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THE

PACIFIC RURAL PRESS

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AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 1.

SAN FRANCISCO, SATURDAY, JANUARY 6, 1906.

THIRTY-FIFTH YEAR.
OFFICE: 330 MARKET ST.

Packing Lemons for Shipment.

In our course of illustrating lemon production in California, as carried on in one of our largest establishments, we come now to the packing for shipment.

All the other processes lead up to this final test of success in growing, picking, washing and in carrying for several months, if necessary, under conditions which promote ripening of the contents of the fruit

the American in the markets of this country. Lemon imports are but a small fraction of what they were before Californians learned how to grow good lemons and handle them satisfactorily.

It was a hard and long process to learn these arts and much loss and disappointment resulted, but the present condition of the industry in this State shows that it has been learned, although it is unfortunately true that all enterprises are not equally profitable, because local difficulties in production have, in some

lemons for shipment in the packing house of the Limoneira company at Santa Paula, Ventura county. It is here that are produced "the lemons that keep," as the motto of the company reads. Whoever has followed these sketches, and thus had intimation of the careful, systematic work which Mr. Teague, the manager, believes in, must also have the secret of why these are lemons that keep.

In this week's picture another view is given of the curing tents which were fully described in the PACIFIC



Packing Lemons for Shipment in the Limoneira Packing House, Santa Paula, Cal.

and bringing its enclosing skin into beauty of color, silkiness of texture and resistance to shock or pressure during the thousands of miles of railway travel to the consumer.

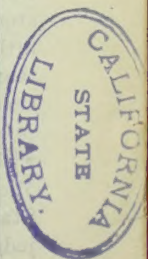
The best pack of California lemons has a uniformity of size, a finish of skin, a juiciness and keen acidity which is unrivaled in the world. Numerous careful tests have been made of the California lemon in Atlantic cities in comparison with the best south European product, and the superiority of the American fruit has thus been demonstrated. The other test, which has also yielded victory, is its submission to popular favor as manifested in patronage, and the testimony of this victory is found in the fact that the Mediterranean fruit has been so widely displaced by

cases, proved insurmountable. For this reason lemon growing has not proved ultimately successful in some districts where the largest plantings were made and the highest expectations indulged in. We recall these facts in the interest of sincerity, and to support a position which we took at the beginning of these articles, that lemon growing and handling were very high and complex horticultural arts and made rather trying requirements upon both natural conditions and business talent. It now seems demonstrated, however, that localities which possess the former and men who possess the latter can be combined in enterprises which are very profitable as agricultural profits go.

The picture on this page shows the final packing of

RURAL PRESS of December 16. The packers are working in the wide alley-way between the rows of tents, each of which holds a carload of lemons. They are working from the large shallow trays into the regular shipping boxes, carefully scrutinizing each specimen to see that it is sound and handsome. The carrying of the lemons depends upon this final selection, and it is, of course, wise to make it conscientiously careful and good.

The structure is, as seen, quite an open one, and as Santa Paula is near the coast, and in a region of very equable temperature, it is possible to give the fruit plenty of fresh air, which it likes, and still furnish by the tents the protection it needs from such changes as do come in the outer air.



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E. J. WICKSON. Horticultural Editor

SAN FRANCISCO, JANUARY 6, 1906.

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The Week.

The New Year opens with a rather wide reaching rain which has set many to work and started the green on fields which have not shown a brown Christmas garment for many years. Such activity is quite a relief from the long leisure and much sowing is now being done in the expectation of deeper wetting later. As it is usual in dry times some sharp frosts have come and have done some injury to tender vegetation, but nothing yet has proved widespread or serious. The general summary of the year's experience in weather lines, which is furnished by the Weather Bureau and published upon the following page, will be found interesting to those who are in retrospective mood.

They have been having an interesting time among the Eastern agricultural colleges to decide which students could do best in stock judging at the Chicago Fat Stock show. This is a way to put in prominent practice the college instruction, and it is certainly a good thing to demonstrate the expertness of the pupils in application of the lessons and demonstrations given them. Six students from the Ohio State University participated in the contest. Besides Ohio, teams from Iowa, Kansas, Texas, Missouri, Michigan and Ontario colleges also took part. Among the 35 contestants from the different colleges, Mr. Main of Ohio stood an easy first by 21.87 points over a Texas student, while Mr. Waid ranked fourth and Mr. Laird fifth. These men were also from Ohio. The Ohio team won the horse trophy, which the Iowa Agricultural College won in 1904. Ohio scored 1,120.33 points, with the Ontario Agricultural College second with 1,042.15 points, with Texas, Iowa, Kansas and Michigan following in the order given. While Ohio State University ranked first among the colleges in judging both horses and cattle, she dropped to third rank on swine and fourth on sheep, Texas excelling on swine and Ontario on sheep. In total points scored on judging cattle, sheep and swine, Ontario led with 3,111.15 points, Iowa second with 3,016.98 and Ohio with 2,948.33 points. This takes the bronze trophy won by Ohio in 1904 to the Ontario Agricultural College at Guelph. It seems too bad that Ohio should miss getting anything, but comfort is found in the fact that a son of Canada cannot be President of the United States!

There is a flood of pathos in the facts concerning the originator of one of the most valuable peaches in California. Mr. G. W. Harney of Marysville, one of our best informed horticulturists, writes to the Marysville Democrat as follows:

There is, however, one creation in the plant world, not by Burbank, that is deserving of extended notice from the newspapers and magazines. The ordinary

observer does not, cannot, appreciate the colossal, tremendous, importance of this new fruit creation. Its a peach, the commercial value of which would require the entire capacity of one of these new-fangled counting machines to compute; of thin skin, golden hue, infinitesimal pit and firm flesh; the trees most prolific bearers. It is the mainstay of the canning industry, and is considered so valuable that it is packed only in glass pots and shipped to London for the fanciest trade in all the world. It is the Phillips cling peach. And the originator of this, the greatest of stone fruits from a commercial point of view, is out here in the poorhouse of the county of Yuba.

This announcement will and should bring a shock to the sensibilities of peach growers and peach canners. Certainly some way should be taken to brighten the latter days of Joseph Phillips and to reward him for his services to the California fruit industry.

Two weeks ago we wrote about the indications of development in the San Joaquin valley as manifested by the making of new rural homes, the extension of towns and the multiplication of facilities for quick transportation. Since then we have had a long run in the Sacramento valley on both sides of the river, from the lowlands to the foothills, and are pleased to note the manifestations of a similar industrial activity. Here and there one sees very gratifying beginnings of the subdivision of large holdings and hears that some offerings have been practically taken up within a year or two of their first announcement. There is a strong movement from the whole northwest district of the United States toward the Sacramento valley as the product of the displays made at the Portland Fair and the accompanying distribution of descriptive "literature." Many who came first into the Northwest, attracted by the offerings of cheap lands, are now finding it possible to close out at an advance to newer comers and desire to invest their profits in a land with a higher winter temperature, and a wider range of products—a land more delightful to live in and to work in. It is interesting to note, also, that there is especially great demand for rich lands under the new irrigation systems, though, of course, there is activity also in rainfall lands if they can be shown to be of good quality, and with good records of production. It is unfortunate that so much good development enterprise in the Sacramento valley should have been expended upon lands uncertain of production and evidently not well adapted to the plantings undertaken upon them. The newer enterprises have profited by the mistakes of the elder, and have chosen richer land with better water supplies. In the vicinity of the larger towns, as for instance in the growth of Chico, large manufacturing enterprises are establishing themselves and offering good chances for labor and for the local sale of products. It begins to be seen that the opportunities in the Sacramento valley which have been exploited for years are being widely realized, and it is clear that the census of 1910 will put that region in a vastly different position in the public eye than did the census of 1900.

The combination of pedagogical and agricultural interests during four days' meetings of Christmas week in Berkeley, proved to be grandly successful. Some authorities place the attendance of the meetings as high as 7000. The State Farmers' Institute phase of the event attracted much attention and each of several exercises in that line was attended by not less than 1000 people. A very notable manifestation was the full sympathy in the same objects of effort by both teachers and farmers. Even in sections which had no connection with the Farmers' Institute, the agricultural point of view was prominent in the papers and discussions showing that rural improvement was a dominant idea in the whole affair. That in itself is a distinct gain, because even in rural schools the teachers are town born and bred, and are not sufficiently impressed with the importance of rural problems. This error is likely to be corrected in the minds at least of all teachers who attended the Berkeley meetings and the new point of view will doubtless be much more widely suggested than that. Dr. A. C. True, of the United States Department of Agriculture, who added greatly to the value of the meetings by his participation, was deeply impressed by the warm interest which all displayed in agricultural education and considered the assemblies in some respects the most significant and promising he had ever attended. We

expect that the events will have a lasting influence and will lead to some very important and progressive changes in our educational work.

It will obviously be impossible for us to present all the papers, which were impressive from a pedagogic point of view, without constituting the PACIFIC RURAL PRESS a pedagogical journal and sacrificing the interest of those who look to us for things more directly agricultural. We shall, therefore, give the right of way to the addresses more closely connected with agricultural practice, and draw from the others from time to time as opportunity offers. It is the intention of the California Teachers' Association, we understand, to prepare for publication their own distinctive matters, so that they will be available, in extenso, in due time. We shall, however, proceed with our selections from this side of the discussions without waiting for such publication. The papers presented in this issue are suggestive of several lines in which our agriculture may advance with profit to all concerned, and other similar discussions of other lines will follow. The State Institute was thoroughly an open meeting and no attempt was made to commit the attendance to support any particular 'doxy, except that Mr. Berwick held that parcels post was a good thing for eggs and Mr. Dore believed that teachers and farmers approved of equal suffrage for men and women, and one of the meetings unanimously declared itself of just that mind. There was the utmost cordiality manifested in the assemblies. The programmes were too full for free discussions, and the people were so well pleased with the formal affairs that they remained in attendance until the afternoon of the fourth day, in spite of the fact that the place of meeting was quite affected by the low temperature of the outer air. On the whole the meetings were a great success, even if judged only from the agricultural side.

One of the best things done by the recent Fruit Growers' Convention at Santa Rosa was the call upon the general Government for continued co-operation with our State Experiment Station in pursuit of the pear blight. It is now telegraphed from Washington that a bill, appropriating \$10,000 for carrying on the study of methods for stopping the pear blight in California, has been introduced by Representative McKinlay, after a conference with officials of the Agricultural Department. M. B. Waite, expert of the Department, has just returned from California, where he made a study of the pear blight. He reports that the disease is gaining a foothold in the Sacramento valley, after having ravaged the San Joaquin valley, and several valuable orchards have been uprooted in an effort to stamp out the disease. California pear orchards are valued at about \$10,000,000, and, unless pear blight is checked, the entire industry may be ruined. The blight has ruined the Le Conte pear industry of Georgia, and the Bartlett pear orchards of California are the next prospective victims. California affords the best place in the world to operate upon pear blight on a large scale, and we are desirous that all forces of Nation and State should be combined to demonstrate whether the pear grower or the disease should survive.

QUERIES AND REPLIES.

Suspected Silage.

TO THE EDITOR: I send a package of ensilage that I am feeding to some old ewes. They eat it fairly well and seem to be doing well on the feed. They also get some hay and run out on poor field feed. Recently several have died; some in very good order at time of death. I have a fear that the ensilage may be the cause of their death, so send to you for an opinion of ensilage. The silo was filled from a volunteer crop of hay, consisting of wild oats, red oats, burr clover, etc., with some sweet (or bitter) clover. The oats had become very much affected by the rust that was so prevalent last season. The ensilage is all dark, almost black, all through the silo, like sample I send you. I have some 40 tons of the ensilage left, but do not know whether it is best to continue to feed it to sheep. Cattle eat it well also, but I have not fed it to them much. What is the best corn to raise for siloing for winter feed?—READER, Napa valley.

The silage has certainly gone to the bad during transit (if it had not arrived there before sending), and in the condition we see it we should consider it

rather dangerous stuff and would use it very cautiously and not risk it with cattle or horses at all. It is, however, unfair to judge the case by the sample, which has undergone so much exposure to the air, even in a tin can, and, therefore, an analysis of this sample might not at all fairly represent the actual condition as it comes from the silo. We can only recommend cautious use, and abandonment if there are signs of trouble. The stuff of which the silo was filled is very hard stuff to keep, even if most carefully put into the silo, because of its perishable nature and the fact that it is hard to handle it to exclude air. It is also known that bad silage has killed animals. Good silage speaks for itself; its odor is rather agreeable, while bad silage also discloses its character by offensive mustiness, or even odors of incipient putrefaction. The color is less significant and the blackness might be expected from the mixed material, particularly by the clovers included. The best corn for silage is the one which gives you the best growth, because the purpose is to get as much succulent material as possible in connection with the greatest number of ears in the glazed state. The best corn is, therefore, a local question, and no variety is best everywhere. The large dent varieties are usually preferred.

Orange Leaves.

TO THE EDITOR: I enclose a piece of new growth from an orange tree. From my garden is a scale and what shall I do to destroy it? It seems to affect the new wood; it turns yellow and dies. If you will reply through the PACIFIC RURAL PRESS I shall be greatly obliged.—A SUBSCRIBER, Napa, Cal.

There is no scale present. The discoloration of leaves and the die-back of which you speak is due probably to defective soil or moisture conditions. The appearance sometimes follows drouth, sometimes follows standing water or a muddy subsoil. You will have to look into the soil conditions and use drainage or irrigation, as your investigation next summer may determine. A little stable manure may help the color of the leaves.

Peach Troubles Again.

TO THE EDITOR: I have mislaid the papers which discussed the 'peach blight,' which we had in this district last spring, so write for directions for spraying for it. First, was it definitely decided that it was shothole fungus? Second, how late can I spray and have it effective? Third, will spraying around four acres of old trees, which are surrounded by quite an acreage of younger trees not sprayed, protect the old trees? I do not care to go to the expense of spraying the younger trees, and they also adjoin a neighbor's trees which will not be sprayed. Fourth, does the Bordeaux mixture have any effect on San Jose scale and, if not, can I add anything so as to make an effective spray for both the scale and the blight at one application?—READER, Selma.

The peculiar trouble of the peach last winter was not completely demonstrated. There was, however, the strong presumption that it was due to compound causes. The unusual temperature and moisture conditions which, first, prevented a normal growth; second, promoted the development of parasitic diseases. It was not determined to be all shothole fungus—this pest probably only seized its chances with the rest. Spraying with Bordeaux mixture was fully discussed in our last issue. Spraying will undoubtedly lessen the trouble on certain trees, although they are adjacent to the unsprayed. Good spraying enables each tree to open the season with a clean bill of health. It removes the handicap of disease from its own body and, of course, lessens its chance of suffering, first, because it will grow more vigorously after the Bordeaux mixture; second, it will have the start of a disease which must come from without. Bordeaux mixture is not an insecticide. For both scales and fungi you must use the lime, sulphur and salt spray. Make it well and use it thoroughly. The following is the recipe:

Unslacked lime, 40 lb.; sulphur, 20 lb.; stock salt, 15 lb.; water to make 60 pounds.

Directions.—Place 10 lb. of lime and 20 lb. of sulphur in a boiler with 20 gal. of water and boil over a brisk fire for not less than one and one-half hour, or until the sulphur is thoroughly dissolved. When this takes place, the mixture will be of an amber color. Next, place in a cask 30 lb. of unslacked lime, pouring over it hot water to thoroughly slack it; and while it is boiling add 15 lb. salt. When this is dissolved, add to the lime and sulphur in the boiler and cook for half an hour longer, when the necessary hot water to make the 60 gal. should be added.

Follow the above directions carefully, particularly

the boiling, if you desire success. For peach moth and fungi use this remedy as late in the season as possible. The best results will be obtained by spraying just before the peach trees burst into full bloom. On cloudy, moist days, blossoms will not be injured by this wash, but in dry weather, with north wind, blossoms will be damaged if full strength is used.

For scales, particularly, earlier work can be done, in fact, it is probably safer not to put off the spraying too late for fear that you may not get it done at all.

For the Canker Worm.

TO THE EDITOR: How can I spray for the canker worm?—GROWER, Gilroy.

Spraying for the canker worm is a last resort. You should have had your trees banded with some sticky preparation since Nov. 15, to catch the wingless moth as she crawls up to lay her eggs. Obviously if you catch the moth you get no worms, and the few which escape the trap can be shaken down by jarring, for they let themselves down by a thread when disturbed sufficiently. If, however, you have the eggs and will get the worms as soon as there are leaves to eat, use an arsenical spray, just as it is prepared for the codlin moth, except that for the apricot you can make it about twice as strong without injury to the leaves, and do more execution with less defoliation.

Stocks For the Sugar Prune.

TO THE EDITOR: Will you kindly let me know in your answers to correspondents column the best stock for the sugar prune? Does it succeed well on the apricot or almond where the soil is adapted for the latter, being sandy loam with friable red clay loam subsoil?—SUBSCRIBER, Nuriotpa, New Zealand.

The Sugar prune is a grateful grower, and succeeds on many stocks. It has been successfully worked on many kinds of plums and prunes, and on the almond, to which it takes very kindly. Our observation does not reach to the apricot. Will some reader answer that?

Favors Long Grape Cuttings.

TO THE EDITOR: Regarding the question of long and short grapevine cuttings, I have tried both and find the long cutting is the best. I think it makes the best vine and a larger per cent of the cuttings live; they will live with less water than a short cutting, because the roots are down to moist ground, where they will stay moist all summer with very little or no irrigating. I never watered mine at all. I intend to put out some more this spring. I put out the cutting where I want the vine to grow. I make my cuttings about 2 ft. long.—A FARMER, Dinuba.

WEATHER AND CROPS.

General Summary.

ALEXANDER G. MCADIE, Section Director.

The year on the whole was one of favorable climatic conditions from an agricultural standpoint, and yet disappointing results followed, especially in connection with the wheat crop. The yield was unexpectedly light, and in view of the good start at the early part of the year and seemingly good growth for several months the result was something of a surprise. The wheat crop in California has been steadily decreasing, and the yield per acre throughout the wheat fields this year was far below a proper figure. Other reasons than climatic ones must be looked for to explain this steady decrease. Barley on the whole made a fair crop. Hay and pasturage were above a good average and much dried feed was stored for winter use. The year was an excellent one for stock.

The season was good for beans, sugar beets, hops and vegetables. Lima and small white beans made a good crop. Hops were for the most part free from pests, and during the picking period the weather was generally favorable and the yield large.

All things considered, the year was a good one for fruit. Cherries, owing to heavy rains at the time of picking, and pears, owing to heavy rains at the time of blossoming, were light crops; but nearly all other deciduous fruits averaged satisfactorily. Unusually high temperatures during the first week of July had on the whole a beneficial effect except on grapes of the earlier varieties. The raisin season was favorable for drying, and there was but little loss through showers during the curing period. The raisins were of good quality and of larger size than usual. The apple crop was large and of excellent quality. In previous years extremely hot weather during the month of September has damaged the apple crop of California, but this year the weather was favorable and the loss through burning was comparatively small. Citrus fruits in the northern, central and southern portions of the State were an excellent crop. The yield will probably be larger than that of any previous year, although it is yet a little early to estimate the total. The weather was favorable throughout the entire season. During the holidays heavy frosts occurred and some slight damage resulted, but ample warnings and extensive smudging have again reduced the losses to a minimum. The olive yield was large and

weather conditions were favorable. The honey crop is an exceptionally heavy one.

MONTHLY SUMMARIES.

JANUARY.—Good rains materially changed crop conditions in southern California and the San Joaquin valley. The outlook for grain and grass was excellent. The acreage in wheat, barley and oats was increased, pasturage improved, cattle did well and prospects were bright. The soil was well saturated, plowing and seeding were in progress, alfalfa and grass made good growth, and vineyardists and orchardists were busy.

FEBRUARY.—Favorable conditions continued and by the middle of the month almond trees were in bloom. Frosts did but little damage. Late sown grain made wonderful improvement and the outlook for good crops was never better.

MARCH.—Rain fell nearly every day after the 10th and some slight damage was done to standing grain and cut alfalfa. Farm work was temporarily suspended in places, owing to the wet soil and continuous rain. Green feed was unusually abundant and cattle were in good condition. Apricots, almonds and peaches were so far advanced as to be comparatively safe from injury by frost. Plowing, seeding and the cultivation of orchards proceeded slowly. The fruit trees were heavily laden with blossoms and young fruit.

APRIL AND MAY.—Conditions were fairly favorable for growing crops. Barley headed out early in April and alfalfa cutting and hay making were general by the beginning of May. Strawberries were shipped by the middle of April. The first box of cherries was shipped from Vacaville on the 7th of April, three weeks earlier than the previous year. Grapes were remarkably thrifty. Near the close of May there were reports that in some sections wheat had lodged. Grasshoppers appeared on some of the southern ranches.

JUNE AND JULY.—Grain harvest began in the San Joaquin valley about the beginning of June. The wheat crop was not up to early expectations, and as threshing progressed the yield was found to be disappointingly small. Barley and oats yielded fair crops. Grasshoppers caused some damage to grain. The sugar beet crop was heavy and matured earlier than usual. The hay crop was the largest in several years. During the first week in July high temperatures prevailed throughout the State. Previous records were broken at many places on the 7th and 8th. Some of the maximum temperatures were: Volcano Springs 128°, Angiola 115°, Bagdad 119°, Bakersfield 114°, Biggs 118°, Chico 114°, Cloverdale 115°, Davisville 116°, Elmwood 116°, Farmington 117°, Folsom 119°, Fresno 115°, Gilroy 116°, Imperial 124°, Indio 125°, Marysville 118°, Newman 115°, Orland 120°, Palermo 116°, Palm Springs 122°, Salton 120°, Shasta 119°, Tehama 115°, Williams 115°, San Francisco 98° and Sacramento 110°. Deciduous fruits and grapes were injured to some extent by the extreme heat, but the damage to beans, sugar beets and vegetables was trifling. Grain harvest was practically completed by the end of July.

AUGUST.—Deciduous fruit harvest progressed rapidly, grape picking was in progress and raisin making had begun. Extensive drying and curing of fruits was general throughout the State.

SEPTEMBER.—The weather continued favorable for raisin making and fruit drying. Hop picking and bean harvest were well under way, with satisfactory yields. The fourth crop of alfalfa was harvested. Wineries were busy and prune harvest was nearly completed. Almonds were nearly all picked and walnuts were ripening. Light rain fell near the end of the month, but adequate warnings were given to fruit driers and raisin makers, and the loss was small.

OCTOBER.—This was a month of little rain, only a few showers occurring about the 7th and 22d. The weather was excellent for raisin making, and the second crop of raisins was practically safe by the middle of the month. In the bean counties the crop was harvested and the yield was said to be the best for many years. Wineries were running to their full capacity.

NOVEMBER.—The long dry period ended about the middle of the month. The soil was hard and dry in most sections and little farm work had been done. In southern California the rain came earlier and was of the greatest benefit to farmers, orchardists and stock raisers.

DECEMBER.—Very little rain fell during the month and the snowfall was less than usual. Plowing and seeding were going on slowly. Heavy frosts occurred toward the end of the month, but little damage was done, as ample warnings had been given and orange growers generally fired or otherwise protected their fruit. High north winds on the 9th and 10th damaged oranges and olives in southern California.

San Francisco, January 2, 1906.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, January 3, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.	Total Rainfall to Date.	Total Seasonal Rainfall to Same Date.	Average Seasonal Rainfall to Date.	Maximum Temperature for the week.	Minimum Temperature for the week.
Eureka.....	1.48	10.14	17.37	18.44	51	32
Red Bluff.....	1.48	4.15	14.62	11.47	54	34
Sacramento.....	.20	1.76	8.80	7.93	52	32
San Francisco.....	.39	2.97	10.18	9.41	56	39
San Jose.....	.19	3.35	7.10	.....	56	32
Fresno.....	.25	1.35	6.19	3.61	50	28
Independence.....	T	.43	.45	1.47	56	24
San Luis Obispo.....	.16	2.30	6.45	6.96	60	26
Los Angeles.....	.14	3.25	3.59	5.65	72	36
San Diego.....	.20	2.65	2.63	3.27	62	36
Yuma.....	.00	3.45	.91	1.71	68	38

THE STOCK YARD.

California Aspect of the Animal Industry.

By PROF. E. W. MAJOR, at the State Farmers' Institute at the University of California.

The subject assigned to me is so large in scope that it is not possible to do more than give a brief review of the more important lines and note their possibilities.

From the last report of the Secretary of Agriculture we learn that the total value of live stock in the United States is \$2,879,255,000—very nearly 3,000 million dollars. The same report informs us that the estimate made of the value of dairy products in 1905 was \$665,000,000. No crop but corn produces the income that the dairy cow does. (Page 5, Secretary's Report.)

According to the last census, the value of live stock in California was \$67,303,325.

I give these figures merely to call your attention to the magnitude of the animal industries, and, when we consider the returns, their possibilities.

Long before gold was discovered, and before the wonderful adaptability of its soil and climate to horticultural pursuits, California was a live stock State. Each Mission had its herds and flocks. Later the Spanish rancho was used, it may be said, exclusively for purposes of stock raising.

The live stock industry continues to be one of the most important of agricultural industries in the State; and yet we do not give it the thought and attention it deserves.

Let us consider the dairy industry. According to the last report of the State Dairy Bureau, the value of California dairy products for the year 1903-4 was \$20,375,567. I believe that the returns this year will amount to close upon \$25,000,000, and yet we do not produce enough to supply the people within our borders.

In the early days of dairying certain sections of the State were counted as dairy sections—Humboldt county, for example, and the coast counties, as far south as Santa Barbara county. At the present time dairying is carried on extensively in nearly every county in the State, from Del Norte in the north to San Diego in the south. A recent trip to the Imperial valley afforded me an opportunity of seeing how rapidly the dairy industry may develop in a section that a few years ago was counted a desert.

The large interior valleys—that were at one time almost exclusively used for grain raising—are now, through irrigation, being converted into dairy farms—medium-sized farms, and each the home of a man who is making a home as well as a living on it. Where is there a State that can grow those two great cow feeds—alfalfa and corn—to better advantage than we can? The so-called corn belt does not raise fodder corn as well as we do.

What dairying is doing for some of those sections was well told by a Portuguese dairyman on the west side. He said that five years ago he was trying to make a living from raising grain. Times were hard, but he had to have groceries and clothes for his family.

"I would go down town and go into" * * * *

What he gave as his experience can well be used to illustrate the experiences of many in the business. It is not always the localities in the State that seem to combine all the desirable points that give the best results. Fighting against some disadvantages causes the dairyman to give closer attention to details. In this way he secures better results.

A line of live-stock work that is closely allied to dairying is hog raising. The value of swine in our State is about \$4,000,000. Of these animals about one-third are raised on dairies. Alfalfa makes a good feed for sows as well as for cows, and there is no better feed for pigs than the dairy by-products. Yet we do not produce enough pork to supply our people. Every year about 10,000,000 lb. of pork products are brought into San Francisco alone. Perhaps not all of this remains in the State; but it doesn't make any difference whether we consume all the product that is brought into the State or whether it is shipped to the Far East. If it is shipped, then we are to blame for not securing that export trade ourselves.

The beef-cattle market has not been in good shape during the past year. There were several reasons for this: The rapid increase of the number of cattle for winter market fed in California from the year 1900 to the year 1905; the abundant rainfall made pastures so good that small bunches of cattle in fine order came from all parts of the State. These were important factors in the falling off of prices.

However, for some time to come, beef raising will be carried on on the large ranches, and the small farmer will not be so interested in the question.

When we consider sheep, we find an opposite condition has existed. The numbers have fallen off quite rapidly, and in consequence the wool clip last year was small. This resulted in high prices. The best Northern wools have sold as high this season as 28c. to 30c. per lb., the highest price in years. Mutton, too, has been high, very high. Under these conditions, and when we consider that the falling off in the number of sheep is not limited to California, but has

been general, we must recognize the possibility of the sheep industry becoming one of the money-making lines for the small farmer.

There is one more line of work that I wish to mention and that is the horse.

California has achieved great reputation for her fast horses—runners, trotters and pacers. I do not wish to say anything against speed horses—they have their place. I like to see a good race. But the raising of fast horses is a special business. Every live-stock farmer can raise draft horses—heavy or medium. James McNab of San Francisco, who has had large experience as a buyer, writes: "It is a fact that at the present time there is a great scarcity of heavy draft horses in this State. I have been constantly a buyer of heavy horses for 30 years past in San Francisco; have always traveled throughout the State in that time looking for and buying stock, and I must say that at no time during that period have good draft horses been so hard to find as at the present time."

"I know of no opportunity in the stock business that affords such profitable inducements as that of raising heavy draft stock. Five-year-olds, weighing from 1,700 to 1,800 lb., readily bring \$300 each in the San Francisco market, and higher prices are paid for fancy animals."

"Good 1,600-lb. teams and over are scarce and sell for from \$500 per span and upward. They are saleable when five years old, and, unlike roadsters, trotters and thoroughbreds, need no expense in the way of breaking and training."

"The Fire Department in San Francisco has had the greatest difficulty in finding suitable stock. At the last price made of \$285 per head, the contractor failed to fill the contract."

"Had California horsemen followed up the line of breeding in recent years with the same enterprise that was displayed up to about the year 1885, I believe they would have attained even greater success than they reached with the thoroughbred or trotter, and that the California draft horses would have been noted the world over."

"Let us hope that the renewed interest manifested by recent heavy importations of draft stallions will result in an effort to put the State in the proper line for the future as a producer of draft stock."

Think of the number of farms where mares could be substituted for geldings for work purposes. A mare will raise a colt, and, with judicious handling, will lose but few days from the field. As has been said already, the demand for horses of this type is great and the prices obtained good.

Now, all the time allowed could well have been taken up by the consideration of some one line of animal industry, and then we would not have covered it thoroughly.

Before closing, I want to consider the conditions that are necessary to put animal industry work on a better basis. It is of no use to say that we have the finest climate, the best soil, we can grow large crops of the necessary food-stuffs, we have a good market in our State and great possibilities in other parts of the world, and then not do the best that is in us to utilize these advantages. We produce a good deal of butter, but it takes a large number of cows to do it—too many by far. We must have better cows, better breeding, better feeding. In fact, we may say that we need better stock and better stockmen. Now the latter must come first. We must train our stockmen before we can hope to make much improvement in the stock. A poor dairyman has poor cows and knows about enough to handle them. Give him of the best and he might—more than likely would—make a failure of them.

There is no use in our saying that there is a great demand for horses of a certain type and telling the farmer that he ought to raise them unless we at the same time tell him how to select mares and stallions in order to secure the desired result. Again, when the colt is born he must know how to feed it and care for it, in order to have it in shape for the market.

The whole matter can be summed up thus: In order to put the animal industry on a proper plane in California, we must have agricultural education. The farmer must be educated through the institute and through short courses.

The University Farm must be so equipped and run that it will provide material for class-room purposes and for experimentation. The farmer's boy must be educated in the proposed High School in connection with the University Farm, or at such an institution as the Polytechnic School at San Luis Obispo. Both the farmer and the farmer's boy must be taught how to judge and select stock, how to breed them and how to feed them.

By these methods we shall be enabled to increase our annual production, have a better product, and no one need fear that we shall overstock the market with goods of the highest quality. The better the article the more of it will people consume.

There is another line of work for the live-stock man that might be dwelt upon. That is the advantages that exist in California for the production of pure-bred live stock for the breeders of other States. Our climate, our grasses, alfalfa and other succulent feed will enable us to develop animals that will be as good as, if not superior to, animals imported from Europe. This is particularly true of certain breeds of dairy cattle, beef cattle and hogs.

AGRICULTURAL SCIENCE.

Organized Efforts Against Plant Diseases.

By PROF. R. E. SMITH at the State Farmers' Institute at the University of California.

We must assume at the outset a consideration of this subject only as it applies to California, since even with this limitation I can present but the briefest outline of what is being done or what might be done along the lines suggested in my subject. Plant pathology and economic entomology have come to be two of the most important phases of botany and zoology in relation to the production of crops. Pests and troubles have multiplied with the increase in plant production, until it may almost be said that every important crop has its serious enemies. It is the means of suppression or control of these pests, diseases and enemies which concerns the entomologist and plant pathologist. Economic entomology has far outstripped plant pathology in California, owing to the variety and pernicious activity of insect pests in the State and the manifest nature of their injuries.

The diseases with which the plant pathologist is supposed to deal include broadly all troubles with plants other than those caused by insects. These may be parasitic troubles, such as fungous or bacterial diseases, or the injurious effects produced by unfavorable conditions. Both classes are frequent, destructive and comparatively little understood in this State. Each of our important fruits has its serious troubles, its blight, scab, rot, or "die-back;" farm crops and vegetables have their rusts, smuts, blights and mildews; our flowers and ornamentals struggle with similar enemies. Some of these diseases are well known in their nature and method of treatment, but others of the most destructive are absolutely unchecked from want of knowledge. Many of them present most obscure problems for getting at their real nature in a manner which must be both technical and practical. I intend in this paper to point out the lines along which the most practical benefit may be obtained in this direction.

In order to develop means for controlling any plant pest successfully we must have four things: Investigation, experimentation, demonstration and application. The specialist must first investigate the nature and cause of the disease, he must then experiment along whatever lines suggest themselves, with the object of finding a remedy or method of treatment. Having found a promising method, he must demonstrate that the treatment is practically successful. This being accomplished, the method must be generally applied by the various growers.

In this State we have several agencies available for accomplishing these results. First of all the grower himself must watch his crops for the appearance of disease and try the application of such remedies as are suggested to him. He may also be able to experiment to some extent. The State and county boards of horticulture are most important agencies for the control of diseases as well as insect pests. They can aid greatly in many ways. The United States Department of Agriculture often lends its aid in various ways, giving the State the benefit of its specialists and their work. The Agricultural Experiment Station should in every State be the center of scientific investigation as applied to agriculture. The investigation of plant diseases is the province of the plant pathologist of the station. He must endeavor to lay bare the whole course, nature and cause of every serious disease, he must experiment for a remedy and endeavor to demonstrate and apply his results, using and co-operating with all the available agencies which may aid in the work.

Without further discussion of the need of organized effort against plant diseases, or the forces available for the work, I may mention some of the undertakings now being carried on by the department of plant pathology at this experiment station along these lines. The pear blight work is largely one of demonstration and application, the investigation having been previously done by the United States Department. The last Legislature made nearly \$10,000 available for this work, which is being done jointly by the pear growers, the State and county boards of horticulture, the University Experiment Station and the United States Department. Eight men are now in the pear orchards on this work, showing and demonstrating to the growers the best methods of fighting the disease.

The lemon rot investigation represents an organized effort between the station and the southern California lemon growers to find a way to control a very serious decay of their fruit, which cost single growers over \$10,000 last year.

The walnut blight investigation was provided for by the last Legislature, and is being organized in connection with the walnut growers of the affected sections.

A beet blight investigation is in progress, promoted by the sugar beet interests. Great losses have been sustained from this source.

Various other work is in progress, but these are typical of organized, systematic work on very serious problems. It is hoped to take up other plant diseases of importance in the same manner, as circumstances and resources will allow.

THE ORNITHOLOGIST.

The California Quail.—II.

By SYLVESTER D. JUDD, Assistant United States Biological Survey.

By its habit of feeding on foliage, the California quail differs from the bobwhite and resembles the ruffed grouse. Such food forms 22.73% of the vegetable matter eaten. In February, when the bobwhite is weathering blizzards, the California quail is enjoying balmy weather and feeding on browse to the extent of 80% of its food. Most of this browse consists of leaves of leguminous plants, principally clovers. Bur clover (*Medicago denticulata*), that grows in cultivated land and along irrigation ditches, appears to supply most of the forage. Alfalfa and clovers of the genus alfalfa form most of the remaining leguminous green food. Next to legumes, the finely divided leaves of alfilaria, or "filaree" (*Erodium*) are important: Grass, chickweed (*Alsine media*), the leaves of fern, geranium, oxalis and groundsel bush (*Baccharis*) also furnish forage for the quail. W. W. Cooke reports that near Grand Junction, Colo., where the California coast quail has been introduced and thrives wonderfully, market gardeners regard it as a nuisance.

WEED SEEDS.—Different seeds, largely of weeds, furnish the California quail 59.77% of its year's diet. Legumes contribute 17.87%, alfilaria 13.38%, compositæ, 5.55%, the spurge family (*Euphorbiaceæ*) 5.85% and miscellaneous plants 17.12%. Leguminous seeds are liked best by the bird and make up 17.87% of its seed diet for the year and 46.1% of its food for June. Bur clover yields abundance of seeds as well as forage. Its seed pod is peculiar, much elongated, beset with long, sharp spines, and spirally coiled into a roundish bur. The quail swallows it whole, regardless of spines. This food is highly nutritious and is relished by stock as well as by birds and wild animals. Seeds of closely allied plants, such as alfalfa, vetch, cassias, cultivated beans and peas, and clovers of the genera *Trifolium*, *Lespedeza* and *Melilotus* also are in the quail's list, as well as locust (*Robinia*) and lupines, the latter taken in large quantities. They include the seeds of *Lupinus nanus*, *L. micranthus* and *L. sparsiflorus*. Other leguminous seeds are eaten in great numbers, including a small beanlike seed, *Lotus glaber*, which looks much like a miniature Frankfurt sausage, and an unidentified, almost microscopic, square seed, with a notch in its edge—possibly some species of birdsfoot trefoil (*Lotus*). Nearly all of the leguminous plants that furnish the quail with seeds belong to the category of weeds.

Seeds of weeds from other families of plants make up no less than 41.89% of the annual food. Seeds of compositæ yield 5.55%, such injurious weeds as thistles making up the largest part of this percentage. The thistles most often eaten are *Centaurea melitensis*, *C. americana*, *C. solstitialis*, *Mariana mariniana*, *Conchus* sp. and *Carduus* sp. *M. mariniana* has the largest seeds. Ninety of these had been eaten by a quail shot by F. E. Le Beal at Haywards, Cal., Aug. 15, 1903. The seeds of the bur thistle (*Centaurea melitensis*) are smaller and have a hook at one end and a set of spines like a paint brush at the other. They are, perhaps, most liked of all composite seeds. From 500 to 800 are often eaten at a meal. The destruction of this seed is highly beneficial, for the bur thistle is troublesome to farmers. Wild carrot (*Daucus carota*) tar weed (*Madia sativa*), wild lettuce (*Lactuca* sp.) mayweed (*Anthemis cotula*) and marsh elder (*Iva xanthifolia*) furnish most of the remaining seeds of composite plants. Tar weed is a favorite source of food, and one stomach, collected at Watsonville, Cal., by J. S. Hunter, contained 700 of these seeds. Another stomach, from the same place, held 2000 tiny seeds of dog fennel, or mayweed.

From seeds of plants belonging to the spurge family (*Euphorbiaceæ*) come 5.85% of the annual food. Spurges, particularly *Croton setigerus*, commonly known as turkey mullein, are a staple with the California quail as with most other seed-eating birds. So fond are the quail of turkey mullein that their crops are often completely distended with the seeds, sometimes from 500 to 900 to a bird. Turkey mullein is a prostrate plant covered with a whitish, woolly pubescence, and is often used by the Indians to poison fish. Seeds of alfilaria (*Erodium cicutarium* and other species), which is both a weed and a forage plant, are eagerly sought. They are lance-shaped, furnished with a long, elaborate corkscrew awn ending in a thin spine. They burrow into sheep's wool and even pierce the skin. The alfilaria is one of the few seeds of the West that all seed-eating birds consume. The plant is very abundant in California, and the quail often eats from 1,000 to 1,600 of the little corkscrew seeds at a meal. It affords 13.38% of the year's food and 26.70% of the June diet.

Seeds of miscellaneous weeds comprise 17.11% of the annual food. Among the species included are pigweed (*Chenopodium album*), rough pigweed (*Amaranthus retroflexus*) and black mustard (*Brassica nigra*)—especially obnoxious in grain fields—and the closely related weed, wild radish (*Raphanus sativus*). Seeds of shepherd's purse (*Bursa bursapastoris*) and of other cruciferous plants are included in common

with silene and the chickweeds (*Cerastium* sp. and *Alsine media*). Geranium seeds are so much relished that often 300 or 400 are eaten at a time. Two closely related plants, miner's lettuce (*Montia perfoliata*) and red maids (*Calandrinia menziesii*) bear minute shiny black seeds that are often eaten by the thousand. The little seeds of red sorrel (*Rumex acetosella*) and curled dock (*Rumex crispus*) are occasionally taken in almost as large numbers. Seeds of chess (*Bromus secalinus* and *Bromus hordeaceus*), a serious grain pest, are relished, and hundreds of the grain-like seeds of the grass known as "poison darnel" (*Lolium temulentum*) appear in crops examined. Macoun, quoting Spreadborough, states that in British Columbia, where it winters successfully, the quail finds shelter in severe weather under the broom (*Cytisus scoparius*), which in places grows abundantly and yields seed for subsistence.

The quail feeds also at times on mast. A. K. Fisher, in the western foothills of the Sierra Nevada, the last of July, found both young and adult quail eating young acorns. Small quantities of sedge seeds (*Carex* and *Scirpus*) and of dodder (*Cuscuta*) are eaten, the latter plant being a destructive parasite on leguminous forage crops. The miscellaneous seed list includes also stick seeds (*Lappula* sp.), buttercup (*Ranunculus* sp.), bind weed (*Convolvulus* sp.), *Amsinckia* sp., *Anagallis arvensis*, plantain (*Plantago major*), ribgrass (*Plantago lanceolata*), painted cup (*Castilleja* sp.), mountain lilac (*Ceanothus* sp.) and black wattle (*Callicoma serratifolia*). In the mountains of Lower California the food supply determines the breeding time of birds. If there is not enough rain for a good supply of seeds, the coveys of quail do not break up into nesting pairs, but remain in coveys throughout the summer. If the season is wet and the winter rains promise abundant food, the birds mate in March and begin nesting immediately.

THE POULTRY YARD.

Promotion of the California Poultry Interest.

By PROF. M. E. JAFFA, at the State Farmers' Institute at the University of California.

Before we can properly consider how best to promote the poultry industry in California we must make a survey of its present condition. The annual product of poultry and eggs for California, according to the last census, is upward of \$6,000,000; at the same time the importation of Eastern and Middle West products amounts to 17,537,820 lb., valued at between \$2,000,000 and \$3,000,000. Here we have one striking fact, which shows that there is room for expansion to supply our home markets, to say nothing of exportation. But the annual amount of eggs and poultry produced does not show on the face of it whether or not it has been a profitable enterprise for the producer. Are our poultrymen prosperous? There are in this State a number of persons engaged in poultry husbandry who have been thoroughly successful, whether it be from the standpoint of the business man or the financier's point of view. Much credit is due to these people, as in most cases they have had no example to follow, but have had to educate themselves. It is owing to their energy, industry and perseverance that we are enabled to enjoy the highly creditable and instructive poultry shows annually held in different parts of California. But a very few days' travel and brief investigation would disclose the fact that there are a large number of men who are attempting to raise poultry for profit in anything but a rational manner. Some of these men desire help, some are ignorant of the fact that assistance can be had; and, again, there are those who do not care to receive any aid at all.

The poor methods and practices which one meets with are due to some extent to lack of sufficient co-operation of science and practice. There has been very little scientific attention paid to the hen, as compared with the study which has been carried on with the cow, horse or hog, and, considering the great importance of the poultry industry, it is not right that this should be so. The value of the poultry and egg product of the United States exceeds \$300,000,000, annually, which is about three-fifths of the value of the dairy products and not much below the valuation of the cotton crop. Does the poultry industry receive proportionately the scientific attention from the State Experiment Stations of the United States?

In California the relative position of poultry products, in 1900, is shown in the following statement:

Wheat	\$20,179,044
Hay and forage	19,436,398
Orchard produce	14,526,786
Animals sold	13,305,165
Dairy products	12,128,471
Barley	10,645,723
Tropical fruits	7,219,082
Poultry and eggs	6,356,746
Grapes	5,622,825

For investigations relating to viticulture, the last Legislature appropriated \$10,000, while only \$4,000 was similarly appropriated for experiments with poultry. It is true that some of the Eastern agricultural experiment stations are devoting time and attention to the improvement of methods and

the betterment of the poultry interests in their respective localities. But our conditions are so different from those met with by our Eastern brothers that we in California cannot follow the roads traveled by them, but must blaze a trail for ourselves. There has been considerable advance and progress made along this line, as shown by the papers read and discussed at the meetings of various county poultry associations, and by the excellent poultry journals published in our own State. But there is room for improvement in many, by far too many, instances. It would be far better to describe what a typical poultry farm for California should be than to describe a typical California poultry farm.

It would be impossible, within the time allotted to me, to thoroughly discuss this phase of the question. Suffice it to say that the plan generally practiced, that is, the colony plan, does not, nor will it ever, conduce to systematic and highly progressive poultry culture. Such an end can only be attained by the intensive plan, and statistics fully bear out this statement.

POULTRY EXPERIMENT STATION.—The Legislature of 1902-3, realizing the necessity for proper experimentation looking toward the improvement of conditions among poultrymen, appropriated a small sum for the establishment of a poultry experiment station at Petaluma. At this station the question of breeding, feeding and treatment of diseases are taken up and two very valuable bulletins on fowl cholera and fowl tuberculosis have been issued as the result of some of the work of the California Poultry Experiment Station, and a third is now in press.

Among the lines of experiments under way is a practical illustration of the intensive system of poultry husbandry. But owing to the smallness of the appropriation, and also because of the uncertainty of its renewal, the ideal system could not be carried out. We intend to establish such a plant in the near future on the University Farm and prove to those interested the advisability and economy of conducting the poultry business along such lines.

In carrying out scientific investigations the workers must be actuated by two motives—they must not only look toward helping the poultrymen, but bear in mind that it is their duty to be of as much assistance as possible to the consumer. It would be far more to the advantage of the poultrymen to have a more constant production of eggs at a more moderate price than a few eggs at an exorbitant rate at one time and a surplus at low prices at other seasons. It certainly would not be just to teach the producer how to get rich at the expense of the consumer. It is far more equitable to try to so regulate hatching and raising young stock so that the price of eggs may not be, as at present, almost prohibitive for many who require eggs as a part of their diet.

The fact that eggs are sold by the dozen and not by weight is an obstacle to progressive work among a large number of producers. There is no incentive to the production of large eggs.

It has been stated by some that the selling of eggs by weight would cause trouble in the retail trade in making change. To a certain extent this would be so, but a step in the right direction would be to make a minimum standard, *i. e.*, require all eggs to weigh at least 2 oz. each, or 24 oz. per dozen. Had such a law been in operation during the current season, there would have been many dozens of eggs in Berkeley sold at 60c., subject to discount.

NEEDS OF THE POULTRY INTEREST.—These are a few of the problems which are necessary to be solved in order to promote the poultry industry, and at the Station at Petaluma and in the laboratory at Berkeley we are doing our best to accomplish this end. Much as the successful outcome of the experiments will help the poultrymen and thus promote the industry, the greatest good must be expected from organization and co-operation among the poultrymen for better and more systematic work, both as regards feeding, breeding and general management. Until those interested do organize and co-operate, it will be almost impossible to put into operation a food inspection law for the protection of the feeder. Were we exercising such a law at present there would not be on sale the large number of proprietary foods selling at high prices, far beyond their food value or nutritive value. We do not find many such products for sale for the feeding of the horse, cow or swine, for the reason that the advice and conclusions of agricultural experiment stations, resulting from careful scientific studies, show that the feeder can obtain the best results without the use of proprietary or condimental foods.

It would appear that, when similar extended investigations for poultry shall have been carried out, there will not be the showing, as at present, by the manufacture of the foods in question. Not only is a food inspection law necessary with reference to proprietary foods, but also in connection with the sale of the ordinary cattle and poultry foods, such as the alfalfa meal, clover meal, bran, etc. It can be truly said that alfalfa is a most valuable food for poultry and therefore alfalfa meal, when made from first quality alfalfa hay, is a highly desirable product. But on the other hand, when we find material labeled such that one would infer that its origin was the best alfalfa hay, showing, upon chemical examination, less than 13% protein, it is far from being what a poul-

tryman requires or should use, and at the same time costs far more than the nutritive value warrants.

MARKET PROBLEMS.—It certainly would be to the decided interest and benefit of both consumer and producer if the pernicious practice, said to be in vogue by some dealers, of placing stored eggs in the same case with fresh-laid eggs and selling the whole case as fresh eggs, might be prohibited. A food inspection law, properly exercised, would soon prevent such impositions. These are just two instances emphasizing the urgency of the passage of the law referred to.

During the last year a large number of requests for advice have been received at the station from poultrymen who have had difficulties with their flocks, arising either from improper feeding or from lack of knowledge necessary for the successful raising of young chicks. These appeals have been so numerous that they seem almost to warrant the opinion that one of the means of promoting the poultry interests of this State would be to have a competent officer of the University, who would in person answer these calls for aid and instruct the party along the necessary lines. These visits would entail no traveling expenses on the University other than the railroad fare, which, doubtless, could be nominal, as we have every reason to believe that the railroads in California would gladly co-operate in any such scheme. The party requesting the aid of such an officer would be asked to furnish his accommodation while in the locality. Similar plans, with reference to dairying, have been successfully carried out in Denmark—the people being only too glad to take advantage of State aid, and the results of visits have exceeded the expectations of the most sanguine. Why should not California do as much for her poultrymen as Denmark does for her buttermakers?

BROWN OR WHITE EGGS.—It has already been said in this paper that the purpose of scientific promotion of the poultry interests is to help both the producer and consumer, and while it would appear that the main line of work is along the education of the producer, still there are some prejudices on the part of the consumer which prove the necessity of his further enlightenment in certain directions. One of these is the objection to brown-shelled eggs, and therefore it would seem timely to enter a plea for the Plymouth Rock and all fowls laying brown-shelled eggs. If there were any difference in size, in weight, or in nutriment between the brown-shelled and the white-shelled eggs, there might be some reason why the California markets should be a few cents less per dozen for the brown-shelled eggs.

It has been said by some that brown-shelled eggs are richer than the white-shelled eggs. This statement, however, is not borne out by a searching chemical analysis; and the physical examination proves that the main points of superiority, although slight, are possessed by the white-shelled eggs. The minute differences that are found between the two groups are exceeded by variations between the varieties within the same group.

We can, therefore, state as a conclusion, both from a chemical and physical point of view, that there are practically no differences so far as the food value is concerned between the white-shelled and the brown-shelled eggs.

In conclusion, let me impress upon each of my listeners that he can individually add his share to the promotion of the poultry industry as a whole. What we need most of all is to accumulate full and accurate statistics upon which to base permanent and reliable conclusions. If a large number of the poultrymen would undertake to keep accurate and careful data in regard to the different methods employed in housing, feeding and general management, it would be of inestimable value to those who are making scientific investigations. Science and practice must go hand in hand, and by a hearty and thorough co-operation between the poultrymen and the Agricultural Department, and between the poultrymen in different parts of the State, we might hope for a speedy solution of many of the problems now confronting us.

THE FIELD.

Some Practical Aspects of Seed Testing.

By MISS ALICE F. CRANE, at the State Farmers' Institute at the University of California.

Nearly forty years ago Dr. Frederick Nobbe of Tharandt, Germany, commenced investigations of the condition of seed trade in that country. His disclosures in regard to the poor quality and serious adulteration of commercial seeds resulted in awakening much popular interest in the subject, and finally, in 1869, organized seed control was established in Germany, with a station for testing commercial seeds. Now there are many of these stations in Europe, Brazil, Japan, Java, etc.

During the past ten or twelve years much valuable work has been done on this subject by the United States Agricultural Department. Considerable has also been done by a number of agricultural colleges throughout this country.

We will not now discuss the necessity of seed control in this country. Such control will be wel-

comed by honest dealers. We look for the time when only seeds that reach a required per cent of germination and of purity will be allowed on the market.

More particularly, I wish to speak about weeds and weed seeds—but, a little about germination tests first. Different seeds require different treatment, or different conditions, and a practical seed tester is supposed to know what are the conditions most favorable to the germination of the seed in question.

Testing sugar beet seed is a very interesting and a complicated piece of work. Some beet balls may produce from three to six sprouts. Each sprout must be carefully pricked out, and a record should be kept of how many sprouts to a ball. High percentage seed will keep one busy when germination is at its height, for each sprout should be removed before it separates from the seed. Sometimes this happens in the middle of the night. A report of sugar beet tested after the rules of Germany and France should state:

The average number of sprouts in 100 beet balls.

The average number of balls in one kilogram of seeds.

The average number of sprouts in one kilogram of seeds.

The percentage of moisture.

The percentage of purity.

The percentage of beet balls that did not germinate.

I have recently examined many samples of the last two crops of wheat grown in different sections of our State. A large number contained considerable barley and oats, either cultivated or wild oats. Also, 70% of the samples of wheat contained seeds of so-called poison rye grass, also called poison darnel, and these frequently in large numbers—in one sample one-half of the seed, by count, were of this weed. This grass, poison darnel, is our California chess or cheat. (A brome grass is the chess or cheat of the Eastern and Northern States.) There has been a popular fallacy that wheat turns to cheat—even some seedsmen believe it now. These grasses spring only from their own seeds. When chess seeds of strong vitality are present with small, shriveled wheat, is it any wonder that the wheat field is overrun with this pest, which is a very hardy plant?

A few years ago in a district south of here there was considerable trouble experienced in raising oats. A sample of the seed used was sent to Prof. Hilgard with a letter explaining that repeatedly in that vicinity oats had been planted from which a crop of barley was raised. An appeal was made for an explanation of this freak or mystery of nature. Upon testing this sample I found that it contained 80% of small oat seeds, 85% of which would germinate under most favorable conditions, but the seedlings were not strong; 18% of the sample consisted of good, plump barley seeds, 98% of which would germinate, showing a vigorous growth; 2% of the sample was of poison darnel, chess or cheat.

Please do not believe that wheat can turn to cheat, or oats can turn to barley.

It has been said that in a broad sense any troublesome plant may be called a weed. Bad or obnoxious weeds are any kind of bindweeds, as morning glory, which is more feared by farmers than any other weed, whether or not it is the worst one we have; parasitic vines, as dodder or love vine, which causes so much havoc in clover and alfalfa fields and in flax fields in the old world, which twines its yellow, leafless stems around the plant from which it takes its nourishment, surely weakening the plant, if not taking its life. The utmost precaution should be taken not to introduce it.

Plants with creeping root stocks, as Johnson grass, Bermuda grass and poverty weed, are very objectionable, for once in the ground it is almost, if not quite, impossible to eradicate them.

Squirrel tail and fox tail grasses may prove very troublesome.

Also, any spiny or prickly plant, as the common spike weed of the lower San Joaquin Valley, and prickly lettuce, and any plant which bears many seeds and is of no use for forage.

It is not unusual for me to find from 100 to 500 weed seeds in about one teacupful or one-third of a pound of alfalfa seed. These samples frequently contain from 10 to 20 different species of weed seeds—often some may be screened out by means of a properly selected sieve. One of the species of dodder seeds frequently found in alfalfa seed can not be cleaned out. Alfalfa seed which contains any dodder seed should never be planted. Utah alfalfa seed may be excellent as regards germination, but we want to know which of Utah's weed seeds we are importing.

From the kind of weed seeds present, I can frequently tell whether the seed before me is Utah or California grown. In about one-third of a pound of alfalfa seed I found the other day just one seed of so-called Russian thistle, also called Russian cactus, but better called Russian tumble seed. Introduced with flax seed into the Middle West some 20 years ago, it proved a fearful pest. It is said that one plant may bear from 20,000 to 30,000 seeds, which are scattered as the plant is blown, rolling and tumbling over the country, or the seeds owing to a winglike attachment may themselves be carried by the wind.

Is there not economy in having seed tested before planting? Frequently, whether there were many or few weed seeds present, I have been able to tell the farmer that it was possible to clean out all of the bad weed seeds.

On rendering my reports I always explain the character of the objectionable weeds represented by the foreign seeds in the sample. One man said recently that he spent \$70 this last summer in attempting to destroy morning glory. I would like to know what some of this audience could tell of destruction of crops, land rendered useless, and money lost from the presence of weeds.

THE VETERINARIAN.

Bovine Abortion.

By CHAS. GRESSWELL, M. R. C. V. S., 232 Hayward Building, San Francisco, Consulting and Veterinary Surgeon to the National Live Stock Association.

After many and various sources of loss to our live stock interests, that of abortion takes a prominent position in importance.

The causes are many and varied, and the disease is both of a non-contagious and contagious character, but in the latter form can be greatly aggravated in violence by some of the non-contagious causes.

The common causes of ordinary abortion are: Poor condition and weakness brought on by bad or insufficient food, especially in the winter months or those of early spring; chronic indigestion, exemplified by frequent attacks of "bloating" or "colic;" uncertain water supply; sudden flushes of grass following a dry spell which has been severe enough to have caused great emaciation; feeding frozen roots, hay badly harvested, or grain affected with "smut," and drinking putrid water. Overfeeding after a time of underfeeding is also a predisposing cause, especially if an excess of nitrogenous food. In addition to these causes, probably the most common cause of non-contagious abortion among range and farm stock is the existence of the ergot fungus which, during warm wet seasons, and on undrained lands, frequently affects grain and the seeds of grasses.

ERGOTISM.—Ergot consists of a purplish black fungoid growth, which takes the place of several seeds on one stock. Rye grass is the most frequently affected, but it is also common in timothy, bluegrass, redtop and other grasses, and also found at times affecting wheat, barley, oats and rye. It is especially common in wet seasons when the temperature is unusually high, and on meadows shaded by trees and protected from the free sweep of the wind. In addition to ergotized grasses and grain, certain poisonous weeds and the presence of the fluke parasite in the liver will cause abortion.

It is not easy to devise a remedy for this kind of abortion when it is the result of widespread conditions, but in special meadows or pastures known to be affected with ergot, it is a good plan to mow the grass before the completion of the seeding period, which will prevent the formation of the fungus. If the hay cut is suspected of having ergot, a small sprinkling of salt between each three feet of hay as put up in the stack will, on the natural fermentation or the curing of hay, so affect the potent qualities of ergot as to prevent its harmful effects.

No particular medicinal treatment is necessary for the after effects of non-contagious abortion, unless the membranes are retained in the womb longer than twenty-four hours. In that event, four ounces of sulphate of magnesia, one ounce of hyposulphite of soda, and one ounce of powdered ginger should be given in one pint of warm water once a day for two or three days to a cow, and half the dose to the mare. If the membranes have not been ejected on the third day, they should be carefully taken away, either by traction with the hand introduced as far back as possible, or by placing the membranes, as they show outside, between two sticks, and gradually and slowly turning them round, until sufficient force is used to cause the removal of all the membranes. Care in this operation must be taken not to break the tissue, but bring all away intact. After removal, the vagina and womb should be carefully irrigated with a solution of bichloride of mercury, made by dissolving one antiseptic tablet in two quarts of water, or with a solution of permanganate of potash, made by dissolving ten grains to the pint of water. Irrigation is best done with a fountain syringe.

CONTAGIOUS ABORTION.—A more important and disastrous cause of abortion is, however, contagion, and the resulting effect is known as contagious abortion, and when well established in a herd of cattle, or in a barn of dairy cows, is very disastrous in its effects unless remedied. Annual losses of offspring have occurred from this cause as high as 70% annually. The disease is conveyed from one animal to another by actual contact of the discharges from an abortive animal with the mucus lining membrane of the vagina of the healthy animal. A peculiar suppurative disease is thereupon set up in the vagina which soon spreads to the uterus and foetal membranes, and causes expulsion of the foetus. This discharge from an infected animal is very virulent, and the smallest particle of it, wet or dry, will cause the disease, with

abortion in a varying period of from one month upward. This form of abortion may be aggravated by any of the causes before mentioned of non-contagious abortion, but may exist of itself when none of the other causes are present. It can only be stamped out by isolation and disinfection, though this can be done effectively and easily. The contagion allowed to run its course has been known to last in a stable or among a herd many years. The discharges after non-contagious abortion are not infective, but those from the contagious form always are to a more or less degree.

THE GERM.—The actual germ has not as yet been isolated and cultivated, but Nocard of France has discovered a germ existing abundantly between the womb and the afterbirth of abortive cows which was never found in the healthy. Sufficient proof, however, exists, by actual experiment with the discharges, that contagious abortion is quite distinct from that produced by other causes, and that it is only spread by actual contact. The virus taken from the contagious discharges will cause abortion in the sow, ewe, goat and rabbit, whereas the discharge from ordinary abortion has no such effect. It is also noted that if the virus is first passed through a rabbit, it becomes intensified in its action, and then will most readily and more quickly act on the higher mammals, such as the cow or mare. The virus is supposed to act by causing a specific disease of the membranes of the fetus and of the lining of the womb, which gradually attains sufficient intensity as to cause, first separation and then expulsion of the whole contents

of the womb, generally before death of the fetus has actually occurred. On the other hand, in non-contagious abortion, the fetus is generally dead before expulsion, and the membranes, being themselves more healthy than in the contagious form, are longer retained after the act of abortion. Thus, in the contagious form, it often happens that the evidences of the occurrence disappears before attention is drawn to the fact.

ENDURANCE OF THE GERM.—An important fact in connection with the contagious form is that the disease, set up in the womb and genital organs of an abortive cow, last an indefinite period after abortion has occurred, and often of so mild a character as to be scarcely perceptible, and does not interfere with the general health of the animal or prevent conception, but yet will cause abortion a few months after conception has taken place. Herein lies the particularly insidious danger of the disease, as during all this period the discharge continues to some extent, and is always effective. Tests show that abortion from this infection may occur at various times, depending upon the progress of the disease. It has occurred in a previously healthy animal in a few weeks, and, in some cases, a few months after insertion in the vagina of a piece of cotton saturated with the discharge of an affected animal. The dry discharge is infectious, and can be conveyed especially in stables most readily from one animal to another. On the open range or in large pastures the most common method of conveyance is direct by the bull. In stables and among small herds the absolute eradi-

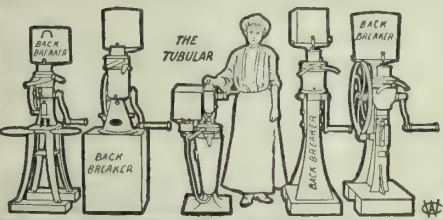
cation of the disease can be readily effected, but among very large herds on the open range the only practicable method is the culling out and treatment or destruction of infected animals.

TREATMENT.—The principles of treatment are to realize that the disease set up by the virus is mild, but constant in character, and kept in existence by the constant reproduction of the virus; and further, that it can be completely destroyed by such disinfectants as bichloride of mercury, and it only requires contact with a 1 to 3000 strength solution of this agent to utterly destroy the power of reproduction in the virus. This irrigation, for a few days, of the womb once a day by means of a fountain syringe with a solution of bichloride of mercury, 1 part to 3000 of water, and washing the tail and thighs with a solution twice the strength for a few times, will prevent the contagious after-effects of contagious abortion. Isolation of the animal until cured is of course necessary, together with a thorough disinfection of all woodwork in stalls or corrals which may have become infected. Manure or litter which has been in contact, and also the afterbirth, should be buried or burned. In all cases of persistent outbreaks of abortion, a careful and scientific inquiry as to the real cause should be at once instituted, as I have known of no instance of continuous abortions where the cause could not, by careful inquiry, be discovered and in most instances remedied, not only to the profit and benefit of the individual, but frequently on open pastures and ranges, to the benefit of the community.

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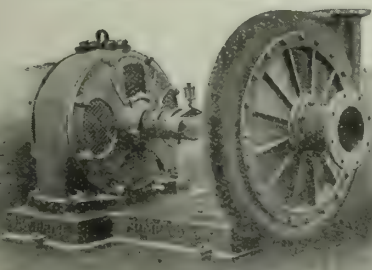
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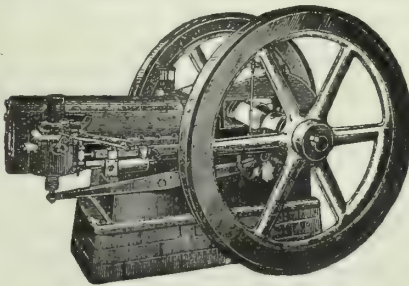
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The Home Circle.

Which One Was Kept.

There were two little kittens, a black and a gray,
And grandmamma said with a frown—
"It will never do to keep them both,
The black one we'd better drown."

"Don't cry, my dear," to tiny Bess,
"One kitten's enough to keep;
Now run to nurse, for 'tis growing late,
And time you were fast asleep."

The morrow dawned, and rosy and sweet
Came little Bess from her nap;
The nurse said, "Go into mamma's room
And look in grandmamma's lap."

"Come here," said grandmamma, with a smile,
From the rocking-chair where she sat;
"God has sent you two little sisters,
Now, what do you think of that?"

Bess looked at the babies a moment,
With their wee heads, yellow and brown,
And then to grandmamma soberly said,
"Which one are you going to drown?"

—Lillian Street, in Ideal Home.

A Dream Melody.

"I suppose I've been ill! I wonder what's the matter with me?"

Colin Stuart opened his eyes, and, struggling into a sitting posture, saw that he was in the shabby bed-sitting-room in the dull side street which for a dreary time now had been his 'home.'

He was still only half conscious and painfully weak, but gradually his brain cleared a little, and bit by bit memory came back.

"So she didn't turn me out, after all! She must have looked after me, too, and found money for medicine and food. Her bark was worse than her bite, poor creature! I daresay she's hard pressed enough herself at times, especially if many of her lodgers are as unprofitable as I am."

"How much did I owe her, now, before I was taken ill? How long have I been lying here in delirium, and, worst problem of all, what am I to do with myself now I have my senses back again? Life was pretty rough before; it will be impossible now."

Another glance around the room freshened his memory again—the open piano, the loose sheets of torn music carelessly strewn all around. However long the illness had been in duration, no loving hand tended him, only grudging service (given, perchance, as an alternative to an inquest) had been bestowed on him.

"I remember! I'd reached the end of all things; not one penny left—no work—season flat—couldn't sell music or get it sung, not one solitary engagement through all those awful weeks. Only the clothes I was wearing left! Not a friend in the whole world I could turn to for help—bread and water for a week—then water without the bread, with the Frenchman's experience to follow; no sooner had I taught the horse to live on one straw a day than the brute spited me and died!

"But I didn't die! No, here I am, unfortunately, alive. I've been under the waters of fate once, and, like other bodies, risen to the surface. I shall go down again directly. Mrs. Wilcox thinks she can turn me out without being held up for manslaughter or anything of that kind. Shall I rise the second time through the casual ward or be allowed to die quietly in the gutter? Heaven knows; I don't."

Another long, weary pause, at the end of which the landlady popped her head in at the door, gave a grunt which might either have been satisfaction or disgust on realizing the invalid was conscious—better; then dived back to the kitchen, emerging therefrom a little later with a basin of very weak soup and a piece of bread, which she set down with a clatter on a small table near the bed with the remark:

"You can feed yourself again now; the time it's wasted every day a-looking after you no money could ever pay for."

"I'm sure I'm very grateful," was

the shamed reply. "Have I been ill long?"

"Mor'n two weeks," ungraciously, "an me scared to death with all this talk o' smallpox about."

Colin started violently. "But it can't be that—there is no rash—"

"Good thing for you it wasn't," was the sharp retort. "It's delirium, the doctor says. You've been a-playing that there piano to death, but there ain't enough on those bones to suit me; it's all noise an' no meat in pianos. Never no more musicians take my rooms, and out you go just as soon as you can set foot to the ground."

"I must owe you an awful lot," he murmured, brokenly. "I see medicine, and food, and wine, besides the rent; you must be a kind of pantomime fairy disguised as—as—"

"Don't you go poking your fun at me," she broke in shrilly. "I'm a poor, hard working, honest woman. Fairy, indeed. The very idea. What you've had you've paid for, or, it stands to reason, out you'd have gone long ago."

"Paid for," blankly; "why, when I was taken ill I was behind with my rent—"

"And who'll blame me for paying myself out of the money in your pocket?" hectoringly. "There you was a-lying dead (so it looked at first) on the floor, and when the doctor was fetched he says food, fire, wine an' good nursing. 'Who's to pay?' says I, and he says, 'You'd better look amongst his things for his money. In the meantime, use this,' giving me a sovereign. One of the lodgers sat with you while I run out for the medicine, an' afterward we went through your things together."

"Ten pounds there was in two five-pound notes, an' fifteen shillings in silver. I jist got the gentleman to sign his name to its being all right, which, thank heaven, he's here an' can prove, an' in course I took out the three pounds owing for rent, an' paid the doctor back his sovereign, an' used the rest as it was wanted. What's left's in that there box on the table, an' another week's rent due tomorrow."

She was hard but honest. There was still a remnant of gold among the silver—enough to last, please heaven, until he was strong enough to crawl out again, with the hope of earning a precarious living.

Where the money had come from goodness alone knew! A purse of gold where not one copper piece had been!

As Colin lay back on his lodging-house pillow (hard and rather grimy) unshed tears burned his eyeballs as he thought of that doctor, who, seeing at a glance that he was dying from sheer starvation, had not hesitated to give the 'two pence' of the Good Samaritan.

"The mere money I may repay some day," he thought; "but the action never! Whether one pound or fifty at the last day, it will speak—it will have a thousand voices. God will hear them."

As soon as he could crawl he dragged himself to the piano. If even now he could only be in time—time to win that grand prize offered by the Conservatoire at Florence for the best setting of a song to words supplied by them—£250 English money, with the situation of harmony master at a large salary to, perhaps, the cleverest group of students the world had ever seen.

There was an exquisite but maddening elusive melody in his brain—an angel song; but his head was weak from illness, and it was evidently doomed to remain one of those untold dream witcheries which thrall most soul musicians at times and draw away their thoughts to cloud land. He could not hum it, could not find its beginning or end, though he tried each note in the gamut; but he felt it, he had dreamed it; some day—too late, perhaps, to make use of in this world—it would come to him in its full, glorious beauty.

Song after song, tune after tune, he painfully evolved, only to throw them aside with a cry of despair when finished.

"Mechanical, wooden! Correct harmony? Yes, but oh, ye gods, how commonplace, how evenly on the dead level! and only twenty-four hours left before the MS. must be posted. I am like a

drowning man who sees the life belt hanging just out of his reach. The prize, the position, the melody, and my utter inability to grasp it. What is that?" springing to his feet and almost ceasing to breathe as certain notes, halting, faulty, but still gloriously beautiful, reached his ear. "Who is that? What is that—" A long pause, then he said deliberately, resolutely, though his face was white as snow: "That is the music that shall win the prize! It is mine, not his! I dreamed it. I can write it into something that will electrify the world; my harmonies shall be transcendently beautiful, his are hopelessly faulty; the melody is worthless to him, to me it is salvation for soul and body—"

The notes were played through again slowly, tenderly, with wrong chords, with right chords, with one finger only, a rich deep voice hummed them, a girl's clear soprano corrected the man to a curious minor resolution that Colin's soul had already leaped to—they—these unknown two—had given him the clew to his dream melody; theirs was of the earth earthy; he would turn it into something that was worthy even of heaven itself.

Down he sat and set feverishly to work and the melody fitted the words, as a glove the hand:

Hail, victor! in the generous strife,
This is the golden hour of life;
The struggle and the task are done,
The guerdon and the chaplet won.

* * * * *

Thine is the fadeless olive crown,
Blazon and badge of bright renown;
For thee the poet's lyre is strung,
For thee the song of triumph won.

He wrote on, and on, and on! Night passed into day, and day nearly into night again before it was finished, and he managed to stagger out and post it himself; then he fainted, and Mrs. Wilcox told him he must leave her house at the end of the week. She couldn't abide invalids, besides which she had a chance of letting her rooms for almost double the money; but her first floors were going, and new people coming in who wanted an extra room.

Colin was thankful to go. He felt like a thief who had robbed a blind man. He was a thief, and he had stolen what was far more precious than gold—he had stolen fame from an old man, a foreigner, from a girl perhaps as poor as himself—and he hated himself for it. He had done it almost in his delirium, but as health and strength returned every hour, so did his moral sense of right and wrong.

He was a thief.

* * * * *

The letter with the good news came to a dreary London attic, one of those tiny, ill-furnished rooms which shelter broken hearts and hide blighted hopes from the mock of the world.

Colin Stuart had won the prize for his superb setting of the classic ode—he held the cheque in his hand for £250, with the formal offer of the post he had craved, with more than formal appreciation of his work, for the famous Signor Tiorno pronounced it worthy of the highest praise.



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Colin threw the letter down in bitter contempt. "Stolen honors—a giant's robe," he muttered, "only, thank heaven, there is still time to make restitution. I will take it there to-night—now, it may be to them what it was to me—what it would have been to me if it were honestly mine. Perhaps the melody was hers—that beautiful dark-eyed girl I used to see passing up and down to the second floor back—perhaps it was the old foreigner's I saw with her just before I was taken ill—they will pity and forgive, the temptation was so great."

But they also had left Mrs. Wilcox's apartments, he found—they had gone a few days before he himself had done so.

"She—Miss Giacomo—was a governess and lived here for three years," explained Mrs. Wilcox, vexedly, "and paid to the day all that time. Then her uncle came and took her away—he hadn't any children, and is quite a rich old man, I believe, an' she's going abroad with him. She was his sister's child, an' there'd been a quarrel over the marriage an' they lost sight of each other. Anyhow the parents are dead now, and the signor he's adopted Miss Giacomo for his own; their address, sir? Now, let me see, they went from here to one of them big hotels—Cecil I think it was—"

Colin contrived to cut short the rest of her voluble talk, and started off to walk to the Hotel Cecil; he was glad from his heart that the girl had found a friend and the prospect of happiness—if only the good luck had come to him, other dreams than money and fame might have been his; now she would never know that her pretty face had chained him to Mrs. Wilcox's house like a spell; that the chance meeting sometimes, the glance from her sweet eyes had inspired his muse—yes! something else had gone out of his life with Nina Giacomo, and he had to confess himself as a thief before her.

It was the only restitution he could make.

* * * * *

"I had set my whole soul on winning that prize," stammered the culprit, with downcast eyes. "I thought of it by day and dreamed of it by night—then I was taken ill, and a wondrous melody made itself known to me; strange, sweet harmonies ran through my fever so that waking was almost a pain, for with coming back to this dreary world the angel tune vanished, and I could not catch hold of it—it seemed

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still in my soul, but elusive, like a shadow which cannot be grasped—then—one night I heard it played in another room. I heard it hummed and strummed, not the harmony, but the ghost of the melody, and my delirium was not over. I entreat you to believe it was not the true Colin Stuart, but some remnant of the fever fiend who did it. I stole the melody and elaborated it, harmonized it, as I had heard it played in my dreams, and I sent it in as my own; it won the prize—it is here—yours, not mine—"

"No," said Nina Giacomo, softly laying a detaining hand to stay the retreat he tried to make, "it was always yours, Mr. Stuart; even in your fever the ruling passion of your life came out; there were many hours when you were alone, untended, and you used to get up and play wonderful music—dream music—which drove one into ecstasy to hear, better, far more beautiful than I had ever heard you play before."

"That prize melody was yours, and I used to pick out just the air on my piano afterward sometimes. I have remembered other tunes, but I liked that best; it is your very own, and the appointment also—and I am happy for your sake—"

"I had one other dream, too," he said in almost an inaudible tone, "as sweet or sweeter than the music. There was a purse found in my room, a lady's purse, with a name hastily erased, yet not so thoroughly but that some letters were left—"

"You must forgive," she cried quickly; "the good luck came to me just then; my uncle offered me a home. I knew I should have enough money for always—and—and I was passing the door when you fell and fainted. I knew why, and—Mrs. Wilcox has been made hard because her own fight has been so bitter—those on the coach cannot understand how the wheels hurt, unless once they have been under them themselves."

And after all they did not pass out of each other's lives—the good luck had come at last!—Tid Bits.

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Our stock is grown in Exeter, the famous thermal belt of Tulare county. The soil is a rich, deep, black loam, just the kind which develops the highest grade of fruit, as well as the most perfect type of tree. Our assortment consists of all standard varieties of Oranges, Lemons, Pomelos, Limes, Citrons, etc. Carrying out the lines already established in the other branches, we do not confine ourselves to one or two standards and no more, for although it costs money to keep up a stock of many varieties, we want to be on top in this as well as in everything we specialize in the nursery business.

GRAPE VINES.

If you do not know it, you ought to know that we are the largest growers of vines on the Pacific coast. We are not only growers of raisins, wine and table grapes, but we are also making a specialty of vines grafted on phylloxera resistant roots. Our great and enterprising neighbor, Mexico, is having its vineyards devastated by this pest, and we have already sold two orders to prominent vineyardists there, who know what our stock is, consisting of eighty thousand grafted vines. How did we get such orders? Because we had pleased our customers before, so they had no hesitation in patronizing us again.

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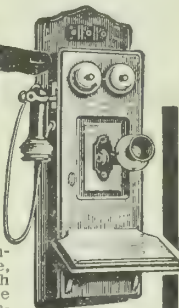
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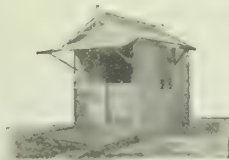
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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, Jan. 3, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	Dec.	May.
Wednesday	82 1/2 @ 82 3/4	87 1/4 @ 87 3/4
Thursday	82 1/2 @ 82 3/4	87 1/4 @ 87 3/4
Friday	82 1/2 @ 82 3/4	87 1/4 @ 87 3/4
Saturday	82 1/2 @ 82 3/4	87 1/4 @ 87 3/4
*Monday	82 1/2 @ 82 3/4	87 1/4 @ 87 3/4
Tuesday	82 1/2 @ 82 3/4	87 1/4 @ 87 3/4

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	Dec.	May.
Wednesday	45 1/2 @ 45 3/4	44 1/2 @ 44 3/4
Thursday	45 1/2 @ 45 3/4	44 1/2 @ 44 3/4
Friday	45 1/2 @ 45 3/4	44 1/2 @ 44 3/4
Saturday	45 1/2 @ 45 3/4	44 1/2 @ 44 3/4
*Monday	45 1/2 @ 45 3/4	44 1/2 @ 44 3/4
Tuesday	45 1/2 @ 45 3/4	44 1/2 @ 44 3/4

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	Dec., 1905.	May, 1906.
Wednesday	— @ —	1 40 1/2 @ 1 40 3/4
Thursday	— @ —	1 40 1/2 @ 1 40 3/4
Friday	— @ —	1 40 1/2 @ 1 40 3/4
Saturday	— @ —	1 40 1/2 @ 1 40 3/4
*Monday	— @ —	1 40 1/2 @ 1 40 3/4
Tuesday	— @ —	1 40 1/2 @ 1 40 3/4

Wheat.

The market for spot wheat continues steady, and prices remain unchanged. Very little cash grain has changed hands during the current week on account of the holiday season, and partly owing to the fact that local grain people are all fairly well stocked. All the mills have purchased large supplies of northern wheat at about the appearing quotations, and aside from the buying of the millers trading has been very limited. Export shipments from San Francisco have been much smaller than usual, while from the north they have been considerably larger. Trading in futures has been rather limited, though prices are maintained at about the same figures as for the week previous, being largely influenced by the advance in cargoes. Prices for May wheat have ranged from \$1.40 to \$1.41 per cental. Advices from Chicago would indicate that the wheat situation is in as sound a condition as it has ever been, the market being far from what could be termed a trading market. In fact it is said that the speculative movement is largely confined to buying and selling on small margins, as the strong statistical situation seems to preclude the possibility of the market undergoing any radical change in the near future. The Russian situation which was used for a time by the bull element in an attempt to advance prices does not seem so alarming as it was represented. That country continues to ship wheat to other parts of the continent in apparently unlimited quantities. The Argentine wheat crop has now passed the stage where it could be possible for the fears of a crop failure to be realized, and, consequently, is not able any longer to give any coloring to the market. On the whole, the situation seems to be exactly what would be desired by the growers of wheat, were the making of the market placed unrestrictedly in their hands.

California Milling	\$1 42 @ 1 47 1/2
Cal. No. 1 shipping	1 40 @ 1 45
Northern Club	1 42 1/2 @ 1 43 1/2
Northern Bluestem	1 45 @ 1 47 1/2
Northern Red	1 35 @ 1 37 1/2

PRICES OF FUTURES.

Tuesday, at the forenoon session of Exchange, May, 1906, wheat ranged from \$1.41 to \$1.40 1/2.

Flour.

The flour market is inactive. The only demand at present comes from the local dealers, and most of these have laid in fairly large supplies to carry them over the winter season. The shipping demand continued very light, most of it being confined to the usual Central American trade, with an occasional shipment for the Hawaiian Islands and Japan. This latter demand, however, is usually supplied from the northern ports, as the limited crop of California wheat compels local millers to obtain most of their wheat supplies from the North; and the high-priced cargoes make it impossible for San Francisco flour shippers to compete with those of the North in price.

Patents, California	\$— @ 4 85
Second Patents, California	— @ 4 80
Straitlines	— @ 4 35
Superfine No. 1	3 50 @ 3 75
Superfine No. 2	3 00 @ 3 40
Oregon Bakers'	4 15 @ 4 50
Washington Bakers'	4 25 @ 4 60
Eastern Patents	5 50 @ —

Barley

The market for spot barley continues firm, and prices are unchanged. Good lots of No. 1 feed have changed hands during the week at prices within the range of quotations given, and it is possible that an exceptionally bright lot of this grain would bring an advance over the

top quotation of \$1.22 1/2. There is plenty of medium and off-grade barley offering as low as \$1.15, but with few takers. Trading in futures on the local stock exchange has been rather limited, but the price has been steadily maintained at a figure not far from \$1.22 1/2. The only barley option which is now receiving any attention from the trade is for May delivery.

Brewing	\$1 22 1/2 @ 1 25
Feed, No. 1	1 20 @ 1 22 1/2
Feed, fair to good	1 15 @ 1 17 1/2
Chevalier, No. 1 to choice	1 25 @ 1 30
Chevalier, common to fair	1 20 @ 1 25

Oats.

The oat market is quiet but steady. Appearing quotations are being well maintained and the light receipts which are now coming in are being readily taken up at these figures. There has been some inquiry for oats for shipment to the Philippines on United States Government contracts. So far as can be ascertained, the contracts have not as yet been awarded, and it is probable that when they are awarded they will go to the Northern shippers, as the San Francisco people are finding it difficult to bid against them this year, owing to the fact that a large amount of the oats for this market must come from the North. Choice red oats and black oats are scarce, stocks being hardly sufficient to supply the demand for seeding purposes, and oats of these varieties suitable for seeding will bring an advance over the appearing quotations.

White oats	\$1 47 1/2 @ 1 55
Black oats	— @ 1 75
Red, choice	1 35 @ 1 65
Red, fair	1 25 @ 1 35

Corn

Corn is firm and stocks of yellow corn in both the large and small varieties are light. There have been as yet no large arrivals of Western corn, but quotations on Western to arrive are lower. Both white and brown Egyptian are firmly held at appearing quotations.

Large White, good to choice	\$1 35 @ 1 37 1/2
Large Yellow	— @ 1 25
Small Yellow	1 50 @ 1 55
Egyptian White	1 37 1/2 @ 1 41 1/2
Egyptian Brown	1 25 @ 1 27 1/2

Rye.

The offerings of what might be termed choice rye have been very meager, and as there is now very little arriving from the East, the present prices show no tendency to decline. The only stocks now are in the hands of the millers and these are very light.

Good to choice	\$1 47 1/2 @ 1 52 1/2
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Buckwheat.

There is no business of a jobbing character reported and the only buyers now in the market are the millers, and these have only been able to secure limited quantities at the quoted price. Seed buckwheat brings a figure somewhat above these quotations.

Good to choice	— @ 1 75
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Beans.

There is a good, steady demand for large and small white beans at appearing quotations. Supplies of Red Kidneys and Blackeyes are limited, and as the bulk of the crop has already been marketed, it is evident that the quotations given are very conservative. On red beans and Bayos the market is firm and Limas are steadily advancing under the alleged manipulations of one of the local dealers, who is said to have almost complete control of the situation.

Small White, good to choice	\$3 00 @ 3 25
Large White	2 00 @ 2 60
Pinks	1 75 @ 2 00
Pinks, damaged	1 00 @ 1 25
Bayos, good to choice	3 50 @ 3 65
Red Kidneys	3 65 @ 3 90
Reds	3 00 @ 3 10
Limas, good to choice	4 50 @ 4 75
Black-eye Beans	4 60 @ 4 75

Dried Peas.

The market continues firm on both green peas and Niles, with stocks of Niles practically out of the hands of jobbers. Arrivals have been few and are readily marketed at the figure given. Scarcely any of the Salinas crop found its way into this market, as better prices were procured in the South, where they are extensively used in orchards as fertilizers.

Green Peas, California	\$2 25 @ 2 40
Niles	1 60 @ 1 75

Hops.

There is not much life to the hop market and very little trading has been done during the current week. The average buying price on such transactions as have been made will be found between 7c. and 10c. per lb. The last deal of any size reported up to this date was made on the last day of the old year, and was for 125 bales at 7c., the hops being, of course, of less than average quality. Holders of choice grades are, however, offering their hops at a figure under 10c. These facts and figures seem to substantiate the pre-

dictions which have been made from time to time concerning the tendency of the market toward weakness. Not the slightest advance has taken place since the hops were harvested, and at this writing little encouragement can be extended to the holders of hops for the betterment of prices. Prime to choice goods may hold steady at 9 to 10c., but the medium and inferior grades will necessarily have to be sold at reduced prices in order to find a market.

Medium to fair	6 @ —
Good brewing	8 @ 8 1/2
Prime	9 @ —
Prime to choice	9 @ 10

Wool.

A few straggling lots of scoured wools of the fall clip have come into this market and were picked up at about the appearing quotations. As the Eastern demand is mostly for long wools there has been no life to the trading, notwithstanding the fact that it is reported that a better demand for California wools has recently sprung up in the Boston market.

FALL.	
Humboldt and Mendocino	15 @ 16 1/2
Northern, free	14 1/2 @ 16
Northern, defective	12 @ 14
Middle County, free	12 @ 16
Middle County, defective	12 @ 14
San Joaquin and Southern, free	10 @ 14
San Joaquin and Southern, defective	9 @ 11

SPRING.	
Oregon, valley	23 @ 25
Eastern Oregon	15 @ 17
Nevada	16 @ 20

Hay and Straw.

Trade in hay has been very dull, owing to the holiday season, and the large quantity which has been received in this market during the current week has been far more than the market could well stand. The difficulty which has been experienced for some time past with regard to getting a sufficient number of cars to care for the shipping of hay has now been remedied, and the arrivals by rail have been somewhat heavier. The bulk of arrivals have consisted of medium grade hay, very little choice hay arriving, and almost nothing in the line of cheap grades. The lack of green feed in the country has compelled farmers to feed baled hay, and for this purpose the lower grades have been used, almost cutting off the supply of this kind for the San Francisco market. A Government contract has been awarded in San Francisco for 1,000 tons and this may relieve the tendency toward the accumulation of stock. Alfalfa and straw remain about as previously quoted, the former in rather good demand and the latter dragging badly.

Wheat, choice	\$14 00 @ 16 00
Wheat, other grades	8 00 @ 13 50
Wheat and Oat	8 00 @ 12 50
Time Oat, fair to choice	8 00 @ 12 00
Wild Oat	8 00 @ 9 50
Barley	7 00 @ 9 50
Clover	6 00 @ 9 00
Alfalfa	9 00 @ 11 50
Stock hay	7 00 @ 8 00
Compressed	10 00 @ 13 00
Straw, 1/2 bale	30 @ 50

Millstuffs.

The bran market shows a further weakness, prices having declined \$2 per ton during the past fortnight. Receipts from the North have been liberal and the market has been fairly active on the decline, as it is thought that the present weakness is only temporary, being the result of the heavy arrivals from the North and the usual holiday dullness. On all other feedstuffs the market is steady and prices are being well maintained.

Alfalfa Meal, 1/2 ton	\$21 00 @ 23 00
Bran, 1/2 ton	19 00 @ 20 00
Midlings	27 50 @ 29 00
Shorts, Oregon	21 00 @ 22 00
Barley, Rolled, choice	26 00 @ 27 00
Commeal	29 50 @ 30 50
Cracked Corn	30 00 @ 31 00
Oilcake Meal	39 00 @ 40 00
Cocoanut cake or meal	24 50 @ 25 50

Seeds.

The seed market is not, at this writing, in a position to hold the attention of the jobbers, most of whom are turning their attention more toward other lines. The prices given are, however, being well maintained, and it is expected that more life will develop in the market within the next four weeks, when the ground will be ready for the commencement of seeding.

Alfalfa	\$11 00 @ 14 00
Flax	— @ —
Mustard, Yellow	3 50 @ 3 75
Mustard, Trieste	4 50 @ 4 75
Canary	Per lb. 8 1/2 @ 7
Rape	2 1/2 @ 3
Hemp	3 1/2 @ 4
Timothy	5 1/2 @ 6

Honey.

Honey is now coming into the market more freely than for some time past, but the size of the receipts does not seem to influence prices. There is a good demand for white extracted honey, and the quotation of 5c. is easily realized for choice lots.

Extracted, Water White	4 1/2 @ 5
Extracted, White	4 1/2 @ 4 1/2
Extracted, Light Amber	4 @ 4 1/2
Extracted, Amber	3 1/2 @ 4

Extracted, Dark Amber	3 @ 3 1/2
White Comb, 1-frames	9 @ 10
Amber Comb	7 @ 8

Beeswax

Both light and dark wax are in good request, and prices are being well maintained. Stocks of the latter grade are very small and this is having a tendency to elevate prices.

Good to choice, light	25 @ 28
Dark	21 @ 25

Live Stock and Meats.

The market is quiet, but prices are steady on all kinds of dressed meats. Spring lamb and large veal are a shade firmer, though quotations remain unchanged. The hog market is active and prices are firmer.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net	5 @ 5 1/2
Beef, 2nd quality	4 1/2 @ 5
Beef, 3rd quality	3 1/2 @ 4
Mutton—ewes, 8@90; wethers	9 1/2 @ 10
Hogs, hard grain, 150 to 250 lbs.	— @ 6
Hogs, large, hard, over 250 pounds	5 1/2 @ —
Hogs, small, 140, under 150 lbs.	5 1/2 @ 6
Veal, large, 1/2 lb.	8 @ 7 1/2
Veal, small, 1/2 lb.	8 @ 7
Lamb, spring, 1/2 lb.	10 @ 11

Hides, Skins and Tallow.

Very little trading of a speculative character has been indulged in since the last report, as the Eastern demand continues too light to warrant it. There has been as yet no change in prices, but it is probable that there will be a slight easing off in the quotations on inferior grades of hides in the near future, as the market does not seem to warrant present figures. Good hides are, however, in very good request and prices are likely to be well maintained.

Nothing but select hides, clean and trimmed, will bring full figures. Culls of all kinds either from grubs, cuts, hair slips side brands or murrain, are not always readily placed at the lower figures.

	Sound.	Culls.
Heavy Steers, over 56 lbs.	13 @ —	12 @ —
Medium Steers, 48 to 56 lbs.	12 @ —	11 @ —
Light Steers, under 48 lbs.	11 1/2 @ —	10 1/2 @ —
Heavy Cow Hides, over 50 lbs.	11 1/2 @ —	10 1/2 @ —
Light Cow Hides, under 50 lbs.	11 1/2 @ —	10 1/2 @ —
Stags	7 @ 8	7 @ 8
Wet Salted Kip	10 1/2 @ —	10 @ —
Wet Salted Veal	12 @ —	11 @ —
Wet Salted Calf	13 @ —	12 @ —
Dry Hides	19 @ —	19 @ —
Dry Kip and Veal, 11 to 16 lbs.	16 @ 17	15 @ —
Dry Calf, under 4 lbs.	20 @ 21	19 @ —
Pelts, long wool, 1/2 skin	— @ 2 00	1 50 @ 2 00
Pelts, medium, 1/2 skin	— @ 2 00	90 @ 1 25
Pelts, short wool, 1/2 skin	— @ 2 00	60 @ 90
Pelts, shearling, 1/2 skin	— @ 2 00	30 @ 50
Horse Hides, salted, large prime, each	3 00 @ —	— @ —
Horse Hides, salted, medium	2 75 @ —	— @ —
Horse Hides, salted, small	2 25 @ —	— @ —
Horse Hides, dry, large	1 75 @ —	— @ —
Horse Hides, dry, medium	1 50 @ —	— @ —
Horse Hides, dry, small	1 00 @ —	— @ —
Tallow, good quality	4 @ 4 1/2	— @ 4 1/2
Tallow, poorer grades	3 1/2 @ 3 1/2	— @ 3 1/2

Bags and Bagging.

No business of any importance has been transacted in the bag market, as stocks are almost entirely cleaned up, and the demand has now practically ceased. Calcutta futures are firm, June bags being quoted at 6 1/2 @ 6 3/4. The season just closed has been one of the largest that local dealers in bags have ever had.

Bean Bags	6 1/2 @ —
Fruit Sacks, cotton, No. 1, 7 1/2 @ 8 1/4; No. 2	7 1/2 @ 7 3/4
Fruit Sacks, jute, as to quality	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 22x36, spot	7 1/2 @ 7 3/4
Wool Sacks, 4-lb.	— @ 36
Wool Sacks, 3 1/2 lb.	— @ 34

Poultry.

The market is a shade easier than before the holidays; nevertheless all good stock finds ready sale. Large broilers and fryers and large hens are in good demand. Hens which are extra large and fat will sell above quotations. The turkey market is nominal. The demand is light and only fancy stock is wanted at quotations.

Turkeys, choice Young, 1/2 lb.	19 @ 21
Turkeys, live gobblers, 1/2 lb.	19 @ 21
Turkeys, live hens, 1/2 lb.	19 @ 21
Hens, California, 1/2 dozen	4 50 @ 5 50
Hens, large	5 50 @ 6 50
Roosters, old	4 50 @ 5 50
Roosters, young (full-grown)	6 00 @ 6 50
Fryers	5 00 @ 6 00
Broilers, large	3 50 @ 4 50
Broilers, small to medium	2 00 @ 3 00
Ducks, old, 1/2 dozen	5 00 @ 5 50
Ducks, young, 1/2 dozen	6 00 @ 7 00
Geese, 1/2 pair	2 00 @ 2 50
Goslings, 1/2 pair	2 00 @ 2 50
Pigeons, old, 1/2 dozen	— @ 1 25
Pigeons, young	2 00 @ 2 25

Butter.

The market for fancy creamery butter is steady at the decline. Other grades are steady, and California storage shows a slight advance.

Creamery, extras, 1/2 lb.	— @ 31
Creamery, firsts	— @ 27 1/2
Creamery, seconds	21 @ 25
Dairy, select	20 @ 25
Dairy, firsts	22 @ 25
Dairy, seconds	20 @ 22
California storage	24 @ 25
Mixed Store	— @ 20

Cheese.

A good, steady demand for all kinds of fancy stock has prevailed during the cur-

rent week and prices are being well maintained. Intermediate grades are some what neglected.

California, fancy flat, new.....	13	@14 1/2
California, good to choice.....	11	@13
California, fair to good.....	11	@12 1/2
California, "Young Americas".....	13	@14
Eastern, new.....	16	@17

Eggs.

The egg market is about the same as it was a week ago with regard to price, though there has been some fluctuation since that date. There has been a slight advance, but the market has reacted again and 36c. is now the top price for selected ranch eggs. This variety is ruling steady at these figures, while other grades are being somewhat neglected, and the tendency is to shade prices a little. Receipts have been fairly liberal, but have been well taken care of by a good local demand.

California, select, large, white and fresh.....	35	@
California, select, irregular color & size.....	30	@
California, good to choice store.....	30	@
Eastern firsts.....	23	@
Eastern seconds.....	19	@

Potatoes.

There is practically no change in the potato market since the report of last week. Market is firm and prices high for fancy stock only, all inferior grade potatoes moving off slowly at reduced quotations. Fancy Salinas Burbanks are very scarce and are in good request at the quoted price of \$1.50 per cental. The outlook is not encouraging for river stock pending a resumption of the demand for shipment to the South.

River Burbanks, per cental.....	60	@
Salinas Burbanks.....	1 15	@
Oregon Burbanks.....	75	@
Tomatoes.....	80	@
Sweet Potatoes.....	1 25	@

Vegetables.

The vegetable market is weak on all kinds of fresh vegetables, and the stock which is now arising comes mostly from Los Angeles, and shows the effect of rains and frosts. Prices are, however, being well maintained by the local dealers, as supplies are so light and so difficult to procure that it is necessary to sell at a good figure in order to realize any profit. The onion market continues firm on all grades. Oregon onions continue to arrive, and are showing up somewhat better as to quality than heretofore. Cabbage has weakened somewhat in price, owing to the fact that the quality of the stock now on hand, and that which is coming in the market, is not up to the average. Garlic is also a shade weaker, but all other varieties are being firmly held at appearing quotations.

Cauliflower, per dozen.....	75	@
Beans, String, per lb.....	8	@
Cabbage, choice garden, per 100 lbs.....	1 00	@
Egg Plant, per lb.....	10	@
Garlic, per lb.....	5	@
Onions, Oregon, per ctn.....	1 30	@
Onions, New Yellow Danvers, per ctn.....	1 25	@
Onions, Australian Brown, per ctn.....	1 25	@
Peas, Green, per lb.....	6	@
Peppers, Bell, per lb.....	12 1/2	@
Peppers, Green, per lb.....	6	@
Tomatoes, per box or crate.....	75	@
Artichokes, per doz.....	50	@
Cucumbers, per dozen.....	1 00	@
Carrots, per sack.....	65	@
Hubbard Squash, per ton.....	20	@

NOTE.—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top, with hand holes in the ends, and weigh when filled from 50@60 lbs gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 30 lbs. gross.

Fresh Fruits.

A dull market has ruled all through the current week, though at this writing it shows signs of reviving. Apples are the only fruit in which any of the elements of a good market have appeared, and even in these the usual holiday dullness was evident. The price of apples has advanced and they are now ruling firm, with a good demand for choice stock at \$1.50. The receipts still contain a great deal of stock which is badly worm eaten, and this will not bring even the minimum quotation of 75c. These figures include, in fact, nothing but sound stock, the grading being governed mainly by size and packing. Other varieties are in very limited supply and represent for the most part the latter end of the 1905 crop.

Apples, choice to select, per 50-lb box.....	1 00	@
Apples, good to choice, per 50-lb. box.....	75	@
Figs, per two layer.....	85	@
Grapes, Verdell, crate.....	1 25	@
Grapes, Tokay, per crate.....	1 25	@
Grapes, Muscat, per crate.....	1 25	@
Persimmons, per box.....	1 00	@
Pomegranates, per box.....	2 25	@
Pears, Winter Nelis.....	2 00	@

Dried Fruits.

Dried prunes are better cleaned up than for many seasons, and some sizes, especially desirable grades of the small and large sizes, are difficult to get. Stocks in the East are reported light, and the short apple crop is creating a good demand. The prune crop of California for 1905 was about 52,500,000 lb., as compared with 135,000,000 lb. in 1904. Of this amount about 35,000,000 lb. were produced in Santa Clara valley, the rest coming from the interior. The crop in Washing-

ton and Oregon is correspondingly smaller, not more than 9,000,000 lb. being produced. Dried apples are also in rather light supply, and according to local packing firms there should be a good demand at a rising market. All other varieties of dried fruit are steady as to price, but the general tone of the market is still quiet.

EVAPORATED OR BLEACHED.

Apples, 50-lb boxes, rings, pressed, good to choice.....	8	@
Apples, extra choice to fancy, 50-lb boxes.....	8 1/2	@
Apricots, Royal, good to choice, per lb.....	7 1/2	@
Apricots, Royal, fancy.....	8 1/2	@
Figs, 10-lb box, 1-lb cartons.....	55	@
Nectarines, White and Stanwick, per lb.....	8	@
Nectarines, red, per lb.....	8	@
Peaches, unpeeled, good to choice.....	8 1/2	@
Peaches, unpeeled, fancy to extra fancy.....	9	@
Pears, standard, per lb.....	8 1/2	@
Pears, choice to fancy.....	10	@
Plums, Black, pitted.....	5 1/2	@
Plums, Red, pitted.....	7	@
Plums, Yellow, pitted.....	6	@
Prunes, Silver, good to fancy.....	5 1/2	@
Prunes, in bags, 4 sizes.....	40-50s.....	@
50-60s, 4 1/2 @ 4 1/2 c; 60-70s, 3 1/2 @ 3 1/2 c; 70-80s, 3 1/4 @ 3 1/4 c; 80-90s, 2 1/2 @ 2 1/2 c; small, 2 1/4 @ 2 1/4 c.		

COMMON SUN-DRIED.

Apples, sliced.....	5	@
Apples, quartered.....	4 1/2	@
Figs, White, in bulk.....	2 1/2	@
Figs, Black.....	2 1/2	@

Raisins.

The raisin situation remains practically at a standstill, though developments are expected in the near future, as the growers' company received bids this week on their remaining stock on hand. This stock includes about 12,000 tons, and their action in asking for bids was probably caused by the difficulty which they have experienced since the crop was packed in finding a market for their goods at the price which they have named on them. The trouble seems to have been that growers who are unrestricted by any price agreement were underselling them, and thereby taking advantage of the holiday demand, while the association growers, owing to their contracts with the packers' association, were unable to take advantage of the high raisin season. The prices given herewith are those named by the growers' and packers' combination at the opening of the season, but are considered above the actual market, and it is probable that there will be a decline as soon as the transaction mentioned above has been consummated.

(Fresno delivery except otherwise specified.)		
London Layers, 2-crown, 20-lb box.....	1 40	@
London Layers, 3-crown, 20-lb box.....	1 50	@
Fancy Clusters, 4-crown, 20-lb box.....	2 00	@
Dehesas, 20-lb box.....	2 50	@
Imperial, 20-lb box.....	3 00	@
2-Crown Standard loose Muscatel.....	5 1/2	@
3-Crown Standard.....	6	@
4-Crown Standard.....	6 1/2	@
Seedless Thompsons, 50-lb boxes.....	6 1/2	@
Seedless Sultanas.....	5	@
Fancy, 16-oz. Seeded.....	8 1/2	@
Choice, 16-oz. Seeded.....	8	@
Fancy, 12-oz. Seeded.....	6 1/2	@
Choice, 12-oz. Seeded.....	6 1/2	@

Citrus Fruits.

Citrus fruits of all kinds are now coming into the market in liberal supplies and are going up somewhat better as to size and quality than heretofore. The orange crop seems to have been especially favored this year, and the quality of those which have been received in this market would indicate that the crop is fully up to standard with respect to quality. The market on oranges is steady and prices are unchanged, except for a slight advance in the price of standards, this being an indication of the improvement in the quality of receipts. The lemon market is very weak and even the choicest grades are scarcely able to command a figure in excess of \$1.50 per box, while on the other grades there is scarcely any demand whatever even, at the reduced quotations. Grape fruit is also weaker, \$2 per box being the top price for fancy new fruit. Limes are steady at figures given.

Oranges, fancy.....	2 00	@
Oranges, choice.....	1 50	@
Oranges, standard.....	1 00	@
Oranges, Seedlings.....	65	@
Lemons, California, fancy, per box.....	1 50	@
Lemons, California, good to choice.....	1 00	@
Lemons, California, standards.....	75	@
Grape Fruit, per box, new.....	1 00	@
Limes, per box.....	3 00	@

Nuts.

The market is still rather quiet, but there is a marked improvement over the past two weeks. Supplies of Languedoc, IXL and Golden State almonds are light, and prices show a tendency toward advancement. The holiday demand made great inroads in the supply of walnuts, which were at the best scarcely sufficient to fill the demand, and the result is that there are very light holdings in second hands, while the high prices made by the growers are being steadily maintained.

WOOL.

Have you any on hand and unsold? If so, tell us how much and kind, and we will give you valuable information that will help you in selling.

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Ordinarily there should be a weakening of the market after the filling of the holiday demand; but this year, on account of the light yield, the contrary is predicted.

Peanuts, fair to prime.....	4 1/2	@
Cal. Walnuts, No. 1 soft shell.....	13	@
Cal. Walnuts, No. 2 soft shell.....	9	@
Cal. Walnuts, No. 1 hard shell.....	12 1/2	@
Cal. Walnuts, No. 2 hard shell.....	8 1/2	@
Almonds, IXL, per lb.....	11 1/2	@
Almonds, Ne Plus Ultra, per lb.....	11	@
Almonds, Nonpareil, per lb.....	11	@
Almonds, Languedoc, per lb.....	8 1/2	@
Almonds, Golden State, per lb.....	8	@
Hard Shell, per lb.....	5	@

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THE IRRIGATOR.

The Progress of the Reclamation Work.

The Secretary of the Interior has recently approved two new reclamation projects. The two additional projects will bring the number of reclamation schemes up to 24. Of these, 11 are well under way. They provide for the reclamation of 1,303,600 acres of arid lands at a cost of \$37,028,571. These are big figures and they represent big projects.

On June 30, 1905, the total cost of construction and engineering work performed by the Reclamation Service, together with the administration expenses, amounted to \$5,462,169. On that date the reclamation fund had reached a total of \$28,028,571. It was estimated at that time that the receipts for the fiscal years 1906-1908 would amount to \$9,000,000, so that the sum available for reclamation purposes up to the end of 1908 will be \$37,028,571.

Since the work of reclamation began, 77 miles of main canals have been constructed and 54 miles of distributing canals, as well as 186 miles of ditches and 147 bridges. Over 9,350,000 cubic yards of earth have been excavated and 3½ miles of tunnel driven. The telephone lines installed have measured 250 miles and the roads built have covered 126 miles. It has been necessary to erect 50 offices and other buildings. One cement mill has been constructed, the product of which already amounts to 15,000 barrels. Besides the cement manufactured by the Reclamation Service, use has been found for 78,000 additional barrels of cement, which were purchased in open market. Over 2,880,000 feet B. M. of lumber have been sawed for the work of construction and 1,750,000 feet B. M. in addition have been purchased. The concrete complete amounts to 70,000 cubic yards, the puddling done to 4500 cubic yards, the riprap completed to 12,000 cubic yards, and the paving to 190,000 square feet. The railroad iron used amounts to 130,000 pounds, the structural steel to 250,000 pounds, the cast iron to 600,000 pounds. The sheet piling driven has amounted to 150,000 lineal feet, the bearing piles to 10,000 lineal feet.

These figures will give some idea of the gigantic size of the enterprise which the engineers of the Reclamation Service have in hand in the reclamation of 1,303,600 acres of arid land.

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CHEMISTS.

ANALYSIS—
Soils, Water, Fertiliz-
ers, Foods, Minerals,
Natural Products, etc.

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San Francisco

DIVIDEND NOTICE

The German Savings and Loan Society,

526 CALIFORNIA STREET.

For the half year ending December 31, 1905, a dividend has been declared at the rate of three and six-tenths (3 6/10) per cent per annum on all deposits, free of taxes, payable on and after Tuesday, January 2, 1906. Dividends not called for are added to and bear the same rate of interest as the principal from Jan. 1, 1906.

GEORGE TOURNY, Secretary.

DIVIDEND NOTICE

California Safe Deposit and Trust Company,

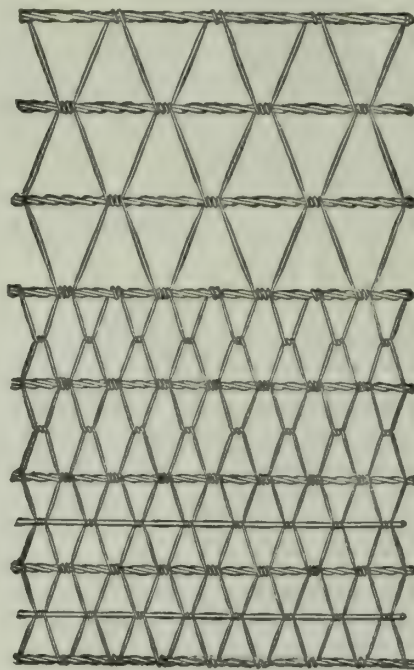
Cor. California and Montgomery Sts.

For the six months ending December 31, 1905, dividends have been declared on the deposits in the savings department of this company, as follows: On term deposits at the rate of 8 6/10 per cent per annum, and on ordinary deposits at the rate of 3½ per cent per annum, free of taxes, and payable on and after Tuesday, January 2, 1906.

J. DALZELL BROWN, Manager.

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San Francisco Savings Union

532 California St., Cor. Webb.

For the half year ending with 31st December, 1905, a dividend has been declared at the rates per annum of three and six-tenths (3.60) per cent on term deposits, and three and one-third (3½) per cent on ordinary deposits, free of taxes, payable on and after Tuesday, January 2nd, 1906.

LOVELL WHITE, Cashier.

Dividend Notice.

SAVINGS AND LOAN SOCIETY, 101 MONTGOMERY ST., Cor. of Sutter, has declared a dividend for the term ending December 31, 1905, at the rate of three and one-half (3½) per cent per annum on all deposits, free of taxes, and payable on and after January 2, 1906. Dividends not called for are added to and bear the same rate of interest as principal.

EDWIN BONNELL, Cashier.

Wanted Everywhere

MORE AGENTS to sell our fruit trees and ornamental shrubbery. We pay the largest commissions and furnish you outfit free. Our agents are earning from \$15 to \$75 per week. If you want to earn such money write for agency with the

OREGON NURSERY COMPANY,
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IN USE ALL OVER THE STATE!

For sale by all the large grocers, or
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113 Fulton St., 1 blk. west of City Hall, San Francisco.
Open All Year. **A. VAN DER MAILEN, Pres't.**
Assaying of Ores, \$25; Bullion and Chlorination Assay, \$25; Blowpipe Assay, \$10. Full course of Assaying, \$50. Established 1864. Send for Circular.

A PERFECT Musk Melon. Crenshaw's mammoth perfection. Write them for description and price of seeds. **CRENSHAW BROS., Tampa, Fla.**

AGRICULTURAL SCIENCE

The Addition of Humus to Soils.

As the humus has such a decided influence over the condition of plant food in the soil, the addition of it to a soil more or less depleted, or naturally deficient, must always be kept in mind, in the consideration of any system of fertilization.

While the time-honored method of supplying humus in the shape of stable manure is still not to be neglected, yet much of its effectiveness is lost from the presence of so large a quantity of straw, which forms humus quite slowly. Care should always be taken to save as much of the manure as possible, but the more modern way of utilizing certain plants as nitrogen catchers, and humus formers, thus improving the moisture and general physical condition of the soil, is by far the better method for the horticulturist, who generally has a limited amount of stock from which to derive manure.

Humus secured in this manner is both superior to and cheaper than that from animal manures. The plants generally most available for this purpose are peas, vetches, lupines, or any of the clovers. In California the selection should be made of one which makes a fairly rapid winter growth, so there will be a considerable mass of succulent matter to turn under in the early spring. The particular value of the humus obtained from this source lies in the fact that the material is green and succulent and easily decomposes and that this class of plants is rich in nitrogen, thus producing a more lasting effect than the humus obtained from stable manure. These plants are also producers of a large root surface, which extends much deeper into the soil than most other plants, thus distributing the organic matter to greater depth than other plants. They are at the same time larger users of lime, phosphoric acid and potash than the other classes of plants.

Leguminous crops are also great users of nitrogen. They not only utilize all the soluble nitrogen within their reach, but also avail themselves of the nitrogen of the air, through the medium of a system of bacteria which they harbor upon their roots, and which serve to manufacture nitrogenous food to supply their host plant. The necessity for their using such large quantities arises, at least in part, from the fact that they have to furnish nitrogen in considerable quantities for the successful operation of these bacteria.

For most general application, the Canadian field pea has given the best results as a green manure crop in California. The handling of a pea crop, outside of the seed, does not cost more than the handling of the soil without it, and there is added to the soil the fertilizer with which they have been fed, in addition to the nitrogen which the crop has been able to gather from the air, and the entire amount then becomes the plant food for the main crop grown upon the land.

Right at this point it must be plainly understood that a pea crop brings neither potash nor phosphoric acid to the orchard, as it obtains all its supply from the soil on which it grows. Further, unless these two elements are present in the soil in an available condition, the pea cannot take up and elaborate the nitrogen of the atmosphere. We should so feed the pea crop then, with potash and phosphoric acid, that it can make the greatest possible use of the atmospheric nitrogen. The fact that we make use of peas as a green manure makes it really the more necessary that we use additional amounts of the two mineral fertilizers, potash and phosphoric acid. The effect of these is not lost through the pea crop, but they enable it to do more work in the elaboration of the nitrogen, and at the same time the potash is saved for the use of the fruit crop of the succeeding year, since, by turning under the peas, we leave in the soil all the ingredients which the crop has required for its growth.

Phosphates and potash should always be applied before the pea seed is planted,

whether the planting is done broadcast or in drills. The fertilizer may be either sown broadcast or, if the seed is to be drilled in, strewn along where the rows are to be, and subsequently mixed with the soil. A fair application would be 300 lb. acid phosphate and 100 lb. muriate or sulphate of potash per acre. In some cases, on account of the lack of soluble nitrogen in the original soil, the plants may appear sickly and yellow. When this condition is observed, the addition of about 75 lb. of nitrate of soda per acre may be used as a top dressing; but to avoid injury, it should be first mixed with four or five times its bulk of dry earth, but as a rule this is unnecessary, and only the potash and phosphates need be supplied.

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HORSES AND CATTLE.

GEO. C. ROEDING, Fresno, California. Breeder of High grade thoroughbred Holstein Bulls and Heifers. Thoroughbred Berkshire Boars and Sows.

RIVERSIDE HERD HOLSTEIN CATTLE.—One of the largest and best in the world. Send for catalogue. Pierce Land & Stock Co., Stockton, Cal.

JOHN LYNCH, breeder of registered Shorthorns: milk strain. High class stock. First-class dairy breeding. Smooth cattle. Best pedigree. P. O. Box 321, Petaluma, Cal.

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"HOWARD" SHORTHORNS—Quinto Herd, 77 premiums California State Fairs 1902-3-4. Registered cattle of beef and milking families for sale. Write us what you want. Howard Cattle Co., 206 Sansome St., San Francisco.

BULLS AND COWS FOR SALE—Short Horned Durhams. Address E. S. Driver, Antelope, Cal.

A. J. C. O. JERSEYS, Service bulls of noted strains. Joseph Maillard, San Geronimo, Marin Co., Cal.

BULLS—Devons and Shorthorns. All pure bred and registered. Fine individuals. At prices to suit the times, either singly or in carload lots. Oakwood Park Stock Farm, Danville, Cal.

PETER SAXE & SON, Lick House, S. F., Cal. Importers, Breeders and Dealers for past 30 years. All varieties Cattle, Horses, Sheep, Hogs. High class breeding stock. Correspondence solicited.

JERSEYS, HOLSTEINS & DURHAMS. Bred specially for use in Dairy. Thoroughbred Hogs, Poultry. Wm. Niles & Co., Los Angeles, Cal. Breeders and Exporters. Established 1876.

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PIGEONS for squab raising, 50c to \$1.50 per pair. Cottonwood Farm, Pleasant Grove, Cal.

WHITE LEGHORNS, White Minorcas—ranch bred and free range. Eggs only. Agent for the "Model" Incubator and Brooder—best made. A. Warren Robinson, Napa, California.

BRONZE Turkeys and Eggs—Ed. Hart, Clements, Cal. Large size, good plumage, early maturity.

L. W. CLARK, Petaluma, Cal. White Leghorns, the white kind that lay lots of large, white eggs.

C. B. CARRINGTON, Haywards, Cal. White Leghorns. World's Fair winners. Stock for sale. Eggs by sitting 100 or 1000. Send for new folder.

SANTA TERESA POULTRY FARM, Eden Vale, Santa Clara Co., Cal. White and Brown Leghorns, White Wyandottes, Barred Plymouth Rocks, Black Minorcas, White Cochin Bantams.

WM. NILES & CO., Los Angeles, Cal. Nearly all varieties chickens, geese, ducks, peafowl, etc.

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S. H. FOUNTAIN, Dixon, Cal. Importer and breeder of thoroughbred Shropshire sheep. Both sexes for sale at all times.

THOS. WAITE, Perkins, Cal., has the Gold Medal flock of South Down sheep.

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GEO. V. BECKMAN, Lodi, San Joaquin Co., Cal. Registered Poland-China Hogs, both sexes.

POLAND-CHINAS—Choice stock, bred from prize winners. R. Kynaston, Burson, Cal.

BERKSHIRE, POLAND-CHINA, CHESTER WHITE HOGS. Choice; Thoroughbreds. Wm. Niles & Co., Los Angeles, Cal. Estab'd in 1876.

BERKSHIRES—Prize Winners—bred from prize winners. Boars all ages. T. Waite, Perkins, Cal.

BERKSHIRE AND POLAND-CHINA HOGS. C. A. Stowe, Stockton.

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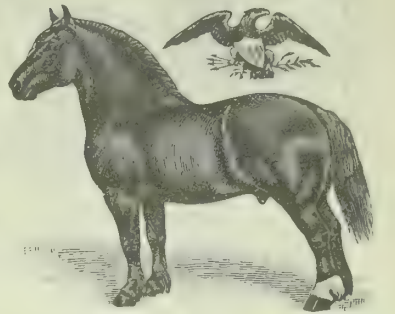
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HORSES WILL BE SOLD ON EASY TERMS WITH THE MOST LIBERAL GUARANTEES.

Visitors are always welcome at our stables, and correspondence is invited. Call or address

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We hatch and prepare little chicks—White Leghorns—for shipment, to all points within sixty hours travel from Petaluma. Now is the time to place your order. When the chicks come high, they are the most profitable. We also supply White Leghorn eggs for hatching. Prices for chicks and eggs on application.

Write for catalogue **D** MUST HATCH INCUBATOR CO., Petaluma, Cal.

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Emery's Poultry Foods are sold by all dealers and commission men because they are the BEST.

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The Bee-keeper's guide to success. The Weekly AMERICAN BEE JOURNAL tells how to make the most money with bees. Contributors are practical honey-producers who know how. Interesting - instructive. \$1 per year; 3 mos. 14 copies, 20c. Sample free. American Bee Journal 334 Dearborn St., Chicago

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SILVER CUP for BEST DISPLAY; 40% of all ribbons in class to Garden Valley Yards, at San Francisco show Dec. 2. Illustrated folder tells the rest; it's free. Eggs \$3 and \$5 per set. Stock for sale.

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Our Catalogue, 228 pages, (8x11) is a valuable guide to money-making poultry success. Describes all needed articles. We make them, including the new 1906-pattern

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It's so handy. Cuts of fowls from life. Chickens, Turkey, Ducks and Geese, 70 varieties. Price of fowls and eggs. Send 10c to pay postage of fine guide of Poultry and buying fowls. Best on earth.

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Perfect in construction and action. Hatches every fertile egg. Write for catalog today.

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Buy From Our Factory—See One-Third. **PRACTICAL INCUBATORS** positively the best. Hatches more and stronger chicks. **10 YEARS' GUARANTEE**. Cal. free. **PRACTICAL INC. CO.**, 720 S. 11th St. San Jose, Cal.

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Color Deep Red. Both Sexes for Sale.

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They were all imported from England, or bred direct from imported stock.



We have also bred American Merinos—Hornless—sheep—for 30 years. They are a large sheep, without wrinkles. Rams will produce 20 to 25 pounds of long, white wool yearly. Sheep of both sexes for sale.



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A safe, speedy and
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Curb, Splint, Sweeny, Capped Hock,
Strained Tendons, Founder, Wind Puffs,
and all lameness from Spavin, Ringbone
and other bony tumors. Cures all skin
diseases or Parasites, Thrush, Diphtheria.
Removes all Bunches from Horses or
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As a HUMAN REMEDY for Rheu-
matism, Sprains, Sore Throat, etc., it
is invaluable.
Every bottle of Caustic Balsam sold is
Warranted to give satisfaction. Price \$1.50
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press, charges paid, with full directions for its
use. Send for descriptive circulars, testimo-
nials, etc. Address

THE LAWRENCE-WILLIAMS COMPANY, Cleveland, Ohio.

Agricultural Review.

Humboldt.

CREAMERY AT EUREKA.—Eureka dis-
patch to Union, Dec. 25: That Eureka
will soon have a mammoth creamery
seems to be a certainty. A. Jensen of
Ferndale said that the work of erecting
the plant will begin about the first of the
year, and that it will consist of a two-
story building, covering a quarter of a
block, with a daily output of 20,000 lb. of
butter.

Kings.

SIGNING UP BEET ACREAGE.—Visalia
letter to Fresno Republican, Dec. 28: Con-
tracts for over 2,000 acres of sugar beets
for the local factory have been signed and
other contracts are coming in rapidly. A
considerable acreage has come in within
the past few days and the amount promises
to be largely increased. Sherman Smith
and G. S. Dyer, local representatives of
the factory, E. S. Field, a prominent
stockholder of Los Angeles, and G. E.
Slater, auditor for the company, attended
a meeting at Corcoran, called by the
ranchers in that section, desirous of learn-
ing something of the culture of sugar
beets. As a result it is estimated that
fully 500 acres will be secured in that lo-
cality. A representative of the Armenian
colony at Churchill, near Oroquieta, has made
arrangements for the signing up of 200
acres and double this amount is expected
later. Near Reedley the contract acreage
is stated to be already several hundred
with a prospect for much more. At Lind-
say and in that section east the amount
already approximates 200 acres with 300
more in sight. It is believed that the re-
mainder of the 3,500 acres desired for the
first season's run will be signed within the
next few weeks. The factory is to be in
readiness for operation by July 1st.

San Joaquin.

GROWING JORDAN ALMONDS.—Lodi
Sentinel, Dec. 28: Experiments in the
growth of the Jordan almond, an impor-
tation from Spain, are being made here
by Geo. E. Lawrence in charge of the local
branch of the United States government
station in viticulture. The Jordan al-
mond experiment is a side issue, but never-
theless is a very important one. Its suc-
cess means the revolutionizing of the Cal-
ifornia almond market, as Jordan blanched
almonds to-day are selling in the San
Francisco market at \$1 per lb., while the
best California varieties blanch bring
45c. a lb. Two years ago the agricultural
department forwarded to Mr. Lawrence a
selection of Jordan almonds imported from
Spain that were grafted here into seed-
ling almond trees. Last season they came
into bearing, not in great quantity, but
about as heavy as was expected. By com-
parison the local grown Jordan exceeds in
size its Spanish ancestry by an average of
at least one-fourth, but in uniformity the
latter excels. This advantage Mr. Law-
rence believes he will overcome by a sys-
tem of propagation that will result in a
standard size nut. In other respects, so
far as the experiments have gone, there
seems little or no difference. The skin-
covering of the Jordan kernel is delicate
and thin. The meat has a decidedly hazel
nut flavor and is oily and rich. The point
to be determined by this experimental
work is whether or not in this soil and
climate the same characteristics can be

preserved that make the Spanish-grown
Jordan so desirable in American markets.
The propagating here will be done en-
tirely from the bud which promises a true
type of the Jordan, better even than the
original in Spain, where it is the custom
to propagate from the seed.

PLANTING TABLE GRAPES.—Lodi
special to Sacramento Bee, Dec. 26: The
large profits made in grape growing this
year have acted as an impetus to the grow-
ers to set out more vines, and this winter
there will be 1,515 acres of table grapes set
out and 624 acres of wine grapes. The table
grapes, with but few exceptions, are To-
kays, for it was this grape that realized
returns in the Eastern markets during
the season just closed.

INTERESTING STUDY AT EXPERIMEN-
TAL STATION.—Lodi Sentinel, Dec. 28:
The viticultural department station at the
Lawrence place affords a great and inter-
esting study for grape men. Here are
growing 102 varieties of vines including
both cuttings and rooted stock imported
from all parts of the world where grapes
are grown. San Joaquin county has 72
varieties of bearing grape vines, and the
experimental station swells the number 30
more. The biggest importations were
made from South Africa and European
countries. The object of experimenting
with so extensive a variety is to take ad-
vantage of many years' experience by the
French Government in producing a resist-
ant stock that will prove congenial to this
soil and climate.

ACREAGE TO TOKAY GRAPES.—Lodi
Sentinel, Dec. 28: C. W. Norton purchased
220 acres, 17 miles south of Stockton,
near Ripon, which he will make a Tokay
vineyard. The land is sandy, has means
of irrigation with ditches intersecting it,
but Mr. Norton does not expect to irri-
gate his vineyard. The field is surrounded
by alfalfa fields that are well irrigated
and the loose character of the soil allows
the water to spread widely.

Santa Barbara.

A BIG POTATO.—Santa Barbara Press,
Dec. 28: J. C. Phillips brought to The
Press office the largest sweet potato ever
seen in this locality. It was 23 in. in
length and weighed 20 lb. It was grown
on the MacLean ranch at Thermal.

STOCKMEN TO MEET.—Santa Barbara
Press, Dec. 28: As a result of the resolu-
tions adopted at the annual meeting of
the County Cattlemen's Association, there
will be a meeting in Santa Maria, January
4th, of a committee appointed by the
Santa Barbara association, with a like
committee appointed by the San Luis
Obispo association, the proposition being
to discuss ways and means for promoting
the work of cleaning the two counties of
the Texas cattle tick, and thereby insure
certain and permanent relief from the
federal quarantine against Texas fever.
The Santa Barbara committee consists of
James Sloan, R. O. Easton and the county
stock inspector.

Siskiyou.

FINE HOPS.—Etna Mills dispatch to
Sacramento Union, Dec. 30: Scott valley
can boast of a highly productive soil.
There is now on exhibition at the Cham-
ber of Commerce office in Yreka a sample
of hops raised on the Charles Holzhauser
ranch, two miles from Etna, which took
the gold medal at the Portland Expon-
sition. Many new fields will be started
next year.

Sonoma.

HOP GROWERS IN SANTA ROSA.—
Santa Rosa Democrat: There was a meet-
ing of the Sonoma County Hop Growers'
Exchange Saturday afternoon at the
courthouse, and it was unanimously de-
cided to open an office and employ an
agent who will act for all the hop growers
of the county, who have yet hops on
hand, without any charge.

Stanislaus.

NEW LEMON.—Modesto Herald, Dec.
28: L. H. Watson is exhibiting at the
Oderon saloon some mammoth lemons
which came from the residence of A. M.
Hilts, at Knights Ferry. The lemons

WHY ARE EGGS HIGH?

Would know—because hens are not laying now. But
why do poultry owners overlook this chance to make
money? It must be because they don't believe our
statement that

**SECURITY POULTRY FOOD
WILL MAKE HENS LAY.**

You don't have to take our word. You can be the judge.
We can make your hens lay in from 2 to 4 weeks and

WE GUARANTEE IT.

Our dealer in your town will back up this guarantee.
Ask him. Will you own this chance to make money
when we take the risk? It takes sick poultry in
healthy condition and keeps them so.

**SECURITY STOCK FOOD CO.
MINNEAPOLIS, MINN.**

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The name Keen Kutter
eliminates all uncertainty in tool buying.

As this brand covers a complete line of tools, all you need remem-
ber in buying a tool of any kind is the one name Keen Kutter.

Keen Kutter Tools are without reserve or qualification the
best tools that money, brains and skill can produce. No
matter how much you pay, no matter who you may
have thought to be the best maker of a particular kind
of tool, you cannot get any tool, anywhere, better
than those sold under the name of Keen Kutter.

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write us and we will see that you are supplied.

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Tools received the Grand Prize at the St. Louis Exposition—the only such award ever given a complete
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SEND FOR TOOL BOOKLET.

average 11½ in. in circumference latitudin-
ally, and 13 in. longitudinally, are hard
and firm, and full of juice and meat, the
skin uniformly thin. Mr. Watson does
not know the name of the lemon, but tells
us the trees were sent to an Oakdale lady,
now dead, by a nurseman in the East.
The lemon is a product of some of the
tropical islands in the West India group.
About two years ago the Oakdale lady
died, and Mr. Hilts was given a couple of
the trees, then about three years of age,
and transplanted the same at his place at
Knights Ferry. Last year, when four
years of age, the trees bore prolifically,
and have done so again this year. They
say the fruit has a fine flavor, and is more
juicy than the common California lemon.
The lemons shown resemble the grape
fruit to some extent in size and texture
of skin, but have the true lemon shape,
whereas the true grape fruit, or pomelo,
is flat at both ends. A "mock" pomelo
is pear shaped, but pithy, despite its large
size. The attention of several orchardists
has been called to the new lemon, and its
merits noted. The slightly cooler weather
at Knights Ferry than is experienced here
seems to have no bad effect upon the new
lemon.

Sutter.

FIG PACKING.—Sutter County Farmer:
A force of 100 was put to work at the
Rosenberg Bros. packing house at Yuba
City the first of the week packing figs for
Eastern orders. The work will continue
most of next week.

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Before you buy, post up a little on lanterns.
Our free catalogue will help you. When
you have made your choice, your dealer
will supply you. If not, we will. If you
know the

Dietz Cold Blast Lantern

you will have no other kind. Handy, easy
filling, long burning, safe, clean. Burns a
pure, steady flame, the result of using
strong fresh air. Another great big reason
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(ESTABLISHED 1860.)

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Inventors have the opportunity to ex-
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lidity of Patents. Our Branch Offices and arrange-
ments for Foreign Patents, Trade-Marks, etc., are
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FORESTRY.

Grazing on the Reserves.

President Roosevelt, in a letter addressed to Secretary Wilson of the Department of Agriculture on the subject of fees for grazing horses and cattle in the national forest reserves, upholds the Secretary in the regulations formulated by him and which will become effective January 1, 1906, whereby certain rules are laid down for the granting of grazing permits.

The communication is the result of a protest sent to the President by cattlemen from one of the Western States, and is based on a report by Secretary Wilson, to whom the protest was referred. The letter of the President follows:

THE WHITE HOUSE, WASHINGTON, DECEMBER 21, 1905.—My Dear Mr. Secretary: I have received your letter of December 20th. I cordially approve of the policy you are carrying on. Your effort is to keep the grazing lands in the forest reserves for the use of the stockmen, and especially the small stockmen who actually live in the neighborhood of the reserves. To prevent the waste and destruction of the reserves and to keep them so they can be permanently used by the stockmen no less than by the public you have to spend a certain amount of money. Part of this money is to be obtained by charging a small fee for each head of stock pastured on the reserve. Less than a third of the actual value of the grazing is at present charged, and it is, of course, perfectly obvious that the man who pastures his stock should pay something for the preservation of that pasture. He gets all the benefit of the pasture and he pays for its use but a small fraction of the value that it is to him, and this money is in reality returned to him, because it is used in keeping the forest reserve permanently available for use. You this year make a special reduction by which the ranchmen pay but half rates. This is in accordance with the steady policy of your department as regards the Western lands, which is to favor in every way the actual settler, the actual homemaker, the man who himself tills the soil or himself rears and cares for his small herd of cattle. In granting grazing permits you give preference first to the small nearby owners; after that, to all regular occupants of the reserve range, and finally to the owners of transient stock. This is exactly as it should be. The small nearby owners are the homesteaders, the men who are making homes for themselves by the labor of their hands, the men who have entered to possess the lands and bring up their children thereon. The other regular occupants of the reserve range, that is, the large ranch owners, are only entitled to come after the smaller men. If, after these have been admitted, there still remains an ample pasturage, then the owners of transient stock, the men who drive from the tramp herds or tramp flocks hither and thither, should be admitted. These men have no permanent abode, do but very little to build up the land and are not to be favored at the expense of the regular occupants, large or small.

This system prevents the grass from being eaten out by other herds or flocks of non-residents, for only enough cattle and sheep are admitted upon the reserves to fatten upon the pasturage without damaging it. In other words, under the policy you have adopted, the forest reserves are to be used as among the most potent influences in favor of the actual homemaker, of the man with a few dozen or few score head of cattle, which he has gathered by his own industry and is himself caring for. This is the kind of men upon whom the foundation of our citizenship rest, and it is eminently proper to favor him in every way. Sincerely yours, THEODORE ROOSEVELT.

Hon. James Wilson, Secretary of Agriculture.

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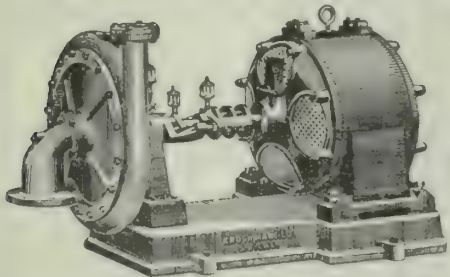
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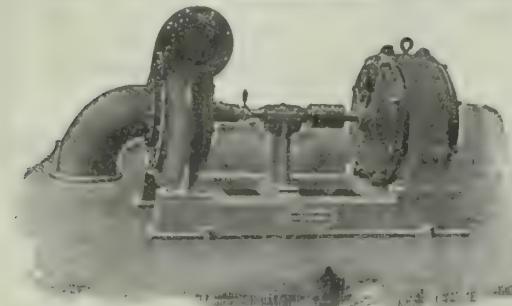
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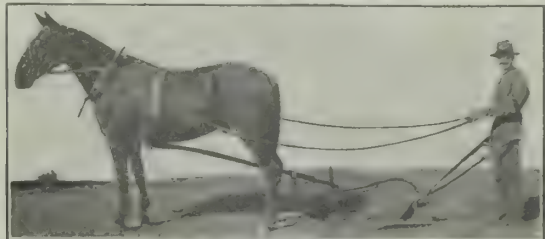
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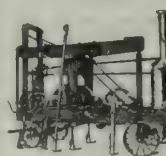
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THE PACIFIC RURAL PRESS

CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 2.

SAN FRANCISCO, SATURDAY, JANUARY 13, 1906.

THIRTY-FIFTH YEAR.
OFFICE: 330 MARKET ST.

In the Fruit Cannery.

Three weeks ago we gave two views of operations in a California fruit cannery, selecting, for illustration, the sorting of apricots and peeling, pitting and can-filling of the same fruit in the establishment of the J. H. Flickinger Co. of San Jose. Upon this page other views in the progress of the series are given, namely, the slicing of peaches and the making of syrup. There are two features of canning fruit in California which are plainly suggested by these pictures: One is the acceptable employment which it furnishes to those who desire to turn part of their time into money, and the other is the invention of labor-saving machinery which secures speed, uniformity, cleanliness and cheapness of product.

First, the work of the cannery. In this respect it must be admitted that there has been great improvement and elevation during the last few years. When the supply of Chinese labor began to manifest the influence of the exclusion laws, there was great doubt whether some of the industries which required a great amount of hard labor, like the fruit preservation enterprises, could survive. The fruit-growers and packers were very apprehensive. Experiments previously made in the employment of white boys and girls had not resulted favorably. It was a very gratifying surprise then to all concerned that there should be developed among our own people dwelling in the smaller cities and towns an adequate and very acceptable labor supply, con-



Slicing Machines for High-Class Peach Canning at the J. H. Flickinger & Co.'s Cannery.

sisting largely of mature women who were very glad to get nearer to nature in the form of elegant California fruit and to work hard for good compensation in the orchard cutting-sheds and in the

large canning and drying establishments of the towns also. Our pictures show them at this work and the acceptability of it is shown by their faces and by the very pretty and proper

garments which they are able to wear at their work. How much better employment for women than the toil of the sweat-shop and other establishments open to the sex! This fact was very quickly recognized after the first trial was made of it and now there is no lack of supply. Families go in groups to the vicinities of the orchards and canneries, secure respectable habitations and employ weeks and months in fruit work in its various phases and many a person enjoys for all the rest of the year the financial lift which earnest work during the deciduous fruit season secures. In the South many women find winter employment in the citrus fruit-packing houses, so that the same condition prevails throughout the State and is an important factor in our industrial situation.

The other suggestion of the pictures, viz., the use of special machinery, applies to our canning industry in all its phases, from the making of the empty cans to the finishing label on the filled ones. The particular machines shown in one of the pictures are for the slicing of peaches, for although most peaches are canned as halves, a specially fine brand of sliced peaches for eating with cream, a close resemblance to the fresh sliced fruit, meets a certain high-class demand. Note the size of the fruit as it rolls along the ways of the nearer machine toward the cutters.

The outfit for the making of syrup is not particularly handsome, but it shows the scale on which the operation is conducted.



The Syrup Room of the Cannery—How the Sugar Goes From Barrels to Cans.

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SAN FRANCISCO, JANUARY 13, 1906.

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The Week.

Weather pranks have been peculiar, as is generally the case in a year which opens dry. Low temperatures have dashed in here and there in the southern California citrus region, and, though some fruit has been hurt, the restlessness of the atmosphere has kept things stirred up and equalled temperatures to such an extent that general injury has been averted. Rains have also been flighty and in most places have not settled down to business as the growers desire. This is another of the usual performances of a freaky year, and it is often after the middle of January before good, warm, deep-soaking rains arrive. It may be so this year; meantime our farmers are doing the best they can. Seeding and planting are going forward, and that is about all one can do to ensure something, for, except near the coast, if one waits too long for rain, he gets nothing, even if the rains do come. Work should go ahead wherever possible.

There is, however, one thing which will be sure this year, and every year, whether it rains or not, and that is taxes; and whenever other topics are scant, taxes will do to talk about. Everybody knows that the taxing system of California is now being expertly looked into and we have had items from time to time noting the progress of the inquiry. The farming interests have been for some time systematically pushing for a reform because they believe that the land is hit harder than it ought to be by the tax gatherer. This seems to be the view of the experts also who appear to quite agree with the farmers' claim that there are vast property interests which are too successful in tax dodging. The State Commission on Revenue and Taxation advocates plans for the separation of State from local taxation, and fear has been expressed that the proposed change might work to the disadvantage of the cities and counties. The fear is that, by surrendering the right to tax the public service corporations, the counties and cities may lose more than they would gain by the release of their real estate from the burden of State taxation. On this point Professor Plehn, expert of the commission, says:

If by the plan proposed it does not seem possible to lower, in some degree at least, the present oppressive burden on real estate, one of the most essential objects of the reform sought will be lost. Eighty-five per cent of all the direct taxes are now borne by real estate, and only 15 per cent by personal property. The aim of the Commissioners' plan is to reach directly or indirectly some of the personal property that can not be reached under the present plan. The Commission is satisfied from the data collected up to the present time that separation can be

accomplished in such a manner that in a very great majority of the counties there will be a substantial gain and in none any great material loss.

This is a very hopeful statement. If relief can come to the owners of real estate, and at the same time allow the agricultural counties what is needed for local administration, that will come very near attaining all that our farmers have contended for. That is a good thing to get happy about while waiting for the rains.

A unique tribute to the winter climate of the Eastern States is found in the story which is being warmly telegraphed that the newly inaugurated Governor of Ohio, John M. Pattison, having taken the oath as Governor, reviewed the parade of 4,000 troops from a glass cage. Mr. Pattison, who has been ill for some time, stood in the open air long enough to take the oath, although the weather had all the rigor of mid-winter, and then stepped into the cage of glass, which had been constructed in the reviewing stand. Standing on footwarmers while the long parade shivered past, the new Governor bowed his acknowledgments. This experience seems to enforce the idea which has been gaining ground that the Eastern States will have to do away entirely with its winter pageants or else remand them to participation in by vigorous young people in skating costume. The historical date for presidential inaugurations, March 4, is likely to be changed, because of the danger of pneumonia to all who take part. Eastern people should certainly have their ceremonies in the spring or summer, or else come to California, where the winter climate holds no malice against statesmen.

We have recently claimed that there ought to be a good rest before another world's fair was undertaken on this continent, and the proposition made by Congressman Kahn of California seems to meet that suggestion. He has introduced in Congress a bill to provide for a Pacific Coast Exposition at San Francisco in 1913, to celebrate the discovery of the Pacific Ocean by Europeans. As fitting that event, it is proposed that a great naval review in San Francisco Bay shall form part of the festivities. To this end the bill contains a request to the President to send invitations to all the nations of the earth to dispatch warships to participate in this review, for which the date is to be September 25, 1913, that being the 400th anniversary of the discovery of the Pacific Ocean by Balboa. The vessels are to meet at Monterey and proceed thence to San Francisco. The bill asks for an appropriation of \$5,000,000 and a similar amount is to be raised in California. Congress is also asked to erect a building at a cost of \$250,000 for the Government exhibits, this building to be subsequently sold to the State of California. The Exposition is to be exceptional in many ways. The climate of the State enables it to be kept open for a much longer period than is usual, and it is therefore proposed that it shall be formally dedicated on April 30, 1913, opened on May 1 and continued until January 1, 1914. There is plenty of time to get ready for such an event.

A man up in El Dorado county has been fined \$150 for selling a band of goats, which he says he found on his place, to a butcher. The man's claim was that 14 goats strayed on his ranch near Georgetown, and following the alleged custom of the vicinity, he took possession of the goats and disposed of them. The owner of the goats got on their trail and caught up with them at the butcher's, who had only killed one of them. The goat-seller entered a plea of guilty of petty larceny and was fined \$150, with the alternative of 150 days in jail. The fine was promptly paid. The goat-seller's reputation heretofore had been good, and he is probably wiser now. It will not do to consider as one's own what comes to him, and possibly the general statement of it may keep others from making a mistake of the same kind.

We are pleased with the announcement that Lieutenant-Governor Alden Anderson has been chosen president of the Sacramento Chamber of Commerce without opposition, and, according to the Union, the general expression of opinion was that the organization was fortunate in securing the services of Mr. Anderson in this capacity. Mr. Anderson has within the past year permanently

located in Sacramento and his fellow-citizens express gratification to have him become thus prominently identified with the active business interests of the community. President-elect Anderson was invited to supply a forecast of his policy, and replied that he will endeavor to formulate a plan that will meet with the substantial approval of all who are interested in the welfare of the community. This he will submit in a formal way at the time of taking office. It is likely to be of such nature that all similar organizations may be helped by it to higher efficiency.

QUERIES AND REPLIES.

Esparto Grass for Paper Stock.

TO THE EDITOR: I have been reading in Eastern and foreign journals about the suitability of esparto grass (*stipa tenacissima*) for the making of fine paper, instead of linen stock. If that is so, would it not be desirable to introduce the plant and see if it will grow in California, because it might meet the needs of paper makers?—MANUFACTURER, San Francisco.

Esparto grass was introduced into California by the University of California about 25 years ago, and full accounts of its success in California soil were published in our columns early in the 80's. The seed was offered for distribution about 1885. No particular interest was manifested. The first idea of its use was in weaving mats used in the pressing of olives to restrain the pomace from following the oil out from under the press, but it was soon found that a wide cloth would answer the purpose as well for less cost than was necessary to weave these mats. Esparto grass has been growing in the University garden in Berkeley ever since that time. There is no question about its success in the coast region of California at least, and it is perfectly hardy around the bay. No more experimentation is necessary; it is simply a question now of whether some one desires to take the matter up commercially. A farmer cannot undertake to put this crop into his field unless his market is assured. If a paper maker finds that he can use it to advantage he will have no difficulty in making contracts with farmers for the growing of it, or in undertaking the production of it himself if he has land available.

Peas and Grain for Green Feeding.

TO THE EDITOR: I wish to experiment a little with cow peas and grain as an early green feed for my milch cows. I expect to mow and feed as early as possible. Will you kindly advise me as to whether I should sow oats or barley? How much seed of each (oats or barley and peas) should I sow to the acre? The soil is rich sediment.—DAIRYMAN, Gilroy.

Cow peas are not suited for growing with grain for winter feeding, because cow peas are really beans, and are subject to destruction by slight frost. The pea which you desire for your combination is the common field pea, which is hardy against ordinary frost, and you will get good results by using these peas as the rate of about 30 lb. to the acre when combined with oats or barley.

California Wild Grape Not Resistant.

TO THE EDITOR: Would the common wild grape which commonly grows wild in central California be a good resistant stock on which to graft our best varieties of grapes?—BEGINNER, Ceres.

The wild California vine was largely planted 20 years ago on the presumption that it was resistant of phylloxera. Experience proved that this was a mistake, and the use of it as a resistant stock has been abandoned.

What Kind of Lime?

TO THE EDITOR: I am about to spray my pear orchard, and will try the sulphur, salt and lime mixture. The storekeepers are offering a powdered lime, and would like to know if that is as potent as the quicklime. I want to spray for the scab. Have formerly sprayed in the spring, with the Bordeaux mixture, but with poor results, as the least rain washed off the spray. Would like to know what results others have had in eradicating the disease, which is greatly on the increase.—GROWER, San Francisco.

For the lime, salt and sulphur you must have good sharp lime, and powdered lime is usually air-slaked and dull in causticity. For this wash you must have quicklime, because it enters into a chemical compound with the sulphur, and it is to promote this that

ample boiling is needed. Powdered lime would do better for Bordeaux, perhaps, because there the lime is a conveyor for the bluestone, and not to combine chemically with it, and yet powdered lime does not make as good a whitewash as quicklime, and therefore is more apt to be washed off by rains. The bluestone needs to be conveyed in a durable whitewash, so it can be released gradually, and thus protect the plant for some time. For the scab we should use lime, salt and sulphur in the winter, and then watch, and if the smoky patches begin to come on the leaves and fruit, give the trees a dose of Bordeaux mixture. This disease can certainly be controlled.

Italian Chestnuts.

TO THE EDITOR: Will you kindly tell me what variety of chestnuts are most suitable for this locality? Italian chestnuts are generally quoted 5c. per lb. more than other varieties. Is there more than one variety of Italian chestnuts? Must all chestnuts be grafted to be true? One nurseryman tells me that Italian chestnuts come true to seed; another—Mr. Gillet, of Nevada City—told me that all chestnuts had to be grafted to be of any account. In putting out trees like chestnuts a person wants to be pretty sure what he is about, for a mistake means 15 years of lost labor.—PLANTER, Grass Valley.

We do not know of more than one variety of Italian chestnut grown in California, although there are undoubtedly many varieties known in Italy. It is true that in order to get just the particular type of nut which you desire grafting must be resorted to. We presume, however, that most of the Italian chestnuts grown in California are seedlings. Mr. Gillet believes in growing particularly fine varieties of Spanish chestnuts, and those certainly must be grafted. We have no doubt you can find other nurserymen who will sell you Italian chestnuts grown from seed, or you can grow them from the seed yourself, and they will be such as are commonly marketed in California under that name.

Field Peas in the San Joaquin.

TO THE EDITOR: I am about to plant a peach orchard and vineyard on land pretty well exhausted by wheat-raising. I would, therefore, like to try green manuring. I see that field peas have done well for the purpose. Will you kindly inform me if it is the common field pea which we used to raise in Minnesota, and if it will mature seed here?—A. K., Collis.

The field peas are practically the same as those which you knew in Minnesota—the common field pea. It does not generally make a satisfactory seed crop in the interior valley unless you can get the plant well grown before the dry season comes on; in that case you ought to grow seed enough for your own use, if not for sale. Of course, for green manuring, the plant is to be winter-grown and plowed in before the seed ripens and while the plant is still succulent.

Pruning, Irrigating and Planting.

TO THE EDITOR: I would feel greatly obliged if you would kindly inform me through the columns of your most valuable and interesting paper—(1) The best time to prune olives. (2) The best time to graft olives. (3) Your opinion in regard to irrigating olives. (4) Also as to irrigation of grapes (table). (5) When do you consider the best time to plant deciduous trees?—SUBSCRIBER, Auburn.

Prune olives at any time after the fruit is gathered that you have sharp tools. Graft olives just about the time the new growth starts at the close of the winter dormancy and continue at your convenience during the early part of the growing season. You must irrigate olives unless you get good free growth and plenty of fruit without it. Grapes must be irrigated unless you can get good size of fruit and growth of cane and late enough retention of green leaves with the rainfall. There can be no rule about these things. Practice must meet conditions which must be learned by studying the plants. Deciduous trees can be planted whenever, in the dormant season, the ground is in good condition, but there is no gain in planting in cold, wet ground.

Just the Same.

TO THE EDITOR: Will you please inform me through the PACIFIC RURAL PRESS if the pear scab treated in the issue of Feb. 11, 1905, would be what I would need for apple scab? Is it the same kind of a scab? If not, what do you recommend for apple scab?—GROWER, Napa county.

The disease is exactly the same and so is the treatment.

Cheat or Chess in California.

TO THE EDITOR: I desire to get as much information as possible about the plant known as cheat in your State, and particularly of its habits and prevalence in California. The plant is known botanically as *Lolium temulentum*, and as you know is known in Europe as the darnel. It is reputed to be poisonous. I shall therefore be greatly obliged if you will give me what facts you can on the following points: (1) Prevalence in California. (2) Evidences of poisonous action or any poisonings which might possibly be ascribed to cheat. (3) The prevalence of the ergot fungus in this plant. (4) Any other facts of the life history of the darnel, as you may have observed them in California.—E. M. FREEMAN, Pathologist U. S. Dept. of Agr., Washington, D. C.

We make public answer to Mr. Freeman's questions for the purpose of drawing out information from others who have observation and experience with the plant. We can only say in a general way that *Lolium temulentum* is very widely distributed in California, and comes up very freely whenever seed of grain is killed out by excessive moisture during the winter, and is the plant which is called cheat or chess in this State. During an observation of over 30 years we have never seen or heard anything to indicate that it has any poisonous action whatever; in fact, when young it is highly esteemed as a green winter feed, and to some extent is cut for hay. We have seen ergot upon the plant frequently, but as it is seldom allowed to reach maturity, but is either cut or pastured off when green, the opportunity for the growth of the fungus is narrowed, and no considerable injury has ever been reported, although its occurrence in dry feed may have been more troublesome than has usually been recognized. We hope our readers will supply other facts of interest.

Applying Sulphur.

TO THE EDITOR: I have been requested by several owners of vineyards to look for a good machine for applying sulphur to vines for mildew, and I wish to seek information through your paper. Will you kindly publish a request to the vineyardists as to which is the way and in what manner is the best for applying sulphur to vines, especially vines which are staked.—GROWER, Orosi.

Sulphur is used in all sorts of ways which cause it to be evenly dusted over the foliage. It may be applied by shaking it over the vines either from a little sack made from close bagging or other material which will not let the sulphur pass too quickly. A better method is to use a bellows or a knapsack duster, especially constructed for the purpose. These can be obtained from most of the dealers handling spraying appliances or from hardware men. All such appliances should be continually advertised in our columns. There is, perhaps, no absolutely best appliance. Some like one and some like another.

Peach Planting.

TO THE EDITOR: I am pulling out some 200 oranges and planting cling peaches instead. Shall I get the best results by planting all Levi or Levi and Phillips in alternate rows? Do you advise planting in orange holes or between rows? How low would you head the new trees?—PLANTER, Penryn.

So far as we know, the peaches chiefly grown in California are self fertile, and no necessity for associating varieties for pollination has yet been demonstrated. We should always plant a new tree in a new place if possible. If the roots like the old place, they will get there all right. We should have the lowest branches of the tree quite near the ground in the foothills, but you can head higher and distribute the branches better than occurs when the young tree is cut very low at planting.

The Reclaimed Lands.

TO THE EDITOR: Can you tell me where I can get any literature on peat or island lands?—READER, San Jose.

The best accounts we know of are published in the PACIFIC RURAL PRESS of July 1 and July 15, 1905.

Not the Winter Nelis.

TO THE EDITOR: I send a pear, bought in one of the San Francisco fruit stores, which I request that you kindly name. All the pears in the box with this one were completely covered with russet. While the flavor of this pear is similar to that of the Winter Nelis, it is difficult to believe that unusual growing conditions could cause so complete a covering of russet and so different an appearance generally from that of the Winter Nelis. If you should conclude this

variety is the Winter Nelis, please explain the probable cause for its unusual appearance.—SUBSCRIBER, San Francisco.

It is an entirely different pear and one not commonly grown in this State. We do not recognize the variety. Although local conditions do affect the coats of pears, they do not make such complete transformations as this sample shows. The Winter Nelis under no conditions becomes as uniformly russet as your specimen, which has a coat as brown as a Seckel, but is not that variety.

WEATHER AND CROPS.

Report of the U. S. Weather Service for Week Ending January 9, 1906.

ALEXANDER MCADIE, Forecast Official and Section Director

Sacramento Valley.

Clear and cold weather prevailed during the week, with severe frosts nearly every night and dry northerly winds. The seasonal rainfall is far below the average and all farm work is backward, owing to the drought and continued cold weather. The soil is too dry and hard for profitable cultivation. Early sown grain has started, but its growth is very slow. It is probable the grain acreage will be considerably diminished unless heavy rains occur soon. Feed is very scarce and stock are suffering. In some places sheep-raisers are compelled to feed corn. Some plowing is being done, but most farmers are waiting for rain. Orange harvest is completed and the crop was very satisfactory. No damage was done by the frosts.

Coast and Bay Sections.

Cold and clear or partly cloudy weather prevailed during the week, with dry northerly winds. Severe frosts occurred nearly every night in the interior and fogs were frequent in the coast districts. The light rain at the close of the preceding week was of little benefit. In nearly all sections the soil is too dry for cultivation and farm work is very backward. Early sown grain is in poor condition and making slow growth. Very little seeding is being done and present indications are that the grain acreage will be light. Feed is very scarce and cattle are suffering. One stock-raiser in Alameda county lost 40 head of cattle. Lambing is in progress, with heavy loss of lambs from the cold weather. Frosts killed tender branches of orange and lemon trees in the vicinity of San Luis Obispo, and probably caused some damage to oranges at Cloverdale.

San Joaquin Valley.

Clear and cool weather prevailed during the past week, with heavy and killing frosts on several mornings. Crops are all harvested and no injury resulted from the cold weather. Plowing and seeding are progressing and early sown grain is coming up. Pruning orchards and vineyards is in progress. Grass has started, but has made little growth on account of the cold weather. Feed is scarce and stock are thin, but generally reported in a healthy condition. Heavy snow is reported in the mountains. Rain is badly needed by both farmers and miners.

Southern California.

Clear and cold weather prevailed most of the week, with slightly higher temperature at the close. Severe frosts occurred several nights, but owing to timely warnings and precautionary measures the damage to oranges was comparatively light. Citrus groves were freely irrigated and smudging was resorted to at the most critical hours. A report from Riverside states that the severe frost of December 24th was accompanied by light north wind, which prevented serious damage to oranges. It is reported that oranges are generally of small size, for reasons which do not yet appear plain. Orange harvest continues and the yield is very good. Grain and grass are making fair growth, but rain is badly needed in most sections.

EUREKA SUMMARY.—Cold, rainy weather has been very severe on stock. Feed is short, and on some ranges cattle are subsisting almost on acorns. Owing to the dry summer and cold weather, grass did not get a good start and has but little substance in it.

LOS ANGELES SUMMARY.—Cold and frost continued until Saturday, when weather became threatening and showers fell in San Gabriel valley at night. Drought continues. Rain is needed badly; irrigation general.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, January 10, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.	Total Seasonal Rainfall to Date.	Total Seasonal Rainfall Last Year to Same Date.	Average Seasonal Rainfall to Date.	Maximum Temperature for the week.	Minimum Temperature for the week.
Eureka.....	.82	10.96	17.37	19.93	60	36
Red Bluff.....	.56	4.71	14.75	12.42	66	32
Sacramento.....	.08	1.84	9.70	8.66	60	34
San Francisco.....	.01	3.01	10.56	10.22	59	41
San Jose.....	.04	2.39	8.17		60	32
Fresno.....	.00	1.35	6.23	3.88	62	34
Independence.....	.00	.43	.68	1.62	62	24
San Luis Obispo.....	.00	2.30	6.71	8.05	70	30
Los Angeles.....	.00	3.25	4.55	6.10	74	40
San Diego.....	.00	4.65	3.98	3.54	70	42
Yuma.....	.00	3.45	1.69	1.80	68	32

THE POULTRY YARD.

Seasonable Reflections.

To THE EDITOR: Undoubtedly there will be a very notable increased activity in poultry matters during the year 1906. In all sections of our State the closing months of 1905 were far busier along these lines than in the same months in preceding years. There has been a large demand for good poultry, not necessarily fancy, and it has been utterly impossible thus far this season to supply eggs for hatching in incubator lots.

All this, notwithstanding the unexceptional backwardness of the fall and winter period, for the cold weather which has prevailed in the region known as the bay counties has kept hens from laying their usual quota of eggs. Breeders on an extensive scale, with but very few exceptions, unite in this verdict.

So far the greatest demand has been for White Leghorns and White Minorcas. There is a fast growing demand for the latter eggs and these fowls are forging ahead in the estimation of the general public. Deservedly so, for they have proved to be excellent layers of large white eggs, and numbers of them. While it is probable that the Leghorns will head the poultry procession for many years to come, there seems to be little doubt that the White Minorcas will follow a good second.

This is a matter that may well engage the attention of farmers who raise only a few hundred hens. Of course all farmer readers of the PACIFIC RURAL PRESS are endeavoring to build up their flocks, aiming always for a higher standard. It will pay to raise the very best hens obtainable. The arguments on this side are numerous and unanswerable.

Another fowl that will be heard from in the not distant future is the Indian Runner duck. There appear to be but few flocks of these modest looking birds in this State; or, at least, in this section. Parties who have tried them for any length of time unanimously agree that they are famous layers of large white eggs, free from any objectionable flavor, and which command top prices in the open market. They have the reputation not only of being remarkable layers, but they keep up the record for several years. For a long time they have been very popular in Ireland, where they are esteemed very highly as money makers among the poorer classes.

Not a few farmers have concluded that hens, when they are moulting and are not paying their way, may as well shift for themselves, at least in good part. But it is very poor policy to cut short the rations of the hen when she is taking her annual resting period. At that time she needs the best of care and an abundance of nourishing food. In future months she will make good the extra outlay, though the patience of the owner may be taxed for a seemingly long time. We are always ready to speak a good word for the hen, providing she is well bred and promising as a layer. Gentle treatment and watchful care, never relaxed, will go a long way in making the hen a money maker—a mortgage lifter—as she has been called in some localities.

In his last report, recently issued, the United States Secretary of Agriculture says, regarding the fowls of the country: "The farmer's hen is becoming a worthy companion to his cow." (The estimated value of dairy products for 1905 was \$665,000,000, or \$54,000,000 above the estimate for the preceding year). "The annual production of eggs is now a score of billions, and, after supplying the needs of factories, tanneries, bakeries and other trades, they are becoming a substitute for high-priced meats, beside entering more generally into the every-day food of the people. Poultry products have now climbed to a place of more than half a billion dollars in value; and so the farmer's hen competes with wheat for precedence."

Farmers will find the following recipe for a cheap paint an exceedingly valuable one, and it will stand each one in hand to keep a liberal supply ready mixed at all times. It is very useful in the poultry house, inside as well as outside. For rough work of any kind, such as fences, gates and outbuildings, it will be found without a peer. One thing regarding it that will appeal to the farmer is its cheapness: Crude oil (petroleum), one gallon; Prince's metallic (dry paint), three pounds. This will give a paint of a dark chocolate color when first applied. If a warmer color is wished, Venetian red can be added in quantity to suit.

Mix well and let stand for two or three days before using. A longer time will improve the mixture. Apply with a common paint brush. It will take a few weeks to dry and a second coat can be used if it is thought necessary. This paint has been tested by the writer and others and can be relied upon as a cheap and good article. It is well to keep a quantity on hand all the time, for one will find occasion to use it every now and then.

The writer believes it is well enough to pass a good thing along when it can be truly asserted to be of benefit. There is an old assertion that one's torch burns none the less brighter for lighting that of another. So, having tested for several years the following recipe for making an unparalleled harness

dressings, assuring all the readers of the PACIFIC RURAL PRESS that there is nothing that excels it for treating leather, whether as foot wear or harness. The formula sold a few years ago for \$1.

To two quarts of fish (or neat's-foot oil) add two pounds of mutton tallow, one pint of castor oil, one-fourth pound of ivory black, one-half pound beeswax, four ounces rosin and one ounce of Burgundy pitch. Put all together in an iron kettle over a slow fire. Boil and stir half an hour. Then take off the fire and allow to settle 15 minutes. Pour into another vessel, leaving all the sediment in the bottom of the first kettle. When cold it will be ready for use.

This preparation can be used hot or cold, but it is preferable to have the leather free from all dirt, clean and dry, and use the oil in a warm condition. If fish oil is used it will keep mice from gnawing the harness. After the oil has well soaked into the leather wipe off the surplus with a soft cloth.

There is another thing the writer can heartily recommend to all who have occasion to use a light vehicle upon the farm. The wagon described can be built at a nominal cost and will prove invaluable to anyone who has any hauling to do, especially where only one horse is kept.

Take the two wheels of a castaway gang plow. Hunt up an iron axle that belongs to a farm wagon that has been set aside as useless. It may be necessary to have a blacksmith reduce the size of the ends somewhat in order that the wheels may fit thereto.

Make a frame of 3 by 4 redwood or pine, 7 feet long and the width of the axle. Fasten it securely to the axle. If you cannot well do this get the blacksmith to help you out; likewise, in placing the shafts in position, which can be made out of 3 by 6 pine, worked down to proper shape. These are bolted to the framework. If the axle is placed at or near the center of the frame the wagon will be well balanced, and is not to be used as a tip-cart.

With this vehicle and a strong, steady horse, one can readily haul gravel, manure, brush or anything that has to be moved. Being so near the ground, a vast amount of heavy lifting is avoided. Put a good breeching harness on the horse and you can back him into any out-of-the-way corner very easily. If you wish to haul straw at any time make a light rack of 1 by 3 or 1 by 4 pine, with stakes of 2 by 3 inserted into the side irons placed on the framework. For hauling gravel, side boards one foot high are used. Try this little wagon and you will wonder how you got along without it for so long a time.

Napa, Cal., Dec. 26. A. WARREN ROBINSON.

THE IRRIGATOR.

The Future of Irrigation in California.

By PROF. S. FORTIER, of the Irrigation Investigations of the United States Department of Agriculture, at the State Farmers' Institute at the University of California.

Irrigation in California is a subject of endless variety and of infinite magnitude. In the few minutes of your valuable time which I shall occupy I cannot do more than present a general outline of the subject. In reviewing briefly what irrigation has accomplished in this State and in considering in a general way the natural resources in both land and water which await development, we may perchance obtain a clearer vision of the future and of the difficulties which beset it.

It is now generally conceded that the future prosperity of the State of California depends on irrigated agriculture. The cultivation of fertile soil rendered highly productive by the use of water will forever constitute the leading industry. This does not imply the neglect or supplanting of other industries. The beneficial results of agriculture are nowhere more important than in furnishing cheap and wholesome food to the miner, in producing raw material for the manufacturer, in buying wearing apparel and farm equipment from the merchant, in providing freight for the transportation company, and finally in contributing in the form of taxes a large part of the revenue of the county, municipality and State. The varied products from the irrigated farms, the timber from the forests, the domestic animals on the range, and the hay and grain from the dry farms, all these soil products will form the safe and permanent foundation on which all other industries may successfully build.

The statistics of California show almost without exception that in every section where water has been successfully applied to cultivated fields and orchards, the greatest and most permanent gains have been made. The same general statement does not hold true for any other industry. A large part of the total revenue of the State is still derived from mining, but comparatively few mining camps have grown into prosperous cities. Many mining centers that once thrived with life and activities are deserted. The fabulous sum of \$1,000,000,000 of gold which was washed from the gravel bars or wrested from the quartz ledge has likewise vanished, leaving little trace that so vast a sum was ever mined. On the other hand, Californians point with pride to the

prune orchards of Santa Clara, the alfalfa fields of the San Joaquin, the vineyards of Fresno, and to the orange groves of Riverside as worthy examples of the value and permanency of irrigation when applied to fertile soil in a climate like that of California.

THE EXTENT OF THE PRACTICE OF IRRIGATION IN CALIFORNIA.—Compared with the total land area of the State, the irrigated portion appears small. At the present time something like a total of 2,000,000 acres out of 100,000,000 are irrigated. While this represents the work of half a century, the greater part has been accomplished during the past 25 years. Twenty-five years ago, Fresno county had only 425 acres in grapevines, now there are about 85,000 acres. At that time the number of bearing orange trees in the entire State was less than 250,000, now the number is over 7,000,000. At no time in the history of the State has progress in irrigation been more rapid than during the past three years. In 1901 the crops irrigated in the Imperial Valley did not exceed 1,000 acres in extent, while last year the irrigated farms comprised 80,000 acres. In 1904 the Modesto Canal furnished water for 6,895 acres. During the past season of 1905 the acreage had increased to 12,685 acres.

A few years ago there was practically no land irrigated in the Sacramento Valley; now canals are being constructed to water several hundred thousand acres. These few cases taken from many that might be cited will serve to convince the most skeptical that irrigation is a live issue in California.

But one should not attempt to estimate the value of irrigation by the size of the field. The real test is the quantity and quality of the products. Judged by this standard, irrigation pays. One acre of irrigated land in California, according to statistics, will produce on an average as valuable products as can be raised on three acres of non-irrigated land. Leaving out of consideration water rentals and the cost of applying water, an acre of land with a water right is thus equivalent in producing value to three acres of land without water. Again the yield from dry farms is decreasing, while that from the irrigated farms is either the same or is increasing. Fourteen years ago the yield of wheat in California was 1,250,000 tons; last year it was considerably less than 500,000. This decrease was not so much due to a smaller area cropped, but chiefly to diminished yields. On the other hand, there has been a marked increase in the production of citrus fruits derived from the irrigated orchards. For every ton of citrus fruits shipped out of the State in 1891 there were eight tons in 1904. Trace the 76,000 carloads of fruit which left this State in 1904 back to the grower and in nearly every case it will be found to be the part of the output of irrigated agriculture. The oranges and lemons, the dried fruits and canned fruits, the raisins and nuts, the deciduous fruits and vegetables and all soil products for which California is famed, come for the most part from irrigated fields and orchards.

FUTURE DEVELOPMENT.—When one contrasts what has been done in reclaiming arid and semi-arid lands in California with what remains to be done, he is forced to conclude that the present marks but the first stage of development. Although there are 1,000,000 acres of irrigated land in the San Joaquin Valley, so extensive is this great central plane that the traveler in passing through it imagines that it is devoted principally to the production of grain and grain hay on dry farms. The irrigated alfalfa fields and orchards look like spots on otherwise unbroken stretches of cultivated but non-irrigated grain fields. The rainfall and melted snows from a lofty mountain range, 300 miles long, flow through it. The combined annual flow of the largest of these streams would cover 19,000,000 acres a foot deep, yet this vast supply subserves no higher duty at present than to irrigate 1,000,000 acres.

In the valley of the Sacramento the prospects for future development in irrigation are equally great. The results of recent surveys made by the Department of the Interior show that there are 2,666,000 acres in the floor of the valley and that the quantity of water which flowed from this basin through Golden Gate in 1904 was sufficient to cover 26,000,000 acres a foot in depth. This vast quantity of water, like that which descends from the Sierras east of the San Joaquin plain, can never be entirely utilized in irrigation, for the reason that it cannot be fully controlled, but the fact that so large volumes flow through the arable lands of the great central plane of California is an indication of the possibilities of irrigated agriculture.

OBSTACLES TO BE OVERCOME.—At the present time it is quite generally admitted that the one essential for the betterment of agriculture in California is the extension of the irrigated area. A more general and more skillful use must be made of the water which flows past the dry farms on its way to the ocean. In the few minutes of my time that remain, I cannot do better than point out a few of the obstacles that lie in the way of such progress.

The dry farms of California are located in the wrong place. They now occupy the valley lands that should be irrigated, and the foothills and higher mesas that should be dry farmed are either non-productive or devoted to grazing purposes. In the States of Colorado, Utah and Montana, farmers would not be content with the meager returns resulting from the cultivation of valley land in its dry state. They in-

variably make use of the deep soil of the upper mesas which are located above the highest canal for the production of winter wheat. These mountaineers who strive to shield their crops from the effects of high altitudes and killing frosts cannot understand why their friends in central California, where the climate is so favorable, continue to devote several million acres of their best land to the production of grain in which there is little or no profit.

But the people who live in other States fail to comprehend conditions as they exist here. It is from necessity and not from choice that the farmers of California are raising wheat on 2,000,000 acres and selling it for a trifle above the cost of production. Dependent as they are upon the rainfall of winter, they cannot do better. Before the profits can be increased there must be a radical change in the mode of farming and an artificial supply of moisture secured to nourish the crops during six months of a rainless summer. A change from dry farming to irrigation can be readily made when the land is held in quarter sections or less, provided the water supply is abundant, but when the size of the farms include estates of 20,000 acres, the task is more difficult. The large size of the farms is accordingly one of the obstacles which stands in the way of irrigation development. In the course of time this obstacle will be removed. The proprietors of large estates in central California will be forced either to sell or to irrigate. The yield of grain on the dry farms is decreasing so rapidly that the profits will soon appear in red in the farmers' ledger. In 1884, the Montezuma district, comprising about 60,000 acres in the Sacramento Valley, produced on an average 20 sacks of wheat, weighing 138 pounds, to the acre; in 1905, the yield throughout the same section averaged four and one-half sacks, weighing 122 lb.

Another obstacle which retards progress in irrigation can only be overcome by educational means. It would be a waste of money to conduct water from the foothills of the Sierras to a farm unless the proprietor or tenant is willing to use it. Again, if the use is to prove beneficial, it is important that the water be skillfully and intelligently applied. It is too much to expect that the farmer who has raised wheat or grain hay for 25 years and trusted to the season's rainfall will take kindly to gum-boots and an irrigator's shovel. And if it is difficult for the farmer to change his methods of farming which he has pursued for a lifetime, it is by no means easy for his boy. The boy who has been accustomed to do things on a large scale, plowing and seeding with a 10-mule team and harvesting with a steam thresher, is apt to become discouraged by the more arduous and difficult tasks of the small irrigated farm. We cannot wonder if such men decline to irrigate their farms unless abundant proof is presented that it would be to their interest to make so radical a change.

Here then is to be found an educational work which, if successfully carried on, may prove of lasting benefit to the State of California. It devolves on the progressive farmer, the agricultural schools and colleges, and the Department of Agriculture of the General Government to demonstrate to the farmers of central and northern California the increased yields resulting from a scientific rotation of crops, the advantages of diversified farming, and, above all, the value of water when rightly applied.

A BROAD PROBLEM.—Men who consider only the engineering features of irrigation are apt to take a one-sided view of the reclamation of arid and semi-arid lands. While everyone must admit the importance of irrigation structures, yet it is nevertheless true that these are but a means to accomplish an end. At one end of irrigation enterprises are the water supply, the storage reservoir, the canal; at the other end should be found abundant harvests, prosperous homes and the highest class of citizenship. We are urging the breaking up of the big farms of the Sacramento Valley, but if the old families are to be replaced by an undesirable class of foreigners, who would welcome the change? Here is another task for those who love California. It may be stated in a single sentence. When the big farms are broken up and when a stream of water is brought to several thousand small farms, see to it that the right kind of people purchase and settle on these irrigated farms.

The only proper standard by which future progress in irrigation can be measured is by the success of the farmer, the fruit-raiser, and the stockman, who make use of water to increase their annual income from the soil. If they are happy and prosperous, then it may be taken for granted that the entire State is likewise prosperous. On the other hand, if they are unsuccessful there can be little connected with irrigation of which we shall care to boast. If I am right in the belief that the future prosperity of California depends mainly on irrigated agriculture and that irrigated agriculture depends on the farmer, then we should not overlook the interests of so important a class. It would seem to be incumbent upon the State and upon every influential citizen of the State to endeavor to remove some of the obstacles which threaten to defeat the best efforts of the producing class.

The State can greatly aid the rural communities in irrigated sections by an early, just, and final settlement of the rights to water that have been acquired. The State can likewise establish an efficient system

of administration by which the appropriated waters may be equitably distributed to those entitled to their use, and it can also make adequate provision for the acquirement of rights in unappropriated waters.

It would also seem to be the duty of both the State and the nation to assume part of the expense of carrying on the large number of experiments that are necessary before we learn how to farm in an arid region. The revenue derived by the State from the taxes on 80 acres of unoccupied and unirrigated grain land is quite small, but when a thrifty farmer purchases a tract of this size, builds his home upon it, and multiplies the yields by intensive cultivation, under irrigation, the taxes are multiplied many fold. By this change the State is the gainer in many ways. So it would seem to be just and prudent on the part of the State to encourage the extension of irrigated agriculture by contributing liberally to every agency that has for its object the prosperity of the farmer.

FRUIT PRESERVATION.

Prunes in Cans.

By MR. J. LUTHER BOWERS of Monticello at the Fruit Growers' Convention at Santa Rosa.

"Prunes! Well, that subject was worn threadbare long ago," some of my hearers will tell me, "and for prunes in tin cans, the late Cured Fruit Association tried that and it did not prove a success." Let me here tell you that a processed prune in tin cans and an unprocessed prune in tin cans are two entirely different propositions.

Six years ago a prominent San Jose packer said to me, "Bowers, a fortune awaits the party who can devise or invent some way to pack prunes in their natural state without processing them. From that time until something like a year ago I made many experiments along that line, until I finally discovered a way to keep prunes or any other dried fruit for an indefinite period. Simply fill glass jars or tin cans, hermetically seal, and sterilize."

My next move was to experiment and find out just the condition the fruit should be in, the kind of package, and what the trade thought of the proposition.

THE FRUIT.—I found by experiments that it made no difference in keeping qualities whether the fruit was moist or very dry, the same results were obtained. If put up moist, at the end of the year a can opened showed its fruit moist, and if dry when put up, the fruit was dry when opened. That moist fruit kept in fine condition and at that stage was the condition in which it should be put up.

THE PACKAGE.—On account of breakage and weight, I found glass jars too expensive, only for exhibition purposes. I then corresponded with a number of can makers and can-making machinery firms, and finally adopted the sanitary can made by the Max Ames Machine Co., Mount Vernon, N. Y., because this can has the whole top off and will admit a press plunger to press the fruit solid in the can. The top is then put on by machinery, making a double seam. No heat or solder is used in closing or sealing the can, and when goods are finished a neat, clean package is the result.

THE TRADE.—I submitted to the Eastern trade this proposition. I would pack sometime in the future prunes in tin cans, in their natural state, and make only three sizes, as follows: 30 to 50 size, No. 1; 50 to 70 size, No. 2; 70 to 100 size, No. 3. I also stated that I would make three sizes of cans; small size to hold 1½ lb. of fruit; medium size to hold 2½ lb. of fruit, and large size to hold 5 lb. of fruit; the small can to be 2½ in. high; the medium to be 5 in., and the large to be 10 in. high, all cans to be 4⅞ in. in diameter, the same case for all sizes holding 12 large, 24 medium, and 48 small cans, each can to be labeled and the price to be put on the label in large figures, the price being the consumers' price, as follows:

White label, No. 1—Large can, 75c.; medium can, 40c.; small can, 25c.

Red label, No. 2—Large can, 70c.; medium can, 35c.; small can, 20c.

Yellow label, No. 3—Large can, 70c.; medium can, 35c.; small can, 15c.

WHAT DEALERS SAY.—I wrote to 17 brokers who are large handlers of dried fruit, many of them handling 100 or more cars of prunes alone. I received answers from 14. Nine of these wrote me very encouraging letters. Two said that I "had the best proposition ever brought before the American people." Five said: "Just as soon as you get your proposition in working shape we want the exclusive territory of a given State or States to sell these goods in." One said: "The price on the can does not interest us. Let the retailer and the consumer fight it out among themselves." The size by numbers was considered a good change by all. Eight firms thought the price on the cans was all right. These nine letters came from Boston, New York, Philadelphia, Baltimore, St. Louis, Columbus, Chicago, Milwaukee, and Vancouver.

I have spent a good deal of time and postage to gather information in regard to the prune situation throughout the East, and I have found many conditions that are against the grower. One thing more than another is the wide range of prices. Take

Philadelphia, for instance. Last summer a party interested in the prune industry visited that city. On a certain street one grocer priced Santa Clara prunes of a certain brand at 8c.; two blocks further up town another grocer quoted the same brand and size at 15c. per lb.; then up town at a store in the fashionable part of the town 25c. per lb. was quoted for the same brand. Such a range of prices will kill any industry. The first price does not help the grower any, and the last-named price is prohibitory, while by the system I have given the price would be the same everywhere.

A gentleman well known to every prune grower in the Santa Clara valley said: "Do not make the price so high that the poor people cannot buy." I will answer the above by saying that people who buy prunes would rather pay 15c. per lb. for prunes in a nice clean package than to pay 8c. for the majority of prunes offered for sale at many of the Eastern retail groceries. Many of these prunes are dirty, dusty and covered with flies.

SAVING TO GROWERS.—Every grower who dries his own fruit well knows that some seasons his last prunes give him a great deal of trouble in getting them dry. They will hang sometimes two or three weeks in the trays. They are cured, but not dry. They are fine fruit, but the packer will not receive them. He wants them dry. Right here is where the can proposition makes a showing. These prunes are just right to can, just right to pack. I claim that the growers can save 200 lb. of fruit on each dry ton, or, in other words, a ton of fruit ready for the cans would only weigh 1800 lb. or less when dry enough for the commercial packer.

On a crop of 120,000,000 lb. of prunes for the State of California, then save this 200 lb. for every 2,000 lb. and we will have saved 13,333,333 lb. of prunes that are doing no one any good. We dry it out of the prune and the commercial packer puts it back in the shape of water and sells the water for prunes. Counting 60 as the average size and prunes at 3-c. basis or 4c. per lb., we would have the enormous sum of \$533,333, enough money to put up a factory large enough to pack in tins the entire crop of the State. The same amount of money saved would put up and equip 10 factories in different parts of the State to do the same work, and all from only one year's crop.

The question has been asked me: "What about the cost of packing?" In a small way, the cost will be per case about as follows: Cans, 48c.; labels, 8c.; case, 10c.; incidentals, 14c.; total, 80c. Each case will hold 60 lb. net of fruit. Do I hear some one say too costly to pack? Let us see. The French packer comes to our State to buy our prunes, pays freight and duty, sends them back to the United States, and we pay the freight and duty. Can we not compete with our own goods packed in tin cans by the French packer if we adopt his way of packing?

To give this mode of packing a severe test I placed on a shelf in my kitchen, near and almost over the cook stove, a lot of cans filled with prunes, about January 5 and left them there until the last of August. Then every 10 days for two months I opened a can. Every one was in perfect condition. Not a sign of mould or sugarcoat, and everyone who saw them was astonished at their fine appearance.

Railroad rates on canned goods from common shipping points to points east of the Mississippi are \$15 per ton, according to present classifications, a saving of \$5 per ton over boxed prune rates. This one thing would go a long way toward cutting down the packing expenses. We could have a good market for our prunes in the Orient and the Philippines if they could be kept any time after they arrive there. A processed prune has been a failure in the Philippines. They will not keep in that hot, moist climate. But in this can proposition I think that prunes can be packed so there is absolutely no loss from mould or worms. So as to be sure of this, a lot have been sent to Manila, to be left there three and six months, and then to be returned to be opened to ascertain their keeping qualities, and then a report will be published, giving a full account of the work done.

Cypress or Pine on Roadsides.

TO THE EDITOR: Kindly inform me through the PACIFIC RURAL PRESS which variety of either the cypress or pine tree would be best for highway planting in situations bordering the ocean where they would be exposed to the sea breezes and fogs. I would like some large growing tree and plant them about 80 ft. or more apart, so that each tree could have a good chance to show itself and leave a good view of the country on the opposite side from between them. If you know of any other tree better suited for the purpose than the above mentioned variety, I would be pleased to know of it.—READER, Moss, Monterey county.

We would prefer the Monterey pine, because the natural form of the tree with its discarding of the lower branches is vastly better for avenue purposes. The cypress should be allowed to take its natural, pyramidal form and then it is too broad on the base for roadsides. To trim up the branches of a cypress is barbaric. The Monterey pine will make a majestic avenue effect if you give them plenty of room.

CEREAL CROPS.

Fertilizers and the Wheat Crop.

Written for the PACIFIC RURAL PRESS.

The time has evidently arrived when the wheat growers of this State must seriously consider the use of fertilizers, if they are to continue to grow profitable crops. The large yields of early years have steadily decreased, until now, on many ranches, it is largely a question of good luck if the crop pays expenses. And the reason is that the continued cropping to wheat has gradually robbed the soil of the readily available plant food required for the growth of wheat, until not enough of this form of plant food is left to fully satisfy the growing crop.

This condition is, of course, not peculiar to California. It is the experience of every country where wheat is grown continuously. Big yields from the virgin soil have steadily diminished as each crop took its portion of plant food away from the soil, until the point has now been reached where one must either put back on the land the plant food taken out by the crops, or quit growing wheat. Off years cannot be held as the cause of this, as some seem to think. Off years came when crops were good, about as they do now, but very likely the off years do more harm now than formerly, because of the lessened vigor of the plant, due to low soil fertility.

The quality of our wheat is also falling off, and while this may not be due wholly to insufficient plant food, there can be no doubt that a well-nourished, vigorous wheat plant will produce better grain, all around, than one not properly fed.

Much of this loss of soil fertility is due, of course, to the methods of cropping and cultivation practiced, and to climatic and other conditions, but a proper rotation of crops demands a market for each, which is not always obtainable, and, as to correct methods of cultivation, it may be assumed that the wheat grower of California is intelligent enough to hunt out and apply the methods most suitable to his particular case.

But, whether under the most or least favorable conditions, it is evident that the land must eventually lose its fertility, if its plant food is removed year after year and none returned, and the time comes, as it now has in California, when it is necessary to return to the soil that amount of available plant food needed by the plant to make its full growth.

Unfortunately, though California wheat growers have realized for some years past that the land was giving out—"that something should be done"—they have done practically nothing so far in the way of securing experimental data which would be of use in determining what fertilizing element, or combination of elements, is best suited to wheat growing, partly, no doubt, because of the old-time feeling that California soils were inexhaustible—"couldn't give out"—and partly because fertilizers have been so high priced that it looked doubtful if enough increase in crop would be gained to make good the outlay. To a certain extent, the latter is true. Generally speaking, wheat growers could not use fertilizers at a profit at prices recently prevailing.

Wide use and improved facilities for manufacture will reduce the price, but for best economy in the use of fertilizers the grower should experiment. Chemical and mechanical analyses of soils give much useful data, but, unfortunately, they don't tell the whole story. It is still to be found out, by actual trial in the field, what must be added to the soil to make the wheat plant do its best. Treating separate portions of the field, each with fertilizer of a different composition, results will soon tell which elements in the soil are least available to the plant, and, by adding these, in the form of quickly available fertilizers, the soil is put into condition at a minimum cost. Some soils, for instance, contain an abundance of some one of the plant-food elements contained in a complete fertil-

izer—for instance, potash. If a fertilizer containing potash is applied to such a soil, the cost of that much potash is practically thrown away. Hence the value of proving, as closely as possible, the exact needs of the soil for each of the fertilizing elements.

The method of determining the plant-food needs of the soil by field experiments has been found to be by far the most satisfactory wherever fertilizers are used for cereals. Fertilizer manufacturers recognize this, and a concern in this city, the Mountain Copper Co., has now under way a very comprehensive series of experiments, in co-operation with wheat growers in all parts of the State. The fertilizer has been furnished free of charge to the grower who conducts the experiment. The company expects to secure in this way data which will enable it to put out a line of fertilizers best suited to wheat growing, and, as the firm has large capital, exceptionally good manufacturing facilities, and makes part of its raw material, there is a reason to hope their prices will be down where they should be. As a matter of fact, there is no reason why the California wheat grower should pay more for his fertilizer than does the Ohio farmer, nor why both should not get it in the cheapest and most suitable form, and, given these conditions, its use will probably prove as profitable here as it has there. But use it we must, and the sooner we get posted on the situation the better. While California has many advantages in the matter of soils, she also has her disadvantages; proper rotation cannot be generally practiced, and the methods of cultivation necessarily tend to destroy the humus more quickly than is the case in more humid climates, with various other troubles, so that a wheat soil here, while much richer in its virgin state than a similar Eastern soil, may show signs of giving out just as quickly, owing to its more rapid loss of plant food.

This loss of plant food must be made good, and if a fertilizer can be found composed of high-grade, ready available materials, at the right price, there is no reason why it cannot be used at a profit in wheat growing.

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Agricultural Review.

Sacramento.

FRUIT GROWERS MEET.—Florin dispatch to Sacramento Union, Jan. 6: The annual meeting of the Florin Fruit Growers' Association on Monday brought out a fair attendance. The manager submitted his annual report, which, on motion of James Totell, was received and placed on file. The year just closed has been noted as a good one for all grape growers, and the members of the Florin association shared in this. The report showed in brief as follows: Cash on hand, \$3,824.74; notes, \$3,035; stock, \$35; building and other property, \$1,057. Total, \$7,950.74. Cars shipped as follows: New York, 29; Chicago, 17; Boston, 16; Philadelphia, 6; Pittsburgh, 4; Minneapolis, 2; Cleveland, 1. Total, 75. Average price for Eastern shipments—Tokay grapes—per half crate: New York, \$1.51; Chicago, \$1.60; Boston, \$1.46; Philadelphia, \$1.49; Pittsburgh, \$1.49; Minneapolis, \$1.47; Cleveland, \$1.52. Total average on Tokays, \$1.52. Total average net on Tokays, 95c. The new board of directors is as follows: George L. Hunt, P. H. Murphy, H. B. Hunting, George Nesche, J. E. Thomas.

Tulare.

ORANGE SHIPMENTS.—Lindsay Gazette, Dec. 29: The shipment of citrus fruits from the Lindsay district for the year 1905 practically closed last week as only one car of fruit left this place since our last week's report. There still remains on the trees about ten cars of Ruby Bloods belonging to Curtis & Glaze, which Mr. Curtis says he will not ship until some time during next month, consequently these will start the table of next year's shipments. The year's crop amounted to 594 cars which shows an increase over last year of 38 cars. Early estimates gave the district 650 cars, but owing to the excessive number of splits this year the estimate was not made good. The excessive splitting of oranges was a new thing for this district, which was likely due to some change of weather during the summer months and it has only occurred once in the history of the industry. As a whole, the season was a successful one. The fruit was early, excellent in quality and the returns from the markets have been coming in very satisfactorily. In fact the prices exceed those of last year when it was considered that the returns were very good. It is too early yet to obtain figures showing the average returns, but in many instances the growers have received between \$1.50 and \$2 per box net.

Kern.

SHIPPING ORANGES.—Kern County Echo, Jan. 4: Loveland & Long are marketing the San Emidio orange crop, having shipped three carloads of the fruit to various Pacific coast points, besides numerous single boxes to points scattered all over the United States.

San Joaquin.

GROUND READY FOR SOWING.—Lodi Sentinel, Jan. 6: The farmers of the county have commenced plowing in general, and even in the adobe lands it is found that the soil works up well except in certain very unfavorable localities. While the showers which have fallen were light, the moisture penetrated the soil enough to make it tillable, and the cold frosts seem to have aided in putting the ground into better condition for breaking up. In the sandy loams of course there is no difficulty about dry plowing, and the cultivation of land in the locality where such soil abounds is in full swing. Ranchers say that if there is a good rain-storm within the next 30 days there will be a large crop the coming season.

WILL PLANT ASPARAGUS.—Stockton Mail, Jan. 6: An immense tract of asparagus is to be planted in the western part of San Joaquin county immediately. The work is to be done by the Empire Asparagus Company, under the direction of M. E. R. Barling and C. M. Owen. The corporation will begin operations with the opening of the new year, and prosecute the work as fast as possible. Five hundred acres are to be planted to asparagus.

Napa.

NAPA WILL HAVE CANNERY.—Napa dispatch to Call, Jan. 5: A large fruit and vegetable cannery is to be erected in Napa by Foster Bros. & Co. Work on the new plant will be commenced in a few days. T. H. Foster, president of the company, has been conducting a cannery in Dixon. It will employ about 500 persons five or six months in the year.

Nevada.

MAMMOTH PEAR.—Grass Valley Union, Dec. 28: A pear 9 in. high and 21 in. in circumference was grown in the yard of

John Williams of Grass Valley. The tree was given no more attention than any ordinary pear tree.

Grass Valley dispatch to Sacramento Union, Jan. 2: Thousands of boxes of pears are shipped from Grass Valley and Nevada City each year, and the pear blight could prevent thousands of dollars from being distributed here. It has already made its appearance in more than one orchard. The Department of Agriculture and the State Board of Horticulture are sending men out to find where the blight exists, and where it is thickest they will work hard to destroy it before the orchards are completely ruined. The cause of the disease is a bacterium which finds its way into the inner bark of the trees from the tender points of the sprouts, and, by preventing the flow of the sap, causes the death of the portion infected. When the sap starts in the spring and reaches the portion in which the bacteria exist, the further flow is stopped and it is exuded from the bark in a gum. Birds and bees lighting on these limbs carry away particles of the infected gum on their feet, and in this manner infect other trees, thus causing a rapid spread of the germs. The sign of the presence of this disease is death to the portion affected, which assumes a darker color than the live limbs, and during this season the presence is also indicated by the hanging on of the leaves of the dead portion, which do not fall as those of the healthy branches do.

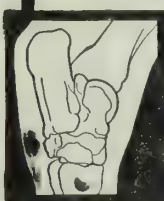
Tehama.

SMYRNA FIGS.—Red Bluff dispatch to Sacramento Union, Dec. 31: The propagation of Smyrna fig trees in Tehama county has become quite a good-sized industry of late years, and now thousands of this variety are annually shipped to orchardists all over the State. Tehama county is one of the three places in the United States where large Smyrna fig trees are in bearing. At the recent exposition at Portland, Supervisor W. H. Samson, who has made the propagation and fruiting of this choice fig a study, carried off the gold medal for his exhibit of the fresh fruit. For years about 300 trees of this variety, planted almost forty years ago, refused to bear fruit, and it was not until a few years ago that Supervisor Samson investigated the trees and succeeded in making them produce by the introduction of the blastophaga, or fig wasp. The fig wasp, which fertilizes the bloom, and without which the fruit on the trees will not mature, makes its home in the figs of the male—or capri—fig tree, and in the summer months fertilizes the fruit blooms on the bearing trees by carrying the pollen from the capri figs to the swelling buds on the female tree.

Smooth Hocks

When Veterinaries Fail.

Madison, Ill., April 21, 1905.
Dr. B. J. Kendall Co.,
Enosburg Falls, Vt.



Gentlemen:—I have a very valuable pacing mare; she bruised her hind leg at the hock joint in the stall, causing a callous growth. I tried several veterinaries and they did no good with medicines and I did not want a surgical operation. One bottle of your Spavin Cure did the work so easy.

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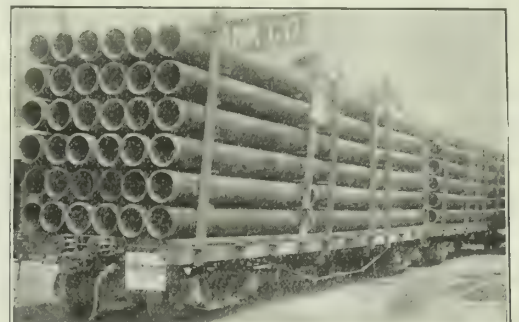
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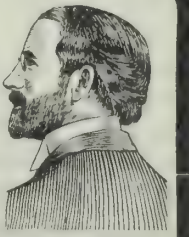
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There is a garden, far, oh, far away,
Kept for the souls who sinned and suffered most.
The sword of God forever guards the way,
And round its borders camps a heavenly host.

A gentle wind breathes through the tufted grass,
Rich with the scent of roses in their bloom;
And, with the wind, all sins and sorrows pass,
Leaving a sweet contentment in their room.

Here are no troubles; here are none that weep;
Here come no thoughts of sadness or despair;
But fairest flowers, in fullest beauty, sleep;
And softest sunlight fills the dreaming air.

The murmurings of fountains, low and sweet,
Forever fill the air and never cease,
Soothing the silence with a gentle beat,
Like kindly voices speaking words of peace.

And here, forever and forever, rest
The weary souls, unburdened of their sin;
And cursed things are here forgiven and blessed:
And wicked hearts are made all clean within. — Bertrand Shadwell.

A Man's Judgment.

"Confound her," muttered Hardin savagely, as the girl balanced herself on a big stone right at the gully's edge. Aloud he said as patiently as possible, "You had better be careful, Miss Stuart, if you should slip you might get a bad fall."

Clutching a slender twig for support, Stella looked over into the ravine and raising her eyebrows began with a ludicrous solemnity, "The dark abyss that looms before—"

A little gasping scream finished her recital as the bank gave way and tumbled her down its side. Hardin plunged after her white with fear and anger.

She was a forlorn looking figure as he pulled her out of the wreckage of earth, stones and dead bushes and raised her to her feet. With his assistance she stood, trembling but with compressed lips.

"No bones broken?" he asked shortly.

"No, I am not hurt much," she answered quietly, trying to stand alone.

He had a new respect for her as he gathered her in his arms, tousled, soiled, scratched, bruised, scared and ashamed, yet making a noble effort to be brave and reasonable. She was now an injured woman instead of the spoiled child who had worn his patience threadbare that afternoon; and with a strong man's natural kindness he even felt tender toward her as he saw the blood trickling down over the mud-stained face against his shoulder.

Struggling out of the gully, he carried her to the spring where they had eaten dinner, and called for the rest of the party. While waiting their arrival he patched and cleaned her up as best he could, going about it with a respectful frankness that made her submit quietly and even thankfully.

He was glad enough, however, to turn her over to the girls who gathered about her; and so far recalled his resentment as to tell Jack Olney that it was due to "her own cursed foolishness" that she was hurt.

Yet as they drove home she bore her evident suffering of both body and mind with such unaffected humility that he found himself immensely sorry for her; and looking at the pale face so resolutely calm, he felt that he would like to take her in his arms again and comfort her as if she were a hurt child. He restrained himself to courteous kindness, however, and unsuccessfully tried to keep his thoughts within the same safe limits.

When they reached her home he

picked her up despite her rather feeble protests, and carried her in. From the lounge where he placed her she looked frankly at him and said with simple dignity:

"Mr. Hardin, I am very sorry I acted so foolishly and caused you so much trouble, and I thank you very much for your kindness. I know you cannot sympathize much with me, but I want you to know I appreciate the way you have treated me."

Hardin hesitated, then, crushing back the things he longed to say, murmured some stupid conventionalities and took his leave.

It was several weeks before he saw her again, and at her first words the fond dreaming of these weeks gave way to the realization that he had judged her rightly at first. Yes, he said to himself, she was only a spoiled child, not bad at heart, but vain, thoughtless, fickle and capricious. He could not help smiling at her whimsical speeches and her vivid mimicry, yet they displeased him. And as he watched the dark eyebrows curve and the red lips ripple into wayward smiles, or heard the sweet-spoken satire, the soft, mocking laughter, his heart filled with anger. He wanted to see again the face, gentle and repentant, but calm and brave, that had appealed so strongly to him the afternoon of that luckless picnic day.

As he met her again and again the deepening perception of the difference between what she might be and what she choose to be aroused in him a deep resentment as if she were doing him a personal injury. So he treated her with a formal politeness whose coldness could be felt; and she repaid this with a punctilious deference which seemed to him to have in it something of mockery.

Thus matters went on until one night they met at an informal party. Stella was the central figure of a little group which was talking of old school days. She had been making them laugh by telling all the absurd things she could remember about her teachers and schoolmates; but suddenly she became grave. "There was another boy, too, who came there that I will never forget. We called him 'Red' from the color of his hair and his freckled face. He was awfully poor and wore the funniest old patched-up clothes. We used to tease him every way we could think of; but he was the brightest fellow I ever saw, and when he began to show us what he could do we got ashamed and treated him better. After a while some of the people who knew him helped him to go to college; but almost as soon as he got there he began drinking and went to the bad. His poor old mother was awfully proud of him and it nearly killed her. I used to go to see her and try to cheer her up, but I couldn't do much at it. She's dead now, I think."

There was silence for a little while, then she spoke again very softly. "He had a sweetheart, too, a little pale-faced girl who took it nearly as hard as his mother did; but I could make her laugh a little sometimes. Isn't it sad to see anyone sacrifice all that is best in himself to what is worst?"

"Yet how many do it," said Hardin, with quivering intensity, looking straight at her. She seemed to guess something of his meaning; for her face flushed and her eyes fell, while his tumultuous fancy broke away from all restraint. Here was the Stella of his dreams; and he found an exquisite joy in reversing his decision about her and telling himself that he had been a fool.

"Miss Stuart," he said a little later when he happened to find her in the hall alone, "I want to ask your pardon."

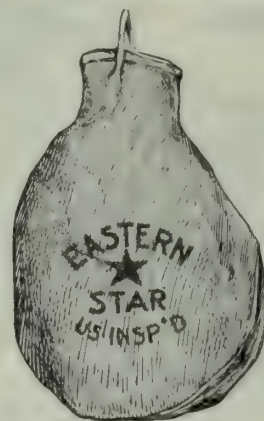
"What for, please?" she demanded.

"For misjudging you through all these months. I have thought—"

She interrupted him, "Well, I can't see that you need apologize to me for your own bad judgment. I have nothing to do with it." She was turning away, but he caught her hand.

"One minute, please, Miss Stuart, Stella, I love you. I have loved you from the first day I knew you."

"Mr. Hardin, you have no right to say such things to me. You have al-



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ways treated me as if you could scarcely endure me, and I do not—"

"But I have been so sadly mistaken," he broke in, tightening his grasp on the hand she was striving to withdraw. "It has seemed to me you were sacrificing what was best—"

"Sir!"

"I mean—I beg your pardon, Miss Stuart. I am a fool; but I love you. I have been trying all this time to think I didn't, for I thought—I mean—you know what I mean, Miss Stuart. I mean that—that I love you."

"Stella, sweetheart!" For the face she turned toward him was tenderer and sweeter than that of his dreams.

"No, you mustn't," she said, pushing him gently away. "Don't you hear, someone is coming?" — *Vick's.*

A New England Plum Pudding.

This style of plum pudding is a favorite with people who prefer a plainer one than the usual rich mixture.

Heat a cupful of the best quality molasses in a bowl set in a pan of hot water, add half a cupful each, of lard and butter. Sift in with a cupful of brown sugar, half a teaspoon each of allspice and cloves, a level teaspoon of cinnamon, half a grated nutmeg and half a teaspoon of ginger. Stir into the hot mixture, and when thoroughly blended mix in two cups of flour sifted twice with a teaspoon of baking powder and half a cupful of fine bread crumbs. Sweeten two-thirds cup of sour cream with a little soda—a good pinch will be sufficient. Beat hard for three minutes, then stir in a cupful of seeded raisins and two tablespoons of chopped candied orange peel, floured, to keep the fruit from sinking. Turn the pudding into a square pudding mold well greased. Steam for four hours continuously. Allow the pudding to cool in the mold. This kind of pudding is always made the day before along with many other goodies for Christmas, and is equally good warmed over, as when freshly boiled. The reheating in its mold will take about an hour. Unmold on a flat silver or other pretty platter and garnish with marshmallows on the top and sides. The marshmallows will stay in place on the sides if you press them slightly into the warm pudding. Circle the platter with a wreath of holly and stick a spray of it in the top.

A liquid sauce to serve with this pudding is simply made. Beat together two eggs, a cupful of powdered sugar, and a tablespoon of butter for five minutes. Add the juice of an orange, a tablespoon of lemon juice, a sprinkling of nutmeg and a cupful of hot water. Boil for five minutes slowly. It should be clear and of the consistency of thick cream.

A delicious hard sauce which many prefer is made as follows: Use butter for the sauce that has not been salted or if that is not handy, work out the salt with the butter ladle. Beat half a cup of butter with two cups of powdered sugar, or granulated will do. Beat until very creamy, adding two table-

spoons of cream, the unwhipped white of one egg and another cup of sugar. Flavor with some fine cider, and set in a cold place to chill. When ready to serve turn into a glass dish and with the handle of the spoon shape lightly into a mound. Then with the tip of the spoon make little dents all over, pineapple style, sticking in the top of the cone some spiky pineapple leaves cut smaller to suit the size of the sauce shape. — *T. C. C.*

Some Beauty Hints.

To clear the complexion take the juice of half a lemon each morning on rising with a glass of hot water.

If the skin is oily, use a little pork, rich pastry and cake. Eat tomatoes freely and celery or other crisp vegetables one can get in winter, plenty of apples and all the boiled beef or poultry one wishes.

Remember, butter and cream are heat producing elements and take the place of fat meat, yet do not seem to show themselves so plainly on the complexion.

Brush the hair before retiring each night and braid it loosely.

If the scalp seems dry and growing less soft and smooth, part it, and with the tips of the fingers rub a little vaseline on the scalp, but do not let it grease the hair. Go all over the scalp and repeat once or twice a week, depending upon the condition of the hair. If the ends of the hair are split or uneven, carefully singe them, holding the hair just above the ends to be burned, with the hand, to prevent the flame spreading.

Eat plenty of food; sleep regularly and keep the impurities out of the system by keeping the skin clean and the kidneys flushed by drinking plenty of water and the bowels regular.

Habits in Appetite.

The so-called cravings of appetite are purely the result of habit. A habit once acquired and persistently followed soon has us in its grasp, and then any deviation therefrom temporarily disturbs our physiological equilibrium. The system makes complaint and we experience a craving, it may be, for that to which the body has become accustomed, even though this something be, in the long run, distinctly injurious to the welfare of the body. There has thus come about a sentiment that the cravings of the appetite for food are to be fully satisfied, that this is merely obedience to nature's laws. This idea, however, is fundamentally wrong. Any one with a little persistence can change his or her habits of life, change the whole order of cravings, thus demonstrating that the latter are purely artificial, and that they have no necessary connection with the welfare or needs of the body. In other words, dietic requirements are to be founded not upon so called instinct and craving, but upon reason and intelligence. — *Century.*

Domestic Hints.

CORN SOUFFLE.—Drain the water from a can of corn and stir in three tablespoonfuls of melted butter. Beat four eggs until very light and turn with a pint of rich milk into the corn. Season well, beat for several minutes and pour into a buttered pudding dish. Cover and bake thirty minutes. Remove the cover brown the souffle and serve directly.

CREAMED HAM WITH MUSHROOMS.—Melt two tablespoonfuls of butter and stir into it 1½ tablespoonfuls of flour; then, slowly stirring all the while, pour in one cup of hot milk. When smooth and thick season with pepper and salt and stir in one cupful of minced ham and a quarter of a can of chopped mushrooms; pour over rounds of nicely browned toast and garnish with slices of hard-boiled eggs and parsley.

GRAPE CATCHUP.—Wash two quarts of grapes, pick over and remove stems. Put in graniteware saucepan, pour over one quart of vinegar, bring to boiling point, and cook until grapes are soft; then rub through a sieve. Return to saucepan, add 1½ lb. of brown sugar, one tablespoonful each of cinnamon, clove and pimento, one-half tablespoonful of salt and one-fourth of a teaspoonful of cayenne. Cook until of the consistency of tomato catchup. Bottle, cool and seal.

CREAM CHOCOLATE PUDDING.—One pint of milk, one-half cupful of sugar, four eggs, four tablespoonfuls of cornstarch, 2 oz. of chocolate and one teaspoonful of vanilla. Put the chocolate in a saucepan to melt, stirring until perfectly smooth. Put the milk on to boil in a farina boiler; moisten the cornstarch with a fourth of a cup of water and add to the boiling milk; cook and stir until thick and smooth. Beat the whites of the eggs to a stiff froth, add the sugar to the milk, then the whites, and beat all together over the fire. Take from the fire and add the vanilla. Now take one-third of the mixture and add to it the chocolate, mixing well. Dip a plain pudding mould in cold water, put in the bottom of it half the white mixture, then all of the dark, and next the remainder of the white. Stand on the ice to harden, and serve with a vanilla sauce poured around it.

To Clean a Floor.

First take some soap jelly or soft soap and mix with it fine beach sand or good building sand. Spread this on the grease spots. We all know that grease is removed from cloth with soap and cold water. Do the same with the floor. With an old stiff broom and cold water scrub the spots. Then you are ready to mop. If you wish to save your hands have two pails of water, one containing very hot water and washing soda, the other clear warm water. Dip the mop in the first pail and after washing a portion of the floor, rinse out the mop in the second pail and wring. The rinsing water will need to be changed several times. By this means you will have a clean floor and the hands will not suffer.

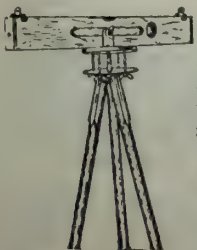
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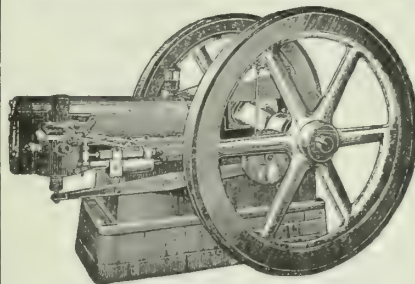
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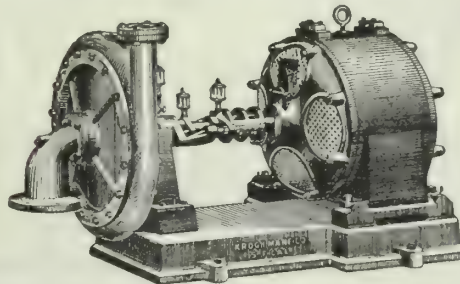
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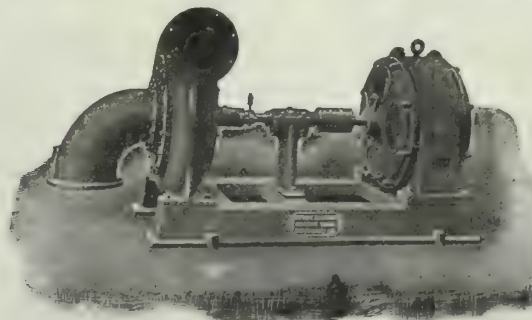
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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, Jan. 10, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday.....	88 1/2 @ 88 3/4	84 1/2 @ 84 1/2
Thursday.....	89 1/2 @ 88 3/4	84 1/2 @ 84 1/2
Friday.....	89 @ 88	84 1/2 @ 84 1/2
Saturday.....	88 3/4 @ 87 3/4	88 3/4 @ 88 3/4
Monday.....	87 3/4 @ 86 3/4	84 1/2 @ 83 3/4
Tuesday.....	87 3/4 @ 86 3/4	84 1/2 @ 83 3/4

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday.....	44 1/2 @ 44 1/2	44 1/2 @ 44 1/2
Thursday.....	44 1/2 @ 44 1/2	45 1/2 @ 44 1/2
Friday.....	45 @ 44 1/2	45 1/2 @ 45
Saturday.....	44 1/2 @ 44 1/2	45 1/2 @ 44 1/2
Monday.....	44 1/2 @ 44 1/2	45 1/2 @ 45
Tuesday.....	45 1/2 @ 44 1/2	45 1/2 @ 45

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	Dec. 1905.	May, 1906.
Wednesday.....	41 @ 41	41 @ 40 3/4
Thursday.....	41 @ 41	41 1/2 @ 41 1/2
Friday.....	41 @ 41	41 1/2 @ 41 1/2
Saturday.....	41 @ 41	40 3/4 @ 40 3/4
Monday.....	41 @ 41	40 3/4 @ 40 3/4
Tuesday.....	41 @ 41	40 @ 39 3/4

Wheat.

The local wheat market remains steady with stocks on hand seemingly adequate to supply all immediate demands. Inasmuch as the greater portion of supply for this market will, necessarily, come from the North this year, on account of the failure of California crops, the main factor which influences this market at present is the matter of transportation facilities. Just at present there seems to be no difficulty in procuring tonnage sufficient to land almost unlimited quantities of wheat in this city, and consequently the difficulty in securing tonnage, which assumed the proportions of a bull element in the market a few weeks ago, is now practically eliminated from the situation. Trade in futures in the local market has been confined mainly to buying and selling on small fluctuations caused by similar movements of the Chicago market. There has been a lack of activity to the speculation since the holidays, but prices have shown only light variations and the average prices for May wheat is now \$1.40 per cental. Just at present the unstable condition of the weather is causing the trade to hold back to some extent. All the latest advices from Chicago seem to indicate that the present condition of the market is full of complications. Logically the preponderance of bear news should indicate a lower level of prices, but actual facts concerning the movements of the wheat market during the past few weeks show that bearish reports have very little bearing on the situation. However, it is undeniable that the foreign situation, financial troubles, uncertainties in Argentine, continued excellent demand in British markets for Manitoba wheat, are all conditions and possibilities which cannot be ignored, and which lend color to the belief that the wheat market has before it a period of activity and strength.

California Milling.....	\$1 42	@ 1 47 1/2
Cal. No. 1 shipping.....	1 40	@ 1 45
Northern Club.....	1 42 1/2	@ 1 43 1/2
Northern Bluestem.....	1 45	@ 1 47 1/2
Northern Red.....	1 35	@ 1 37 1/2

PRICES OF FUTURES.

Tuesday, at the forenoon session of Exchange, May, 1906, wheat ranged from \$1.40@—.

Flour.

There is no change of any consequence in the flour situation since the last report. The holiday demand was about normal, and was filled at about the ruling quotations. It will probably be several weeks before there will be a renewal of activity locally, and the prospects for anything like an active shipping demand seems even more remote. The Chinese boycott situation does not seem to have been relieved any; on the contrary, it seems to have increased in bitterness. There is, however, a fair demand for shipment to Japan, where a large quantity of American flour is being used as a substitute for rice, the crop of the latter having fallen short of what would be necessary in order to supply the wants of the populace. This demand, however, is usually filled from the Northern ports, as California millers are handicapped in the matter of competition for Oriental trade, by the fact that this year's wheat supplies for the local mills must come entirely from the North. The demand for shipment to Central and South American points continues fair, and is about equally divided between San Francisco and the Northern ports.

Patents, California.....	3 @ 4 85
Second Patents, California.....	4 @ 4 60
Straights.....	4 @ 2 25
Superfine No. 1.....	3 50 @ 3 75
Superfine No. 2.....	3 00 @ 3 40
Oregon Bakers'.....	4 15 @ 4 50

Washington Bakers'.....	4 25 @ 4 60
Eastern Patents.....	5 50 @ —

Barley.

The barley market continues firm and prices are without change. There is a good demand for bright lots of spot feed at the appearing quotations, and the scarcity of this grade would indicate that there is no danger of an immediate decline. Off grades are, however, moving slowly and the minimum quotation of \$1.15 is seldom exceeded. May option has sold during the current week as high as \$1.23 on the local stock exchange. Traders are now commencing to turn their attention toward December barley for 1906 delivery, and sales of the past few days have established a price ranging around \$1.04 per cental.

Brewing.....	\$1 22 1/2 @ 1 25
Feed, No. 1.....	1 20 @ 1 22 1/2
Feed, fair to good.....	1 15 @ 1 17 1/2
Chevalier, No. 1 to choice.....	1 25 @ 1 30
Chevalier, common to fair.....	1 20 @ 1 25

Oats.

Trading in the oat market has been rather light, but appearing quotations are being well maintained. Reports from the North indicate that whites and grays are now pretty well cleaned out of first hands, so the arrivals of these varieties are likely to be rather limited from now on, and higher prices may be expected as soon as any appreciable shipping demand springs up. It is rather difficult to make an accurate quotation on black oats, as there is very little of what may be termed good black oats in the market. The price of \$1.70 per cental might be exceeded for a choice lot suitable for seeding purposes, but the bulk of the stock now available would not bring anything like that figure. Red oats move slowly at quotations.

White oats.....	\$1 45 @ 1 60
Black oats.....	1 35 @ 1 70
Red oats.....	1 30 @ 1 60

Corn.

The market has been dull for several days past, but at the present writing there seems to be a little more disposition to trade. Local stocks are light on all varieties quoted, but the general statistical situation would seem to indicate that the present prices are fully high enough. Egyptian corn, in both the white and brown varieties, is firmly held at appearing quotations.

Large White, good to choice.....	\$1 27 1/2 @ 1 30
Large Yellow.....	— @ 1 30
Small Yellow.....	1 50 @ 1 55
Egyptian White.....	1 38 1/2 @ 1 40
Egyptian Brown.....	1 25 @ 1 27 1/2

Rye.

There is very little rye of any description now arriving from the East, and stocks in the hands of local grain men are very light. The price of \$1.52 1/2 is for choice grades only, and includes very little of the Utah crop.

Good to choice.....	\$1 47 1/2 @ 1 52 1/2
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Buckwheat.

There is no noteworthy movement in buckwheat, as stocks are exceptionally light and would seem to indicate that the area devoted to the production of this grain is much smaller than usual. The appearing quotation seems to be about what would be justified for the average of the crop, but could probably be exceeded for choice lots of seed buckwheat.

Good to choice.....	— @ 1 75
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Beans.

There is a scarcity of large white beans and the appearing price of \$2.50 for first-grade beans is being firmly held. In fact, if the same demand as that now ruling continues right along, the expectations of the trade for a 3c. market seem likely to be realized. It is estimated that the 1904 crop of large whites was about 335,000 bags, while the 1905 crop is only 235,000 bags, making a shortage of 100,000 bags for 1905. Small whites are in good demand and in fairly liberal supply. The stocks of Pinks in the hands of jobbers are rather light, and the appearing quotation of \$2 for choice is being well maintained. Only a small portion of the crop has been marketed up to this date, a large portion of the crop having been warehoused on the river. When this is let loose, which will probably be some time before tax day in March, prices will undoubtedly weaken. Red Kidneys and Blackeyes are in rather limited supply, and in the case of the former somewhat firmer in price. Red beans and Limas have advanced, the latter now being held at the high price of \$5. Traders do not seem disposed to buy Limas at this figure, as it is generally conceded to have been a speculative movement which has brought the price up to this figure.

Small White, good to choice.....	\$2 90 @ 3 10
Large White.....	2 10 @ 2 50
Pinks.....	1 75 @ 2 00
Pinks, damaged.....	1 00 @ 1 25
Bayos, good to choice.....	3 30 @ 3 60
Red Kidneys.....	3 50 @ 3 75
Reds.....	3 00 @ 3 10
Limas, good to choice.....	4 75 @ 5 00
Black-eye Beans.....	4 50 @ 4 80

Dried Peas.

The dried pea market is quiet, but steady at quotations. These figures seem to be warranted by the limited stocks available, but trading has been light, as such high prices leave a small margin for speculation. There has been a fair demand for good seed peas of both the quoted varieties and a large amount of Salinas stock was shipped South for use as fertilizer. The small size of the recent marketings even at the present high price shows that there is practically nothing left in first hands, so there is not likely to be any decline in price before the next crop is placed on the market.

Green Peas, California.....	\$2 25 @ 2 40
Niles.....	1 60 @ 1 75

Hops.

The Eastern market is quiet and the same tendency is reflected on the Pacific coast. Business has been done in a slow way, but absolutely no speculative movement has taken place. The latest transaction of any consequence was made January 8, and was for 125 bales of Sonomas at 9c. per lb. Prices on all grades of hops continue as heretofore, and the situation generally would seem to eliminate any possibility of immediate improvement. Some contracting has been done in Sonoma county for a period of from one to three years at an average price of 10 cents.

Medium to fair.....	6 @ 8 1/2
Good brewing.....	8 @ 8 1/2
Prime.....	9 @ 9
Prime to choice.....	9 @ 10

Wool.

There is some improvement in the Boston market for wools suitable for worsteds and some good-sized transactions in California Spring wools have been reported, but on all wools of the fall clip, of which the stock now on the Coast consists entirely, there is practically no demand. No trading is being done by local jobbers for the reason that they regard the prices named by the growers on the fall clip as prohibitive of anything in the nature of speculative buying. It is probable from the estimated size of the stocks now in first hands that some concessions will have to be made by the growers before the fall clip can be moved. An estimate emanating from a jobbing source places the remaining stocks in the hands of growers at between 800,000 and 1,000,000 pounds.

FALL.

Humboldt and Mendocino.....	15 @ 16 1/2
Northern, free.....	14 1/2 @ 16
Northern, defective.....	11 @ 13
Middle County, free.....	10 @ 14
Middle County, defective.....	10 @ 13
San Joaquin and Southern, free.....	9 @ 12
San Joaquin and Southern, defective.....	8 @ 10

SPRING.

Oregon, valley.....	23 @ 25
Eastern Oregon.....	15 @ 17
Nevada.....	15 @ 19

Hay and Straw.

Shipments of hay for the week just ended amount to 2,450 tons, which is somewhat below the average range for the past month. This lessening in arrivals, coming at a time when the car situation is comparatively easy, is unusual. There is yet a large quantity of the crop in first hands, but owing to rather unpromising conditions, many farmers continue to hold their hay rather than sell at present quotations. There is a growing demand for hay throughout all interior sections, and many dealers and warehousemen are busy disposing of their holdings at points other than San Francisco. Large quantities of hay are also being unloaded from the various warehouses and shipped to interior points every day. Choice hay is rather scarce and high and the medium grades are in ample supply. Alfalfa continues in good demand and straw shows a tendency to drag somewhat owing to the dry weather, a wet winter always necessitating the use of more of this latter article.

Wheat, choice.....	\$14 00 @ 16 00
Wheat, other grades.....	8 00 @ 13 50
Wheat and Oat.....	9 00 @ 12 50
Tame Oat, fair to choice.....	8 00 @ 12 00
Wild Oat.....	8 00 @ 9 50
Barley.....	7 00 @ 9 50
Clover.....	6 00 @ 9 00
Alfalfa.....	9 00 @ 11 50
Stock hay.....	7 00 @ 8 00
Compressed.....	10 00 @ 13 00
Straw, 3/4 bale.....	30 @ 50

Millstuffs.

The lack of rain and the consequent dependence of stockmen on feedstuffs for their cattle have caused a firmness in the tone of the market which could not otherwise be felt at this season of the year. Bran is a shade firmer in price, though receipts have been quite liberal. Other varieties of millstuffs are being steadily held at appearing quotations and altogether the market is in excellent shape, as a heavy rain right now could not affect prices materially for several weeks.

Alfalfa Meal, 1/2 ton.....	\$21 00 @ 22 00
Bran, 1/2 ton.....	19 50 @ 20 50
Middlings.....	27 50 @ 29 00
Shorts, Oregon.....	21 00 @ 22 00

Barley, Rolled, choice.....	26 00 @ 27 00
Cornmeal.....	29 50 @ 30 50
Cracked Corn.....	30 00 @ 31 00
Oilcake Meal.....	39 00 @ 40 00
Cocoanut cake or meal.....	24 50 @ 25 50

Seeds.

Some signs of reviving animation have been shown by the seed market during the week, but no particular activity is to be expected before another month. A week's rain would, however, stimulate business and cause a demand to spring up sooner than that date. Hemp seed is scarce and shows an advance. The market contains a liberal supply of alfalfa seed, the lack of rain having caused holders to make some concessions in price in order to clean up stocks. It is reported that there have been offerings in carload lots at primary points at 11 1/2c. Rains would probably cause a reduction of stocks at this point and an advance in price.

Alfalfa.....	\$11 00 @ 14 00
Flax.....	— @ —
Mustard, Yellow.....	3 50 @ 3 75
Mustard, Trieste.....	4 50 @ 4 75

Canary.....	6 1/2 @ 7
Rape.....	2 1/2 @ 3
Hemp.....	— @ 5
Timothy.....	5 1/2 @ 6

Honey.

Receipts of honey have been of fair size, and seem to indicate that apiarists are now more willing to conform to the ideas of buyers regarding prices. The price of 5c. for extracted white is, however, considered a jobbing figure, and can scarcely be realized on round lots.

Extracted, Water White.....	4 1/2 @ 5
Extracted, White.....	4 1/2 @ 4 1/2
Extracted, Light Amber.....	4 @ 4 1/2
Extracted, Amber.....	3 1/2 @ 4
Extracted, Dark Amber.....	3 @ 3 1/2
White Comb, 1-frames.....	9 @ 10
Amber Comb.....	7 @ 8

Beeswax.

The market continues firm on all grades of wax, and stocks in first hands are well cleaned up. An occasional lot of dark wax comes into this market and is quickly picked up at the price of 24c to 25c.

Good to choice, light 1/2 D.....	25 @ 26
Dark.....	24 @ 25

Live Stock and Meats.

The market for beef continues steady though not active, prices remaining quotably unchanged. Mutton, lamb and veal are all in good demand, and the market is well supplied at these figures. Hogs are firmer in price and receipts rather light.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net 1/2 D.....	5 @ 5 1/2
Beef, 2nd quality.....	4 1/2 @ 5
Beef, 3rd quality.....	3 1/2 @ 4
Mutton—ewes, 8@9c; weathers.....	9 1/2 @ 10
Hogs, hard grain, 150 to 250 lbs.....	6 @ 6 1/2
Hogs, large, hard, over 250 pounds.....	5 1/2 @ 6
Hogs, small, fat, over 150 lbs.....	— @ 6
Veal, large, 1/2 D.....	6 @ 7 1/2
Veal, small, 1/2 D.....	8 @ 9
Lamb, spring, 1/2 D.....	10 @ 11

Hides, Skins and Tallow.

The Eastern hide market has hardly opened for the new season yet and prices are a little hard to fix. The quality of the present take-off is very poor and but few sound hides are offering. California stock now offering will hardly bring the top quotations, though sound stock is still held at former prices.

Nothing but select hides, clean and trimmed, will bring full figures. Culls of all kinds, either from grubs, cuts, hair slips, side brands or murrain, are not always readily placed at the lower figures.

	Sound.	Culls.
Heavy Steers, over 56 lbs.....	13 @ 12	12 @ 11
Medium Steers, 48 to 56 lbs.....	12 @ 11	11 @ 10 1/2
Light Steers, under 48 lbs.....	11 1/2 @ 10 1/2	10 1/2 @ 10
Heavy Cow Hides, over 50 lbs.....	11 1/2 @ 10 1/2	10 1/2 @ 10
Light Cow Hides, under 50 lbs.....	11 1/2 @ 10 1/2	10 1/2 @ 10
Stags.....	7 @ 8	7 @ 8
Wet Salted Kip.....	10 1/2 @ 11	10 @ 11
Wet Salted Veal.....	12 @ 13	11 @ 12
Wet Salted Calf.....	13 @ 14	12 @ 13
Dry Hides.....	19 @ 19	19 @ 19
Dry Kip and Veal, 11 to 16 lbs.....	17 @ 15	15 @ 15
Dry Calf, under 4 lbs.....	20 @ 21	19 @ 19
Pelts, long wool, 1/2 skin.....	150 @ 200	100 @ 125
Pelts, medium, 1/2 skin.....	90 @ 125	60 @ 80
Pelts, short wool, 1/2 skin.....	60 @ 80	20 @ 50
Pelts, shearing, 1/2 skin.....	30 @ 50	20 @ 50
Horse Hides, salted, large prime, each.....	3 00 @ 3 25	2 75 @ 3 00
Horse Hides, salted, small.....	2 25 @ 2 50	1 75 @ 2 00
Horse Hides, dry, large.....	1 75 @ 2 00	1 50 @ 1 75
Horse Hides, dry, medium.....	1 50 @ 1 75	1 00 @ 1 25
Horse Hides, dry, small.....	1 00 @ 1 25	— @ 1 00
Tallow, good quality.....	4 @ 4 1/2	3 1/2 @ 3 1/2
Tallow, poorer grades.....	3 1/2 @ 3 1/2	— @ 3 1/2

Bags and Bagging.

There is practically nothing of importance to note in the bag situation, stocks in the hands of jobbers having been nearly exhausted for some time. Calcutta futures are said to be steady and quotations for June bags are from 6 1/2 @ 6 3/4c.

Bean Bags.....	6 1/2 @ —
Fruit Sacks, cotton, No. 1, 7 1/2 @ 8 1/4; No. 2.....	6 1/2 @ 7 1/2
Fruit Sacks, jute, as to quality.....	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 22x36, spot.....	7 1/2 @ 7 1/2
Wool Sacks, 4-B.....	— @ 30
Wool Sacks, 3 1/2-B.....	— @ 34

Poultry.

With four cars of Eastern poultry in

the market, and with some held over from last week, it seems probable that the market will be somewhat easier on all grades except large broilers and fryers for which there is an exceptional demand at good prices. Large fat hens are also wanted in the local market. The turkey market remains nominal. Live turkeys move slowly and only limited quantities of fancy dressed stock is wanted at the prices of 23 to 25 cents.

Turkeys, choice Young, # lb.	18	@	20
Turkeys, live gobblers, # lb.	18	@	20
Turkeys, live hens # lb.	18	@	20
Hens, California, # dozen.	4 50	@	5 50
Hens, large, # dozen.	5 50	@	6 50
Roosters, old, # dozen.	4 50	@	5 00
Roosters, young (full-grown), # dozen.	6 00	@	7 00
Fryers, # dozen.	5 50	@	6 00
Broilers, large, # dozen.	4 50	@	5 00
Broilers, small to medium, # dozen.	2 00	@	3 00
Ducks, old, # dozen.	5 00	@	6 00
Ducks, young, # dozen.	6 00	@	7 00
Geese, # pair.	2 00	@	2 50
Goslings, # pair.	2 00	@	2 50
Pigeons, old, # dozen.	2 00	@	1 25
Pigeons, young, # dozen.	2 00	@	2 25

Butter.

The butter market is steady at quotations—a shade under those of last week for fancy creamery stock. Receipts have been fairly liberal, and owing to the cold weather, the quality is good. The reductions for the past few weeks in the price of select stock have caused cold storage stock to become somewhat neglected.

Creamery, extras, # lb.	—	@	30
Creamery, firsts, # lb.	—	@	27½
Creamery, seconds, # lb.	21	@	25
Dairy, select, # lb.	20	@	25
Dairy, firsts, # lb.	22	@	25
Dairy, seconds, # lb.	20	@	22
California storage, # lb.	24	@	26
Mixed Store, # lb.	—	@	20

Cheese.

A stronger market on fancy California cheese prevails this week and the appearing quotation of 15c. is being well maintained. Other grades are steady at quotations.

California, fancy flat, new, # lb.	14	@	15
California, good to choice, # lb.	—	@	13
California, fair to good, # lb.	11	@	12½
California, "Young Americas", # lb.	13	@	14
Eastern, new, # lb.	16	@	17

Eggs.

The egg market continues to decline, and it is now apparent that the movement which has kept the prices soaring during the past few weeks was of a speculative nature. The top price at which eggs were sold on the local Dairy Produce Exchange during the current week was 32c. this figure being only for the most select grade. The intermediate and off grades are having a tendency to accumulate at these figures, and a further reduction is probable.

California, select, large, white and fresh, # lb.	—	@	32
California, select, irregular color & size, # lb.	27½	@	30
California, good to choice store, # lb.	—	@	27½
Eastern firsts, # lb.	23	@	26
Eastern seconds, # lb.	19	@	20

Potatoes.

The condition of the potato market is, in substance, what it has been since the falling off of the Southern and Southwestern shipping demand, which promised for a time to keep the supply of cheap potatoes well reduced. The only change at this writing is a possible accentuation of previous conditions. Fancy stock is harder to procure, and prices are higher, while the demand for cheap stock is almost nothing and the wharves are fairly groaning under the burden of it.

River Burbanks, # cental.	50	@	70
Salinas Burbanks, # cental.	1 25	@	1 60
Oregon Burbanks, # cental.	75	@	1 15
Tomatoes, # cental.	80	@	90
Sweet Potatoes, # cental.	1 25	@	1 50

Vegetables.

The market is in good shape, but stocks of nearly all the varieties now quoted are very limited, and a great deal of such stock as is now appearing shows up in somewhat damaged condition, owing to recent frosts and rains in the southern part of the State, whence most of the supplies for this market are now coming. The market was very short of such vegetables as string beans and green peas, and extremely high prices are asked for the same. Peppers of both the Bell and green varieties are now out of the market entirely, and cucumbers are in scarcely sufficient supply to justify a quotation. The onion market remains in good shape, and fairly large receipts are coming in from Oregon, showing up extremely well as to quality.

Cauliflower, # dozen.	75	@	1 00
Beans, String, # lb.	—	@	17
Cabbage, choice garden, # 100 lbs.	1 00	@	1 25
Egg Plant, # lb.	10	@	15
Garlic, # lb.	5	@	6
Onions, Oregon, # ctl.	1 30	@	1 40
Onions, New Yellow Danvers, # ctl.	1 25	@	1 40
Onions, Australian Brown, # ctl.	1 25	@	1 40
Peas, Green, # lb.	—	@	12½
Tomatoes, # box or crate.	1 50	@	1 75
Artichokes, # doz.	50	@	1 25
Carrots, # sack.	65	@	75
Hubbard Squash, # ton.	—	@	20 00

NOTE.—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top, with hand holes in the ends, and weigh when filled from 50@60 lbs. gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 35 lbs. gross.

Fresh Fruits.

The past week has seen the supplies of nearly all kinds of fresh fruits exhausted. Apples and pears of the Winter Nellis variety are the only deciduous fruits remaining in the fresh fruit market, and, in the case of the pears, the greater portion of these is cold-storage stock. The demand for apples has been fair and prices are being well maintained. Winter Nellis pears are firmly held at \$2.75 per box, for choice grades. There are some apples in the local market which will not bring the minimum quotations of 75c. for good to choice, but these are either wormy or otherwise damaged and are in practically no demand whatever.

Apples, choice to select, # 50-lb. box	1 25	@	1 75
Apples, good to choice, # 50-lb. box	75	@	1 00
Pears, Winter Nellis, # 50-lb. box	2 00	@	2 75

Dried Fruits.

The market is quiet but steady on all kinds of dried fruits. Apples are firmer and in rather light supply, and while there is no immediate heavy demand expected, the shortage of the Eastern crop and the generally strong position of all dried fruits lend an unusually strong undertone to the situation. Stocks of prunes in first hands have been practically exhausted for some time, and the estimated supply on the Pacific Coast in all hands is smaller than it has been for a number of years. On the strength of this unusual statistical situation, jobbers are holding their stocks at an advance of ½c. per pound over last week's quotations and predictions of further advances are many.

EVAPORATED OR BLEACHED.

Apples, 50-lb boxes, rings, pressed, good to choice, # lb.	8	@	4½
Apples, extra choice to fancy, 50-lb boxes, # lb.	8½	@	9½
Apricots, Royal, fancy, # lb.	7½	@	8½
Apricots, Royal, # lb.	5½	@	6½
Figs, 10-lb box, 1-lb cartons, # lb.	8	@	8½
Nectarines, White and Stanwick, # lb.	8	@	8½
Nectarines, red, # lb.	—	@	8
Peaches, unpeeled, good to choice, # lb.	8½	@	8½
Peaches, unpeeled, fancy to extra fancy, # lb.	9	@	9½
Pears, standard, # lb.	—	@	8½
Pears, choice to fancy, # lb.	10	@	12
Plums, Black, pitted, # lb.	5½	@	6½
Plums, Red, pitted, # lb.	7	@	8
Plums, Yellow, pitted, # lb.	6	@	8
Prunes, Silver, good to fancy, # lb.	5½	@	8½
Prunes, in bags, 4 sizes, —@—c; 40-50s, 5½@5½c; 50-60s, 4½@4½c; 60-70s, 4@4c; 70-80s, 3½@3½c; 80-90s, 3@3c; 90-100s, 2½@2½c; small, 2½@2½c.	—	@	—

COMMON SUN-DRIED.

Apples, sliced, # lb.	5	@	5½
Apples, quartered, # lb.	4½	@	5½
Figs, White, in bulk, # lb.	2½	@	3
Figs, Black, # lb.	2½	@	3

Raisins.

It is almost impossible to name a figure on raisins at this writing, which will in any way conform to the requirements of the situation. Just at present there seems to be an uncertainty regarding the proprietorship of the raisins now on hand on the Pacific Coast. A transaction was supposed to have been consummated last week by which the Packers' Association came into possession of the entire remaining stock in the hands of the Raisin Grower's Company, including about 12,000 pounds. The packers have not yet named any prices on their newly acquired stock, and they gave as the reason for their failure to do so the fact that they are not yet legitimately in possession of the goods. So far as trade is concerned, the market is practically nominal; no demand of any consequence having sprung up since the holidays.

(Fresno delivery except otherwise specified.)			
London Layers, 2-crown, 20-lb box	1 40	@	—
London Layers, 3-crown, 20-lb box	1 50	@	—
Fancy Clusters, 4-crown, 20-lb box	2 00	@	—
Dehesas, 20-lb box	2 50	@	—
Imperial, 20-lb box	3 00	@	—
2-Crown Standard loose Muscatel	—	@	c
3-Crown Standard	—	@	c
4-Crown Standard	—	@	c
Seedless Thompsons, 50-lb boxes	—	@	c
Seedless Sultanas	—	@	c
Fancy, 16-oz. Seeded	—	@	c
Choice, 16-oz. Seeded	—	@	c
Fancy, 12-oz. Seeded	—	@	c
Choice, 12-oz. Seeded	—	@	c

Citrus Fruits.

Oranges are firm for good stock only, inferior grades having a tendency to accumulate at these prices. Lemons are weak and prices lower. There is a fairly active demand for grape fruit, but most of the arrivals have been of small size, and on such, the appearing quotations cannot be excelled. Large grape fruit would readily bring from \$2 to \$2.50 per box. Limes are steady at appearing quotations.

Oranges, fancy	2 00	@	3 00
Oranges, choice	1 25	@	1 75
Oranges, standard	1 00	@	1 40
Oranges, Seedlings	65	@	1 10
Lemons, California, fancy, # box	1 50	@	2 00
Lemons, California, good to choice, # box	1 00	@	1 25
Lemons, California, standards, # box	60	@	75
Grape Fruit, # box, new	1 00	@	1 50
Limes, # box	3 00	@	4 00

Nuts.

As is usual after the filling of the holiday demand, the market has weakened, i. e., with regard to demand. This is not

WOOL SALE.

The Century Mercantile Company is conducting regular sales at its warehouse. This interests all growers. Full particulars by mail. Office, 14 Sansome St., San Francisco.

true of prices, however, the same prices as those named by the growers earlier in the season still holding good. Many predictions have been made, concerning the almond market, and all to the effect that prices would decline after the holidays, but, notwithstanding the predictions, and the figures set forth in their justification, prices remain unchanged. Walnuts are in very light supply and stocks remaining in first hands are unusually light, so there is small probability of any decline in price.

Peanuts, fair to prime	4½@5½
Cal. Walnuts, No. 1 soft shell	@13
Cal. Walnuts, No. 2 soft shell	@9
Cal. Walnuts, No. 1 hard shell	@12½
Cal. Walnuts, No. 2 hard shell	@8½
Almonds, IXL, # lb.	11½@12½
Almonds, Ne Plus Ultra, # lb.	11@12
Almonds, Nonpareil, # lb.	11@13
Almonds, Langedoc, # lb.	8½@—
Almonds, Golden State, # lb.	8@—
Hard Shell, # lb.	5@—

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From Grass Valley Grange.

TO THE EDITOR: We are so pleased to see a nice letter from the State Secretary again. As that 'Committee on Press' don't materialize—anyway, she is the one who is in a position to know things.

We have not seen any accounts of election of officers in the PACIFIC RURAL PRESS, so are wondering if we are all in the same boat. Grass Valley, No. 256, has held no election. We cannot get enough members on hand at one time to fill the offices. We decided at our first meeting in December to omit next meeting night, as it came the night before Christmas Eve, then to call one in January to discuss the matter and see what can be done.

The State Lecturer, J. W. Webb, in his remarks on December 30 in the PACIFIC RURAL PRESS, makes me think of writing this—hoping for some advice or assistance. A few of us hate to give the Grange up, but the most of them take no interest. We are getting old; the duties we have cheerfully done for a good many years are growing hard for us, and we do not feel so ambitious as of yore.

This being more of a mining community than a farming makes it difficult, perhaps, to have an up-to-date Grange. There are a good many fruit raisers, market gardeners, etc., that should be interested in a farmers' organization, but some way we cannot get them interested or fail to find the right ones.

An interesting Institute was held under our auspices on December 20—and we furnished hall, also programmes, of course—so it seems that we do some good in the world for those outside our gates. I want the Grange Editor to make a note of it, as he wants such things, he said.

D. T. Fowler was with us as leader—and a born one he is—his wife coming in a good second, and B. E. Hutchinson (the 'right man in the right place') seeming to be a practical, all round, well informed man on the raising, care and marketing of fruit. The weather was quite disagreeable, otherwise we should have had much larger attendance. One can hardly expect people to drive several miles through snow and sleet, even to hear free lectures, although we do that same ourselves, not living on a street car line or having other conveniences than our own horse and surrey. They could come, if their hearts were in it, and a little snow or rain would not discourage them.

To the Worthy State Lecturer I would say, his remarks about Subordinate Lecturers are, alas, too true. We have been unfortunate in our choice it seems for the last few years, although it seemed we elected our best at the time but were disappointed or mistaken in them. We could not persuade our Lecturer to send his name for the *Grange and Home* when it was first launched on the waves, to our chagrin, and he seemed uninterested. The Executive Committee soon informed us that the official organ was changed to the PACIFIC RURAL PRESS, so now we don't propose to change again to please anybody.

MRS. R. S. TWITCHELL,
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Plums and Prunes

are again coming to the front. Prunes have paid well this year and their ready sale shows what can be done with a fruit so universally in demand, when the price is right and the quality above criticism.

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- XII. Pruning Orchard Trees and Thinning Fruit.
- XIII. Cultivation.
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THE DAIRY.

How to Secure Sanitary Milk.

By C. M. HARING, Instructor in Veterinary Science and Bacteriology to the University of California, at the State Farmers' Institute.

A crusade for pure milk is going on throughout the State and everyone ought to wish it Godspeed.

This is a movement of importance in every household. In families where there are young children, milk is a necessity of life, and the problem of how to secure a wholesome supply, is a vital one. The difficulties of the problem vary as widely as do the conditions under which families live. For instance, to the customers of the city milk company this is usually a question as to the thoroughness and conscientiousness of the inspection of the Board of Health. To the customer of the village milkman, it is a delicate personal problem, and to the creameryman or the dairyman himself, it is a question of knowledge, care and decency.

Sanitary milk is not capable of transmitting or directly producing disease in human beings consuming it. Sanitary milk means more than milk produced by healthy cows; more than unadulterated milk, pure milk so-called; or even more than milk of a low bacterial count. (The low count signifies that it is free from dirt.) It is possible for milk to fulfill all of these conditions and still fall short of wholesomeness. Milk from healthy cows and unadulterated may, by unsanitary handling, become so tainted that even pasteurization or sterilization will not render it a harmless food for infants. Unlike many other foods, unsanitary milk can not usually be detected by eye and taste. Good milk is the most wholesome diet for young children, but it is to them that the chief dangers of unsanitary milk are fatal.

A principle recognized by efficient municipal Boards of Health is, that a rise in the infant mortality without a proportionate rise in the total mortality usually indicates unsanitary conditions in the milk supply.

Milk is more often the means of transmitting disease than any other food. This does not imply that clean, fresh milk from healthy cows is anything but the best diet. The dairyman, or anyone else, who takes the stand that disagreeable facts, regarding the common transmission of disease by milk, ought not to be brought to the attention of the public because, as it has been said, "it spoils the people's appetite for milk and hurts the business," ought to lose the confidence of his customers. The public needs education right along this line. "Sanitary education is better than sanitary legislation" and informing the people of unsanitary conditions in the milk supply will help the right kind of dairyman every time.

Typhoid fever, diphtheria, scarlet fever and tuberculosis are diseases commonly transmitted in milk. I had rather

live in a room with a typhoid fever patient than to drink a glass of milk from a dairy where I knew there to be a case of this disease. That an average milker can be an attendant to a typhoid patient and escape transmitting the virus to the milk in milking, seems unlikely.

Milk from tuberculosis cows is not sanitary milk. The argument as to whether there are two distinct varieties of the germ, or whether the deficiency in virulence of the germs from human sources is due to the different conditions under which they have grown, does not affect the truth of the above statement. The best authorities hold that tuberculosis of infants may be produced by their drinking milk from tuberculosis cows.

The milk from diseased cows, whatever the trouble, is not desirable. Udder troubles especially are to be guarded against. There is a great temptation, particularly at this time of the year, to use every drop of milk that is produced in the dairy. Milk from pretty badly caked, or otherwise affected udders, can be used without its showing when diluted with the milk of several other cows.

The contamination of milk with large quantities of manure and dirt, during milking or transportation, renders it unsanitary.

The shower of manure particles, hair, etc., which usually fall into the milk-pail during milking, can be prevented by grooming the cow and by dampening the udder immediately before milking. The use of a centrifugal clarifier is not to be recommended. Pasteurization, as a regular practice, is not to be recommended. The thing to do is to prevent the dirt and germs from getting into the milk in the first place. Milking pails constructed so as to expose as little opening as possible for the reception of dust, aid in minimizing the contamination by fecal matter. In a large herd all this necessitates a good deal of extra labor and the employment of more help, and hence means an added cost to the milk.

As long as the people are unwise enough to purchase their milk entirely on the basis of cheapness and the percent of butter-fat, they must expect to get a dirty product. This is inevitable and cannot be entirely remedied by the most energetic Board of Health. The personality of the milkers has as much to do with the sanitary condition of the milk as anything, and it is a fact to be deprecated that the average union milker is anything but a neat and savory individual. The non-union milker, on the average, is even more slovenly. The fault is not entirely that of the milkers, but in the way that they are often treated. I have seen many dairies where the conditions under which the cows were living were far more sanitary than those imposed upon the milkers.

It is desirable that milk be quickly strained, cooled and put up in sterilized bottles. Once in a bottle and kept cool the milk is protected from further pollution.

Dr. S. D. Belcher, in her book entitled 'Clean Milk,' states a good point in this connection. "In hotels, restaurants, and other public eating places, whose cuisine and service is otherwise faultless, the manner of serving milk is antiquated. Whereas in families and households, bottled milk has long been in use, there still remains in hotels and restaurants the unclean practice of dipping milk from large receptacles. All the thought and attention lavished on other foods is denied to milk which in fact requires the most careful protection. Just as the wine and finer grades of beer and ale are brought to the table in sealed bottles, so also should milk, and brands of milk of known reputation for cleanliness. The hotel-keeper has no excuse for not furnishing milk in this manner, as many dealers are able to supply him with pint or quart jars, which have been sealed at the dairy, and the question of cost is not to be considered. At most it is only a fraction more than the present objectionable method calls for and the advance in cleanliness is imperatively needed. Certainly the patrons of expensive hotels are entitled to

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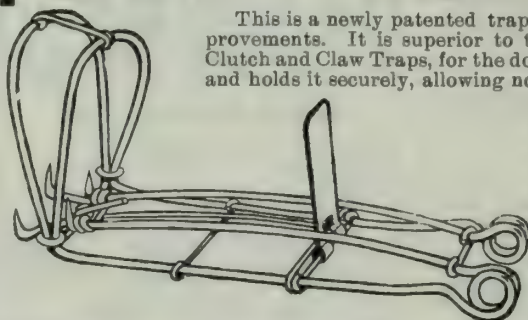
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every refinement in the service of their food, and a bottle of milk, known to have been produced and delivered with a regard for cleanliness, is no longer a luxury."

Dr. N. K. Foster, secretary of the California State Board of Health says, in the October, 1905, bulletin of that bureau: "Milk is a necessary article of diet and should be furnished pure. It can be, but it depends in no small measure upon the consumer. The producing and selling of milk are commercial, as much as that of flour or cloth and are governed by the same laws. If one demands a good article he must pay for it. Cheap flour will be made from cheap dirty wheat, and cheap milk will be supplied from poor cows kept in cheap and unsanitary surroundings, and it will be served in dirty containers. To have the corrals clean, the milk-shed whitewashed and free from dust and dirt, the milkers dressed in freshly washed suits, the containers cleaned with steam, and the milk-house free from flies and odors requires an outlay of money for which the owner must get return. His milk costs more to produce, and therefore he must get a better price. Consumers too often demand cheap milk, and, getting it, find fault that it is poor and soon spoils. This forces the producer to use preservatives to keep the cheap milk sweet—a proceeding entirely unnecessary if the milk has been kept clean. If consumers demand good milk they can it, but it will cost more money."

"In every city can be found some dairyman who will be willing to furnish pure and clean milk for a reasonable advance in price. The Oakland Home Club is getting such a milk, the dairyman agreeing to conform to the requirements of the club, which are those recommended by the United States Bureau of Animal Industry. The dairy is inspected and the cows tested as often as necessary, and the examination of the milk is made frequently. The limit of bacteria is placed at 10,000, but has never come over 3,000 germs, while the ordinary dairyman's milk often goes to 500,000 or 1,000,000. This is the difference between pure milk, which is a nourishing food, and a filthy solution, which is the cause of much disease."

It is a pleasure to say that the dairy which has conformed to the rules of the Home Club is proving a financial success and the business has so enlarged that they are now sending certified milk to San Francisco. Any other dairy in this part of the State can have the certificate of the Oakland Home Club, provided they come up to the requirements, but as yet none have cared to do so. The plan adopted by the Home Club is essentially that recommended in the 17th Annual Report of the Bureau of Animal Industry—1900; page 158, Market Milk: A plan for its Improvement, by R. A. Pearson, M. S. There are few large cities in the East that do not have an abundant and reasonably cheap supply of high-grade certified milk. "Laws will always be necessary to protect the public against themselves and unscrupulous producers and should be strictly enforced; but a recognition by the customers that pure milk is worth more than impure is also necessary."

The care of the milk at home is also an important factor. The milk-pan is sometimes the last dish washed and, without scalding, is wiped on a towel that has done service for all the other dishes and, the milk having been poured in, it is set where flies could take a drink and mice, occasionally, refresh themselves from it. The careless maid may also leave it on the table or shelf while she sweeps the floor, and it catches the dust filled with all kinds of unquestionable filth. The pan should be thoroughly washed with soap and warm water and scalded with boiling water and dried with a clean towel. After receiving the milk one should protect it from contaminating influence of animals, insects or dirt, for the dirt allowed to enter after the milk has been received at the house it is as bad as that entering it before. Buy pure, clean milk, and keep it clean and much sickness of children will be prevented.

Transfers of Holstein Friesians.

Recorded sales of registered Holstein Friesian cattle in California, reported for the PACIFIC RURAL PRESS by F. L. Houghton, Brattleboro, Vt., secretary of the Holstein Friesian Association of America:

COWS.

Autumn Bud, Ozro Mitchell to R. F. Guerin, Visalia.
Nola Beryl Wayne, E. G. Wharton to W. I. Burnett, Tulare.

BULLS.

Agent Royal of Obispo, Chas. J. Welch to Oakland Sanitary Dairy Co., Oakland.
De Kol Mercedes Aaggie, R. T. Brooks to G. W. Mills, Tulare.

HORTICULTURE.

Care in Planting Peaches.

TO THE EDITOR: The fruit crops of our State have been exceptionally profitable during the year now drawing to a close. Especially has this been the case with certain varieties of peaches.

As a natural consequence there is a heavy demand on the nurseries for these varieties, and prices are ranging high. It is useless to attempt to induce a practical grower in any of our orchard counties to plant anything but Muir and Lovell peaches for drying purposes, or Phillips, Tuscan, Orange and other California clings for canning. But there are always novices in orchard planting who do not know the relative value of different varieties and are willing to accept something else which they think is nearly as good, because these can be had from the East at a lower price.

Now the fact is, there is scarcely a variety of peaches in any of the Eastern nurseries that is wanted by any of the older orchardists of our State who know the value of our native strains. Notwithstanding these facts, there are communities in our peerless fruit State in which these Eastern trees will be brought in car lots this season. This practice of bringing Eastern peach trees to California should be condemned by all who have an interest in our fruit industry. The dreaded 'rosette' and 'yellows' are liable to be introduced. The larvae of borers will come in spite of all precautions, and from past observations it seems impossible to get all varieties true to the name from the East.

Only a few years ago conditions were similar to those of the present, and there was an influx of peach trees from Nebraska, Kansas, Missouri and Alabama. I know of several orchards of these trees, but I do not know of one that is not badly mixed and some have not a single variety that the labels represented, and are practically worthless in a commercial way. This furnished grounds for complaints and threats of suits for damages against some of the vendors of these trees, and it would seem strange now if these same vendors could afford to repeat their folly.

There doubtless are many Eastern nurserymen who are just as honest and careful as any on the Pacific coast. Some on either side of the Rockies may be honest for policy sake only. Policy alone would cause him to keep things straight around home, but it might not prevent him from mixing or substituting in order to fill an otherwise impossible order, when his customer is two thousand miles away and it is the last order from him he expects to get. There might easily be a difference of from fifty to one hundred dollars per acre per annum in favor of our Muirs and Lovells as compared with some other varieties which are planted for the same purpose. This is not an extravagant estimate, in view of the fact that the income from many orchards has been above the two-hundred-dollar mark the past season. If such varieties as are wanted could not be had at any price, it would be far better to defer planting a year or two than to accept any substitute. Competition in fruit growing will be great. The discrimination by packers and canners will be more definite as to grade and quality. Good peach land in ideal peach climate is limited. Make the best of the situation. Plant only the best.

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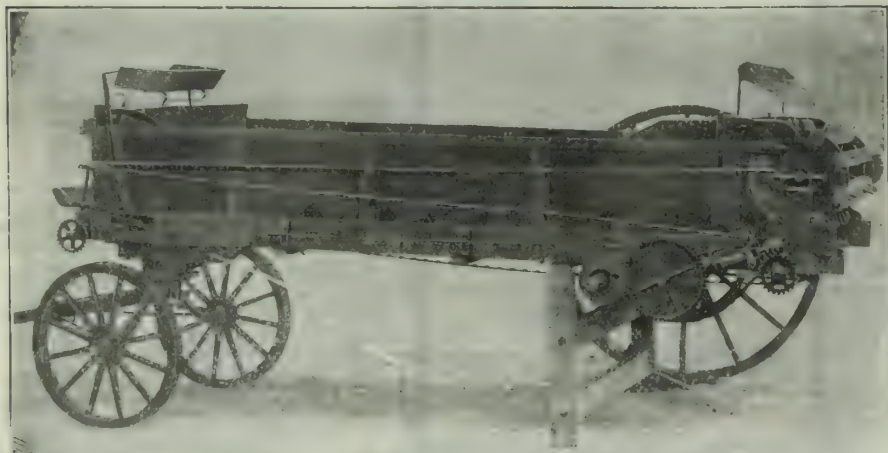
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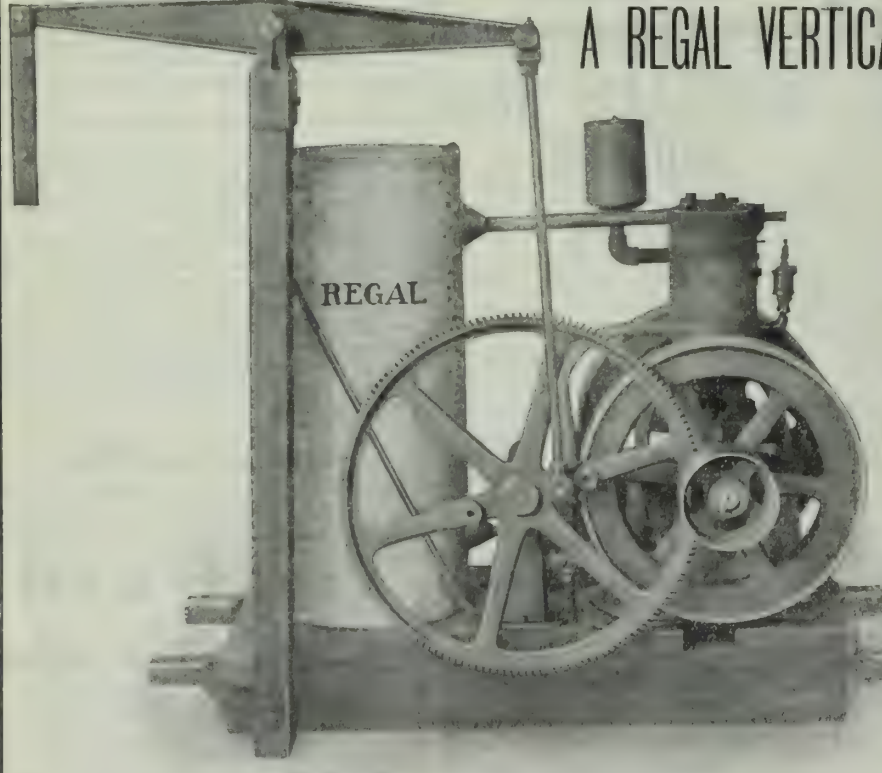
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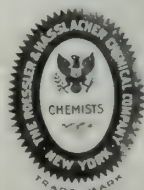
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THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 3.

SAN FRANCISCO, SATURDAY, JANUARY 20, 1906.

THIRTY-FIFTH YEAR.
OFFICE: 330 MARKET ST.

In the Southern Orange Belt.

Written for the PACIFIC RURAL PRESS by MR. WM. M. BRISTOL of East Highlands.

It has been said that California is as spotted as a coach-dog. The simile was first used, doubtless, in connection with the striking diversity of soil, but it is equally applicable to the variegated climate. Roughly speaking, the spots may be said to represent the innumerable valleys which form the great State, while the intervening spaces stand for the eternal hills and mountains which divide them.

To a person accustomed to the uniform conditions existing over great stretches of the middle West, the sharp definitions of the California orange-growing districts are interesting and peculiar, and even within the districts where oranges will grow, the lines must again be drawn around the areas where they can be grown with profit, until on a map of the United States these spots would appear as a small constellation of minute pencil dots.

The accompanying illustration shows one of these little patches. East Highlands, in San Bernardino county, is an irregular triangle about one and a half by three miles in extent and contains about 1500 acres. Ninety-eight per cent of this is planted to citrus fruits, of which more than three-fourths are Navel oranges, the remainder being an assortment of varieties and lemons. From these figures it may be inferred that this is one of the spots particularly adapted to the Navel orange—and so it is. A peculiarly favorable combination of conditions exists. The high mesa of reddish gravelly loam slopes to the south and is protected on the north by the San Bernardino mountains, Mt. Harrison being its immediate guardian. The



The East Highlands Citrus District in San Bernardino County, California.

Pacific is 50 miles away, but there is no intervening range to break or divert the sea breeze, which rolls in every day through the summer, shorn of its surplus moisture because of the distance it has traveled. With the going down of the sun the direction of the air currents is reversed and the pure, dry atmos-

phere of the mountains and desert, flowing down through the groves during the night, prevents the ingress of the ocean fogs and dampness, so conducive to scale and other pests. So far the district has had no occasion to spray or fumigate, and the coal basket and oil pot for frost protection are equally unfam-

iliar. The elevation of the orchards shown ranges from 1,300 feet at the viewpoint to 1,700 feet in the background, the mountain being 4,700 and the main range beyond it 6,000. It should be remarked, however, that freedom from damaging frosts is not dependent upon altitude above sea level, but rather upon relative local elevation. Half a mile below the viewpoint no attempt is made to grow oranges—and this abrupt and inflexible limitation exists in all citrus-growing districts. This is but another way of saying that the area in California where all conditions are favorable for orange growing is limited; in fact, if all such land were now planted and all existing orchards in unfavorable localities were pulled out, the acreage would not be materially greater than at present. Within the past two years a large percentage of the orange trees planted have been the Valencia Late—a variety which goes to market throughout all that part of the year when the Navel does not. Taking account of the Navel trees which have been budded over to Valencias, it is safe to say that the Navel acreage is not much greater than two years ago. Considering the popularity of the California orange and the constantly widening market, there does not seem to be any imminent danger of overproduction.



How Fruit Cans Are Filled With Syrup at the Flickinger Cannery, San Jose.

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The Week.

The glorious rain: so soft and warm and wet, and such an amount of it! The coming of such generous downpours when people had almost nerved themselves to be reconciled to the worst, has exhausted the stock of appreciative adjectives in California, and people find adequate expression beyond the reach of words. The only recourse, in the absence of fitting speech, seems to be to do things, and people are doing things which they almost despaired of this year. They can scarcely wait for the surface water to disappear. Even the mud seems delightful to work in. Those who can refrain from such relief are buying things to use as soon as the soil welcomes, and the rush for seed, plants, trees, tools and general supplies is noticeable in all markets, from the hamlet to the metropolis. The whole agricultural organism seems to be endangered by enlargement of the heart, so expansive are the emotions of satisfaction and confidence. There have indeed been a number of years in which a late beginning of rains has been followed by a very satisfactory season's aggregate, and in which production has reached very high figures. There is every reason to expect such an outcome this year, for the storms succeed each other with most business-like manner. As we go to press on Wednesday we are taking water from the third cyclonic entry to the coast within a week. Snow covers the mountains and reaches far out over the Nevada plains. Rains drench the foothills, and valley streams are swollen. The soil is fast filling to saturation. It will be a great year for all things which move by water-power, and that includes nearly all interests and nearly all people. It is not wonderful that the State is glad and active.

Speaking of water power, it is interesting to note that Uncle Sam is doing something in that line on his own account. The General Government is going forward with the completion of the first national irrigation project in Nevada, preparing to make moist and productive a large area of arid land with the water of the Truckee river. Private parties who feel themselves aggrieved have so beset the contractors with injunctions that their work seemed doubtful of issue. As this became apparent, Uncle Sam annulled the contract, paying the contractor for his expenses and machinery, and will carry on the work on its own account, as an injunction cannot be obtained against the United States. No doubt those aggrieved can have their claims tested in the courts, but they cannot try their case by injunction. No individual can stop the people. One can get some measurement of the importance of this governmental fact from some figures recently given before the National Geograph-

ical Society by C. J. Blanchard, of the Geological Survey. He declared that 77 miles of main canal of river size have been built during the three years in which the United States reclamation service has been organized, and that irrigation canals long enough to span the earth twice and representing an outlay of \$90,000,000 had been built during the past quarter century. "Every year," he said, "this area returns a harvest valued at \$150,000,000, and 2,000,000 people dwell in harmony and contentment where only a short time ago the wilderness reigned." These are other statements by Mr. Blanchard:

"The reclamation service has built 54 miles of irrigation canals and 186 miles of ditches. It has constructed and has in operation 150 miles of telephone, 125 miles of road in canyons, involving deep cuts; it has excavated 10,000,000 cu. yd. of material and one-half mile of tunnels. Work is now actually going on in 11 different projects. The reclamation service has laid 70,000 cu. yd. of concrete, 12,000 cu. yd. of riprap, 19,000 sq. ft. of paving, 150,000 lin. ft. of sheet piling, and has driven 10,000 ft. of bearing piles. It has purchased 150,000 lb. of railroad iron, 250,000 lb. of structural steel, 600,000 lb. of cast iron, 75,000 bbl. of cement, and 1,750,000 ft. of lumber. The sawmills operated by the reclamation service cut 2,800,000 ft. of lumber."

And yet this work is only beginning. It is a force in west American development which will keep us abreast of the new era for Pacific countries.

Our representatives in Washington have been incited, by the questions of their constituents, no doubt, to ascertain the share of California in this great governmental effort for development, and Senator Perkins came to the front with a letter to the Director of the Geological Survey, complaining against the apparent discrimination against California in the allotment of reclamation funds, and Director Walcott of the Geological Survey has replied in part as follows:

While on one hand the Yuma project is largely in Arizona and listed under head of California, the Klamath project is about one-half in California and is listed under the head of Oregon. On the passage of the Reclamation Act efforts were promptly made to find a project in California which would fulfil the conditions of the Act, and to this end surveys were made on Clear lake, Cache creek, Stoney creek, King river, Sacramento river, Eel river, Pitt river and several other points. On the Sacramento river and at other places in California large ownerships of land, vested rights to water and lack of appreciation of the benefits of irrigation were so great that consideration of these were abandoned for the time. Since the adoption of the Yuma project more liberal offers have been made by the landowners under Clear lake than they were willing to consider a year earlier, and it is possible that a feasible project may yet develop in that vicinity and other sections of the Sacramento drainage basin.

California is therefore in it in the projects on government land and will enter also on private lands as far as the owners will co-operate. We seem to be getting what we deserve.

Governor Pardee is showing his well-known proclivity for doing things, in the way he is laboring to rehabilitate the State Agricultural Society and make California State Fairs true to the name. He very wisely has said: "If the people can be convinced that the State Fair is to be made what it ought to be—really a State Fair—much good will be accomplished. They will all be glad to help, and the press, this being done, will also be glad to help. Nobody really takes the State Fair seriously nowadays. But let it be shown that it is really desired to make it again a State Fair, and everybody will help push it forward." Governor Pardee also says:

In a word, why should not the State Fair be made a State Fair? And how can it be done unless we have some man or some men who know how to do it? The Board of Directors cannot hope to do it, even were they all experts at this sort of thing, for they are, as they should be, busy men—men of affairs—who cannot, even if they knew how, devote themselves to the actual work of procuring and installing exhibits for a State Fair. If this be true, why not do as we all do in our own business—procure the services of those who know how and can?

That is certainly sound. The State Fair has been trifled with and its opportunities neglected. Spasmodic effort has been made to collect certain exhibits and to provide "attractions" to draw gate-money from the Sacramento people, but which had no relation to agriculture nor to any other developing force in the State. The Governor is on the right

track, and he is right as to what can be done; but he is also right that it will take a lot of work of the right kind to make the fair of wide value to the State and to afford the State a demonstration of the fact. All our organizations should support him in the work which he now proposes shall be done.

QUERIES AND REPLIES.

Alfalfa Meal—Alfalfa Varieties.

TO THE EDITOR: Is there any difference in the food value of a ton of alfalfa hay and a ton of alfalfa meal for cows? If so, please explain why. I understand there are several varieties of alfalfa—some do better on one soil and some on another. I would like to know which is best to sow on upland soil, from five to eight feet deep, the land quite level, and no water within reach of alfalfa roots but what is held in the soil from year to year. The rainfall is from five to six feet, falling from September to June.—READER, Humboldt county.

There is no difference in the food value of the same sample of alfalfa hay ground and unground except that the ground material is in such finely divided form that the digestive juices can act upon it more easily and completely, and for this reason better results may be had in feeding it. This is the only virtue we know of in the grinding. As we have said before, the comparative values of alfalfa from different countries has not yet been fully determined. How well any alfalfa will do on the place you describe will depend on the soil, climate and whether you can keep the gophers out of it. Upland rainfall alfalfa is not usually very long-lived, but your situation may be exceptional. The only way to find out is to try it.

Treatment for Alfalfa.

TO THE EDITOR: I should like to get your idea of the spring treatment for an alfalfa field three years old in good condition, that is a good stand. I have been advised to disk it thoroughly, harrow and sow with oats or barley. The explanation is that either of these grains will give a better second crop, preventing the foxtails and other weeds from growing. How much seed would I need for my 30 acres, which is at Lodi and under irrigation, and when would you advise starting the work.—NEWCOMER, Sacramento.

You will have to get some other doctor to advise you about that treatment, which is too new for us. If we had a good stand of young alfalfa on a soil which best suits alfalfa, viz: one which does not crust badly with winter rains, we would not worry it with farm tools nor with grain seeding. We should be so glad with what we had that we would not take the risk of injuring it by such treatment. An old stand of alfalfa, especially if scanty, would be improved with the disking and by putting on more alfalfa seed. But, as we have admitted, the method described by our correspondent is new to us. Who can commend it?

Buckwheat and Flax.

TO THE EDITOR: Can you offer any suggestions in the matter of raising flax for the seed, and what? I notice no attempt anywhere in the State to do anything with either it or buckwheat. Has either of them been grown profitably under irrigation under soil conditions similar to ours here, a slightly adobe soil?—FARMER, Esparto.

There is very little buckwheat grown in California, nor is there any particular inducement to grow much, as the local demand is very small. Buckwheat can only be grown during the frostless season and it requires moist land and the small product which is now made is grown in the river bottom. Flax is grown to some extent for the seed crop on the plains in the Sacramento valley in Solano county and the crop is handled very much as barley is. The difficulty with flax-growing for seed is that our oil-makers can often buy supplies at a lower price than the California grower can afford to produce it for. Flax-growing for the fiber is still in an experimental stage, and the individual who can give you most information is Dr. J. K. Toles, Stockton, Cal.

The Use of Bones—Potash for Prunes.

TO THE EDITOR: How do you apply sulphuric acid to bones in dissolving them and preparing them for fertilizing purposes? How is bone phosphate produced? I have several tons of bones that I wish to grind and apply as a fertilizer. What effect has the acid on them? I wish to use this

method in order to secure my phosphoric acid in order to stimulate young vines, as, while I am aware we have phylloxera, I think that our vines are starving and injured as much by constant cropping without fertilizing as by the phylloxera. Do you think potash would assist in making less shrinkage in prunes through lack of sugar if the trees were occasionally fed potash—say, 200 lb. per acre—or what amount would you suggest and where could I secure the best for this purpose? Would not constantly cropping grapes (heavy crop) in time destroy vines? —VINE GROWER, Sonoma county.

It is very doubtful whether you can make superphosphate from the bones which you have accumulated without too great cost, as sulphuric acid can be used only on bones in properly prepared tanks, which are too expensive for the small amount of bones which you mention. Besides this, sulphuric acid is a very dangerous material, which only experienced people should undertake to use. The following are some suggestions prepared by Prof. Hilgard as suggestive of ways in which bones can be used to advantage on the farm:

1. Bones put into a well-kept (moistened) manure pile will themselves gradually decay and disappear, enriching the manure to that extent.

2. Raw bones may be bodily buried in the soil around the trees; if placed at a sufficient depth, beyond the reach of the summer's heat and drouth and cultivating tools, the rootlets will cluster around each piece and in the course of a few years consume it entirely.

3. Bones may be packed in moist wood ashes, best mixed with a little quicklime, the mass kept moist but never dripping. In a few months the hardest bones will be reduced to a fine mush, which is as effectual as superphosphate. Concentrated lye and soil may be used instead of ashes. In this process the nitrogen of the bones is lost, going off in the form of ammonia, the odor of which is very perceptible in the tank used.

For neither of these processes should the bones be burned. The burning of bones is an unqualified detriment to their effectiveness, which can only be undone by the use of sulphuric acid.

4. Bones steamed for three or four hours in a boiler under a pressure of 35 to 50 lb., can, after drying, be readily crushed in an ordinary barley-crushing mill, and thus be rendered more convenient for use. Practically, very little of the nitrogen (glue) of the bones need be thus lost.

It certainly is desirable to stimulate the growth of young vines when the soil becomes less productive, and, although fertilization is a cure for phylloxera, there are cases in which the vine can be longer maintained in production by recourse to fertilization.

It is held that potash does in some cases produce a desirable effect on prunes in the way you indicate, and the easiest way for you to try it would be to apply wood ashes to a number of trees (as you are in a wooded district) and watch their fruit as compared with other trees of the same kind to which you do not apply the ashes. This will give you an opportunity to form practical judgment as to the value of potash and to decide whether you would be warranted in the purchase of commercial fertilizers, which you have in view. You can safely apply wood ashes at the rate of two bushels to a tree, scattering it evenly over the surface and plowing it in at the winter plowing. Commercial potash in the form of sulphate or muriate can be applied at the rate of about 200 lb. to the acre, scattering it evenly over the surface and plowing in. You can purchase commercial potash for fertilizing purposes from dealers advertising in our columns.

Shall Peas Follow Beans?

TO THE EDITOR: Kindly inform me of the best time to plant the common field pea for green manuring in the Lompoc valley on land from which a bean crop has been harvested.—OWNER, San Jose.

The field pea for green manuring should be started as soon as possible. It would have been better to have planted it a month or two ago, but probably this year little would have been accomplished because of the drouth. We would get them in now so as to secure as much growth as possible for plowing under while there is still plenty of moisture remaining in the spring. But why do you wish to grow peas for green manuring after a bean crop? The beans themselves have probably done all that a legume can do in the way of fixing atmospheric nitrogen, and the decay of the bean roots is in itself a large contribution toward the humus in the soil. It is common to use green manuring plants for the relief of soil which has been cropped with grains or potatoes, or fruit trees, or any other plant which is not of a leguminous

character. However, the experiment will be an exceedingly interesting one, to see whether green manuring with peas, following a crop of beans, will be of any particular value.

Pruning Cherries.

TO THE EDITOR: I have a small orchard of the Bigarreau varieties of cherries, planted last spring from one-year-old stock. They have made a very satisfactory growth, and I would like information in regard to proper pruning. Most of them are on a sidehill, and I would prefer to train them (if advisable) to a wide-spreading form rather than to have them grow so tall. Will they stand pruning about the same as other deciduous fruit trees? Any information you can give will be appreciated.—SUBSCRIBER, Santa Cruz.

Certainly; the cherry tree is one of the easiest trees to get into a low-headed, vase form. Cut back summer's growth to 10 or 12 in. from the starting place of each shoot—always leaving the top bud on the outside when you wish to spread the tree.

Nitro-Cultures Again.

TO THE EDITOR: Will you kindly tell me through your columns of the PACIFIC RURAL PRESS if 'nitro-culture' is successfully and extensively used for beans? Is the plan of dissolving the stuff and sprinkling it on the beans before planting the correct way of using it? Would the application of nitrate of soda to the soil, in addition to the nitro-culture, be profitable.—SUBSCRIBER, Escondido.

As we have said before, this matter is still in the experimental stage and enquirers must not expect conclusive answers. The whole matter was started with a boom and it will take some time to demonstrate what can be accomplished with it. At present there are some favorable reports and some which indicate no advantage. If you are interested try it for yourself on a small scale. You can get the cultures and directions as to use from the larger dealers in seeds and garden supplies.

Asiatic Alfalfas.

TO THE EDITOR: What is the difference between the Arabian alfalfa and the Turkestan alfalfa that was introduced by the Agricultural Department some years ago? We wish to send for some of the Arabian alfalfa for a trial in our high, arid land.—RANCHER, Mono Lake.

The particular differences of the various kinds of alfalfa which are now being introduced from Asia are not yet made out. We only know that they have been grown for generations in the districts from which the seed has been obtained and presumably some variations and adaptations to different climates have been acquired. What these are can only be told by local experiment and it certainly would be advisable for you to try both the Arabian and the Turkestan to determine their comparative suitability for your conditions.

Cottony Cushion Scale.

TO THE EDITOR: Kindly inform me as to what the enclosed sample of parasite is called, and what to do to get rid of it?—SUBSCRIBER, Petaluma.

You have the cottony cushion scale on your orange trees and for an insect to destroy it you can apply to Mr. E. M. Ehrhorn, Deputy Horticultural Commissioner, Ferry Building, San Francisco.

Trees for Hillside.

TO THE EDITOR: I have a hillside facing south, which is more or less overgrown with liveoaks, holly, etc., and an occasional madrone. Most of the trees are small (six to ten inches). I am thinning out the trees for stovewood, and want to put back other trees, which will be suitable, and which are ornamental and useful, which will grow moderately fast. I want a selection which will include shade, fuel, fruit, nuts, and beauty.—READER, Sonoma county.

You can get quickest results in fuel by putting in eucalypts of several kinds; more beauty, perhaps, by using maples and elms, nuts by using California black walnuts if you like them. We doubt if it would be worth while to try improved varieties of nuts unless you give them something better than wild treatment.

Weeds in Alfalfa Seed.

TO THE EDITOR: I enclose in separate envelope some alfalfa seed which seems to be mixed with some foreign seed. Will you please tell me what it is and if it would harm the alfalfa crop?—FARMER, Fresno.

Miss Alice F. Crane, seed tester and examiner,

kindly makes an examination of the sample, which was about one-third of a teacupful in amount, and reports finding six seeds of dodder, the parasite vine which is so obnoxious in clover and alfalfa fields. These seeds are so nearly the size of alfalfa seed that they cannot be cleaned out. There were also six seeds of sheep sorrel (*Rumex acetosella*), and about 300 seeds of tumble weed (*Amaranthus albus*), which seeds may be sifted out. *Amaranthus albus* is not considered a particularly harmful weed by farmers, but such seeds are certainly very undesirable in such large quantities. Miss Crane's address is 314 Cherry St., San Francisco, and we must advise our readers to secure her services as it is impossible for us to undertake such determinations in these columns.

WEATHER AND CROPS.

Report of the U. S. Weather Service for Week Ending January 16, 1906.

ALEXANDER MCADIE, Forecast Official and Section Director.

Sacramento Valley.

The weather was warmer than during the preceding week and rain fell every day. Heavy rains in the mountain districts toward the close of the week caused a rapid rising of the American and Sacramento rivers, but no danger of overflow is probable unless heavy, warm rains continue. The warmer weather and generous rains have come most opportunely and materially changed the prospects for crops of all kinds. The soil is well saturated and grain and grass will now make good growth. Plowing and seeding have been resumed and reports state that a large acreage of wheat, barley and oats will be planted. Stock are in poor condition, but green feed will soon be plentiful if warm weather continues. Orchards and vineyards are in excellent condition.

Coast and Bay Sections.

Warm, cloudy and rainy weather prevailed during the week, with high southerly winds Friday and Saturday. The rain was very beneficial to grain and grass and the soil is now in good condition for cultivation. Plowing and seeding have been resumed and it is probable the grain acreage will be about average. Orchards and vineyards were greatly benefited by the rain and are in splendid condition. In some sections grain and grass had made a fair start, and with warm weather following the rain will soon make good growth. Feed is still scarce in most places and cattle are in poor condition, but there will be rapid improvement if warm weather continues. The high winds caused no material damage.

San Joaquin Valley.

Clear and cool weather prevailed the first part of the week and cloudy and warm with generous rains the latter portion. The rainfall averaged from an inch to two and one-half inches over the valley, and being accompanied by warm, growing weather will prove very beneficial to grass and grain. Plowing and seeding are progressing as rapidly as the condition of the ground and weather will permit. Orchard and vineyard pruning is in progress. A large acreage of vines will be planted. Packing houses are running to their full capacity seeding and packing raisins. Green feed is scarce and stock are thin but healthy.

Southern California.

Cool and frosty weather prevailed at the beginning of the week and some damage was done by frost to celery and other tender vegetation. Warmer weather with rain prevailed at the close of the week. At Upland the seasonal rainfall is 5.43 inches, or 0.83 inch greater than at the same date last year. The warm rains will be of great value to grass, early grain and orchards. Grain and grass are making good growth and the outlook for large crops was never better. Plowing and seeding continue. Green feed is quite plentiful and stock are doing well. Orange harvest is progressing. It is reported that citrus fruits have not been seriously damaged by frost.

LOS ANGELES SUMMARY.—Cool, dry weather followed the latter part of the week by a general rain storm, which continues, improving farming and cattle interests which had begun to feel the drought. Farming operations will now become active.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, January 17, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.	Total Seasonal Rainfall to Date.	Total Seasonal Rainfall to Same Date Last Year.	Average Seasonal Rainfall to Date.	Maximum Temperature for the week.	Minimum Temperature for the week.
Eureka.....	...	18.38	21.52	...	...	...
Red Bluff.....	3.60	8.31	17.35	13.37	56	38
Sacramento.....	4.58	6.42	10.57	9.39	58	38
San Francisco.....	2.48	5.50	11.41	11.03	58	45
San Jose.....	1.69	5.08	8.57	...	64	44
Fresno.....	1.15	2.78	6.43	4.17	64	40
Independence.....	1.82	2.50	.88	1.81	70	24
San Luis Obispo.....	2.23	4.55	7.17	9.15	66	40
Los Angeles.....	1.62	4.88	5.11	6.66	70	44
San Diego.....	.25	4.82	4.73	3.94	62	41
Yuma.....	.00	3.45	1.87	1.89	74	38

AGRICULTURAL SCIENCE.

The Industrial Use of the Imagination.

By E. J. WICKSON, Dean of the College of Agriculture of the University of California, at the joint meeting of the California Teachers' Association and the State Farmers' Institute in Berkeley.

Those of my hearers who are old enough to be wise, will recognize my subject as a graft. Thirty-five years ago John Tyndall had the task of preparing a discourse for the British Association, and to escape distractions, made a journey to the Swiss Alps, taking with him, as he says, "two volumes of poetry"—Goethe's 'Farbenlehre' and Bain's 'Logic.' One of his critics afterward said he failed to see the wit in calling those books two volumes of poetry. To him Mr. Tyndall simply replied: "Nor do I." For Tyndall was deeper than his critic thought; he was not indulging in pleasantry, he had a deep purpose, and he even went so far as to select his books for dramatic effect. He wished to forcibly suggest that creative work in poetry and in reasoning called into action the same power of the mind, and he could then proceed to show that creative work in natural science proceeded from the same source, and he chose as his subject: "The Scientific Use of the Imagination." The idea was not new, but the times seemed to demand its enforcement, and Tyndall proceeded to meet this requirement by recourse to the true scientific method, that is, to illustrate by a few simple instances the use that scientific men have already made of this power of the imagination and to indicate afterward some of the further uses they are likely to make of it. And this he succeeds in doing in a way more effective with the people to whom he desired to appeal than any philosophic argument could have been.

It was particularly necessary just at that time that this should be done. The wave of popular interest in the achievements of natural science was running high. Books and magazines were laden with discoveries, and lecture platforms were ablaze with demonstrations in chemistry and physics. The people were getting the idea that all they needed to do was to equip themselves sufficiently with instruments of glass and brass to lay bare all the secrets of the universe—they were even prone to think that they could 'find out God' by this line of searching. It was time to show them, thought Tyndall, that such hopes were vain. The god in a machine was a graven image, and more than that, even simple instances of scientific achievement were the products of the creative power of the human mind, for without this power to discern the relation of things, the investigators are like those who, having eyes, see not, even though possessed of the most powerful batteries of brass and glass.

I have invoked this powerful work of Tyndall, which accomplished so much a third of a century ago toward a better understanding of the relation of scientific research to other great undertakings of mankind, because it seems to me our present strong impulses toward industrial achievements may lead some to think that here, at least, we have something quite different, intellectually, from other human efforts and that proper preparation for it consists in securing an entirely new outfit of methods, agencies and principles.

THE AGRICULTURAL USE OF THE IMAGINATION.—But here I perceive that the subject which I chose for this writing is too comprehensive. The 'industrial use of the imagination' is beyond my power of illustration. In grafting it is possible to cut too long a scion even for a strong stock. To guard against this danger I shall cut a short one and confine my effort to a few suggestions on the 'agricultural use of the imagination' and endeavor to render them somewhat concrete by discussing the significance of forms in animals and plants. There is, of course, the prime significance of forms in the theories of evolution, mutation, etc., but that belongs to science, and if Darwin had written on Tyndall's theme, they would have displaced Tyndall's 'simple instances' which were naturally drawn from physics. The scientific aspect of forms is quite different from the agricultural aspect; let us, therefore, consider briefly a few of the more obvious manifestations of forms in agricultural practices and products and ask:

1. What they teach us of themselves.

2. What they teach us of ourselves.

What do we mean by 'form' in this discussion?

An agricultural form is an improved form. The very word agriculture implies that; not improved form in a moral sense; not 'in good form' as approved by a society leader; not 'in good form' as depicted in the advertisements of popular tonics—but improved form in an agricultural sense. But an improved form of what? Manifestly of everything on the farm except the farmer and his bank account—these improvements belong to the preacher and the economist. Let me suggest a few striking instances of improvement.

FIRST: IMPROVED IMPLEMENTS.—Contrast the modern riding gang plow and the forked stick of ancient agriculture and surviving still in benighted regions. Or compare the California traction engines, pulling

plows enough to turn a 40-ft. width of land with the single furrow plow which lacked rational adaptation to its work, even as late as Jefferson's time. Or think of the flail, which, perhaps, some of my older hearers remember swinging, with the California combined harvester, steam propelled and riding the plains of the San Joaquin, automobile as a battleship, which its fuming chimneys and castellated structure cause it to resemble.

SECOND: IMPROVED ANIMALS.—Compare the lordly Shorthorn and other cattle bred for beef, every useful part expanded to fullness and every useless part repressed, with the sway-back, cat-hammed, long-legged *bos urus* which Julius Caesar hunted in Gaul. Compare, also, the deep, capacious dairy breeds with the wretched, unprofitable scrubs which still remain to emphasize the quality of their betters. Remember, also, the thoroughbred racer and the draught-horse; the greyhound and the mastiff; the game fowl and the Light Brahma, grand instances of agricultural form as adapted to various powers and uses.

THIRD: IMPROVED PLANTS.—Study the uniformity of California orchard trees, capable of a maximum of product with least cost of production. Learn the economic importance of the spherical peach, the seedless orange, the special types of grapes for various uses. Compare the grand, many times double rose with the scant but graceful eglantine. Remember the flavors, odors and colors developed in the improved fruits, the food value of grains, the durable beauty of flowers.

All these are but few of the wonderful array of improved forms which agriculture has achieved for its own purposes from earlier and ruder types, and still all are probably but approximations of the attainment of generations yet to come. They are, however, exponents of our agricultural progress; they are the embodiment of the deepest thought and the most determined effort of the larger part of the human race during all the courses of history.

THE AGRICULTURAL POINTS OF VIEW.—Whence came all these strange forms—these products of advancing civilization? They do not belong to the natural; the so-called 'lover of nature' calls them monsters. No poet will sing of them except the one who sings of the prize cow at 25c. per line. No artist will paint them except the specially trained 'livestock artist' whose work has little standing in the studios or galleries. But these improved forms of the agriculturist are not unnatural except that they are wide departures from wild types. They are, in fact, strictly natural in that they have been attained through natural laws directed by human intelligence toward ideals which are the acmes of specific desirabilities. These achievements are deeply respected by science, and some of the most forceful arguments in support of evolution have been based upon the work of the stock-breeder and horticulturist. The man of science appears, then, as the champion of an agricultural achievement as distinct from the scientific or the esthetic, and yet of the same kind: different in methods and purposes but similar in origin and functions. For thousands of years the bucolic poets have flattered the agriculturist, and the orators have patronized him, but it was reserved for the men of modern science to appreciate his work and to honor his achievements as striking manifestations of the power of the human mind.

Now to what quality of mind are these achievements to be attributed. Tyndall in his essay avoided definitions, and he could afford to, because of his power in describing his 'few simple instances.' This graft of mine upon Tyndall is of weaker growth and means tying up a little with definitions. Possibly, also, the traditional place of agriculture in the public mind is so different from that of full panoplied science, that its relation to the higher mental functions may excuse a faint attempt at analysis. The poem, the music, the painting, the sculpture, are products of the human mind. The industrially magnificent horse, or ox, or sheep, or swine, are also products of the human mind. All of them result from the exercise of the same mental activities and functions. We will not quarrel about differences in degrees; points of view are so different that degrees are not easily determined. The contention is that the old idea that there was a 'divine afflatus' in the poet not vouchsafed to other high human workers, is wrong. The quick perception, the deep insight, the full sympathy are the same in kind with all of them. It has always been wrong to attribute to the man who develops plants or animals only the possession of 'shrewd sagacity,' as though it were something akin to instinct in the lower animals. There is only one mind in man, as there is only one heat in the universe. The heat in the roaring furnaces of the blazing sun is the same which burns in the arteries of the angry man, or which boils the kettle in the cottage. It is the same mind in man which constructs an epic poem, releases an imprisoned angel from a block of marble, plans a battle or frames a constitution for a free people. It is the same mind, also, which molds a splendid domestic animal, with perfectly adapted form and placid disposition, from the gaunt and fiery wildling of nature's make.

IMAGINATION.—What, then, is this faculty of the mind so potent in all the higher achievements of man-

kind? It is the imagination which the philosophers characterize as follows:

Imagination—The reproductive power considered as producing ideal objects under the intentional guidance of an abstract synthetic judgment.

(Distinguished from phantasy by special exercise of judgment, hence a faculty of imagination involves voluntary control of our thinking powers.)

Results from vividness of conceptions, but it also stimulates and increases the ability to form such conceptions.

Ideals are objects which one imagines and endows to the best of his ability, with every object suitable to their nature, and with which, as standards, he compares things really existing, or in the process of production.

Success in scientific discovery and invention depends greatly on the exercise of the imaginative power. Investigation which discovers the laws of nature and invention, which discovers the modes in which these laws may be rendered practically useful, and make no progress without vigorous employment of constructive and creative thought.

If we should review the achievements of progressive agriculture in all lines, it would be easy to demonstrate the service rendered by this creative faculty in industrial affairs.

It would be clear, that to reach any success in industrial effort, there must be an ideal. In no line has this been more clearly demonstrated than in the development of the domestic animal, as has already been suggested. But, even in smallest affairs, the same rule holds. No man can prune a tree intelligently without an ideal of a tree of that variety in his mind. Nor can he turn a furrow nor can he hitch up a team, without such a conception.

Men who cannot conceive an ideal of what each act should be, are our stupid men. They are men who never can do anything right because they cannot conceive a fact clearly, nor discern its relations to other facts.

EDUCATION.—Now that is the conclusion of the whole matter? Education is the only agency by which the true can be enforced and the false cast out—not shallow, inadequate, incomplete education which misleads, because the possessor thinks he has gold, but it is only silver. Teach handicraft, teach imitative arts, but do not think that those are the end—they are but means to an end of which they are unconscious. Humanity must see beyond the ends of its fingers, and the guaranty is, that as one does go farther and forms conceptions of the principles and understanding of the materials involved, handicraft is improved and its rewards multiplied.

In the present demand for a change in pedagogic subjects, so as to better serve the time and the people in industrial advancement and to arouse tastes and sentiments in sympathy with rural employment, care should be taken not to substitute information for education. It is teaching for the good old purpose of mental awakening and strengthening which must not be lost sight of. The new pedagogic material will be better than the old in its intrinsic usefulness and suggestiveness, but the art and science of employing it in school work will be the same, in motive and purposes, that have ruled since good teaching began.

THE VINEYARD.

The Needs of California Viticulture.

By F. T. BIOLETTI, Assistant Professor of Viticulture in the University of California at the State Farmers' Institute in Berkeley.

Before discussing the needs of viticulture in California it may seem necessary to give some reasons why we should consider these needs.

CALIFORNIA GRAPE PRODUCTS.—There are, first, the economic reasons. At present the crop of the vines of California is about equal in value to that of all the other States in the Union taken together. In the absence of trustworthy official statistics it is impossible to give exact figures regarding the acres of vines or the amount of the crop, but a rough estimate made from the available sources of information places the number of acres at about 200,000, and the total average annual value of the crop at about \$10,000,000.

More than half of this acreage is devoted to wine grapes, a little less to raisin grapes and somewhere between 5% and 10% to table and shipping grapes.

The average annual money value of the crop is divided about as follows:

VALUE OF AVERAGE ANNUAL GRAPE CROPE OF CALIFORNIA.	
20,000,000 gal. of dry wine @ 15c.....	\$ 3,000,000
5,000,000 gal. of sweet wine @ 25c.....	1,250,000
1,000,000 gal. of brandy @ \$1.25.....	1,250,000
100,000,000 lb. of raisins @ 4c.....	4,000,000
30,000 tons of table grapes @ \$30.....	900,000
Total.....	\$10,400,000

The value depends, of course, on both the amount of crop and the price obtained, but as these factors usually vary inversely, the total value to the country at large will be fairly constant.

The reason why grapes are grown in California on a scale so much larger than any other State is that it is only here that raisin grapes, the best wine grapes, or grapes most suitable for shipping to long distances can be grown at all on a commercial scale. The whole United States, therefore, must depend on California for its home supply of these commodities, and we have a market of 80,000,000 people in which to sell our products.

THE WINE INDUSTRY.—Americans do not drink much wine, but there are probably nearly 2,000,000

people in the United States who were born in one or another of the wine-drinking regions of Europe. If these people drank as much wine here as they did in their native country they would consume 50,000,000 gallons of wine per year, which is about twice as much as the present production of California. There are probably another 2,000,000 people of Latin race whose parents were brought up among the vines of the Mediterranean littoral, and who, with the wine drinkers scattered among the rest of the population, could easily bring up the consumption of wine in the United States to four or five times the present output of our vineyards.

All that is necessary to throw this market open to us is to offer good, cheap wine in every section of the country and this California, and California alone, can do. To do this, however, before it is too late, before our hyphenated fellow citizens, the Franco-, Italo-, and Hispano-Americans, learn to satisfy their thirst with coffee and whisky, we must improve our methods both of grape growing and wine making. We have the most favorable soil and climate in the world for the production of good, cheap wines, but we cannot derive the full benefit from them unless we use every effort to learn and adopt the best methods of cultivation and manufacture.

The economic importance of viticulture in California, then, may be summed up saying that it brings \$10,000,000 yearly into the State and may be expanded very quickly until it brings in \$40,000,000 or \$50,000,000.

Viticulture, moreover, has a moral and esthetic value which should not be lost sight of. No satisfactory reason has been given why the nations of southern Europe are more temperate than those of the northern countries, except that they drink wine instead of ardent spirits. Drunkenness, which is the curse of even the country districts of England, Germany and Scandinavia, is almost unknown in Spain, Italy and southern France, especially in the wine-producing districts.

My contention is not that wine will not intoxicate. A Russian peasant will get drunk on wine, methylated spirits or ginger pop, if he can't get vodka. But statistics prove that racial sobriety and wine drinking go hand in hand and whether or not wine has any direct influence in the cause of temperance, it certainly has no influence in the contrary direction.

Anything which can be said against the use of wine by healthy, normal human beings can be said with far more force and truth against the use of tea, coffee, or any of the numerous articles of our ordinary diet which, in excess, have deleterious effects.

The esthetic side of viticulture hardly needs emphasizing. The shady, fruitful vine has been the theme of poets from the time of Homer and it still keeps its fascination for the native and adopted sons of the Golden West. With this introduction and apology allow me to proceed with the subject of my paper.

TO MAKE GRAPE GROWING MORE PROFITABLE.—Means of increasing the absolute and relative profitability, that is, the profit to the State and to the individual grower, may be discussed under two heads: First, those which depend on improvements in the creation and exploitation of market, and, second, those which aim at increasing the output and quality of our vineyards.

With regard to the first group the Agricultural College can be of little help, except in so far as its efforts tend to the improvement of the products of our vines and thus facilitate the work of the business man in getting and retaining markets.

It is with regard to the second group that the work of the Agricultural College should be effective and towards which most of our efforts are aimed.

Broadly considered our work is of two kinds: First, the collection and dissemination of facts and knowledge which is of proved value to Californian grape growers and wine makers, and, second, experimentation with promising methods and the search for new facts with especial reference to peculiar Californian conditions.

The first of these divisions of our work is at present of the most pressing importance and takes up the major portion of our time and of our resources.

If the methods known and practiced by our most enlightened grape growers and wine makers could be made general throughout the State, there can be little doubt that the average crop of our vineyards could easily be doubled and the quality considerably improved.

While some of our grape growers prune their vines with a care and skill unexcelled anywhere in the world, most of our vineyards are pruned, or rather mutilated, in a way that seriously diminishes the crop and shortens the profitable life of the vine.

Certain minor diseases of the vine, such as oidium, which can be, and in many vineyards are, kept under almost perfect control, are responsible for the loss of tens of thousands of tons of grapes, amounting in some localities and some years to 50% and even in some vineyards to 75% and 100% of the crop.

Other more serious diseases, such as phylloxera, which threaten the very existence of our vineyards, are so little known or understood by many of our grape growers that hundreds of vineyards and thousands of acres of vines are being planted where

there is not one chance in fifty of their ever bearing a paying crop.

EDUCATIONAL EFFORT.—On the other hand, many of our methods of handling the crops of our vineyards have reached a high degree of perfection. Our best methods of raisin making, of handling table grapes, and of the manufacture of wine are much more generally disseminated throughout the State, though even here there is much room for improvement in many sections of the country. The pressing need along these lines, especially in the manufacture of wine, lies not so much in the dissemination of acquired knowledge as in the discovery of new methods adapted to our peculiar soil, climate and labor conditions.

A major part of our efforts, then, as already stated, is directed towards the education of grape and wine makers. The Department is to some extent, and should be so more completely, a kind of clearing house where the viticultural and oenological knowledge of the State and of the world is collected, sifted, arranged and sent out to every grape grower and wine maker in the State.

The machinery by which it is attempted to accomplish this is by correspondence, lectures to farmers, the regular and short courses of the Agricultural College, and by occasional bulletins of information published by the University.

To increase the efficiency and widen the scope of this phase of our work, what we need more than anything else, is the active co-operation of all our grape growers and wine makers.

If they will write to us whenever they want information regarding their vineyards or wines, and whenever they encounter any difficulties in growing the former or in manufacturing the latter, we will often be able to give them useful information, though they must not be disappointed or disgusted if we fail to solve immediately every problem they present to us.

They should read our reports and bulletins carefully, using what appeals to them as correct, and criticising freely and openly what strikes them as erroneous. It is only in this way that our publications can be improved and made thoroughly and generally useful.

Above all, they should make use of the courses given at the Agricultural College. The number of students who follow our courses in viticulture and oenology is astonishingly small when we consider the importance of these industries in California and the great need of instruction in these subjects. This is due undoubtedly to a lack of a just conception of what we do or can do for a student. We cannot take a young man, who often hardly knows a vine from a potato, and, in four years, while at the same time he is acquiring a general education, make him an expert pruner, ploughman and wine maker. To be an adept with the plow, the pruning shears or the pump handle requires long practice, which, if needed, can be obtained much more easily and quickly on a farm than at a college, and we have no more right to waste a student's time teaching him these things than the grape grower has to expect him to know them when he leaves college.

What we can do, and ought to do, is to put him into a position to learn quickly all his neighbors have to teach him, to avoid their mistakes and gradually to improve on their methods. If he has natural ability, and has received the proper mental training at college, he will acquire all the manual dexterity he needs very quickly when he gets among the vines and the wine casks.

EXPERIMENTATION.—I don't wish to be understood as meaning that all we need in the teaching of our special subjects is a blackboard and a desk. We need most urgently a vineyard and cellar where we can illustrate and demonstrate theories and their application to practice. This is especially true as regards our short courses, which are intended primarily for young men and farmers who are actually engaged in the production of grapes and wine. We ought to be able to show by actual examples how a cane from a certain part of a vine produces grapes, while a cane from another part yields nothing but leaves; how a wine fermented at one temperature possesses aromas which caused Homer to call it a nectar fit for the Gods, while a wine fermented at another is full of bacteria and possesses odors which I must refrain from characterizing.

While it is above all theories, correct theories, deduced from what experience has shown to be the best practice, that should be our main subject-matter, these theories should be constantly and completely illustrated by practical examples. For these reasons it is to be hoped that our new college farm will include a vineyard and cellar of suitable character and adequate proportions.

With regard to the investigational phase of our work, the special function of the Experiment Station, it will be sufficient to say that all of our conditions are so different from those of any other grape-growing region in the world that, while there is much we can learn from France, Italy and Algeria, there are numerous vital problems which we must attack and solve ourselves. Many of these are pressing for solution at the present time and new problems arise every year.

Undoubtedly much has been done by the Experiment Station during the last 20 or more years, under the able

direction of Prof. Hilgard, that is of permanent value to the grape industry of the State. This has been done under great difficulties, the principal of which is the uncertain and discontinuous way in which funds have been appropriated for the purpose.

Some problems can be solved by a microscopic examination or a chemical determination which takes an hour, while others require weeks, months, a whole season, and the great majority of problems require continuous and careful tests extending over several seasons, or even over many years. Many of the most important and most difficult problems which the grower and manufacturer have neither the time nor the training necessary to solve, cannot, from their nature, be solved in a short time. Questions of fertilization, pruning, adaptation of varieties, require years of effort and observation before definite answers can be given. Progress may be made, useful conclusions drawn, continually, but most of these questions may never be answered completely for all time.

Conditions change, one improvement suggests others, and, while useful knowledge is being acquired all the time, very few subjects can ever be exhausted, and with most the more we learn the more avenues we see for useful experimentation. The work done one year and the money expended are in great part wasted if they are not continued the following year. A break of two or three years in the funds available, and still more in the men available, will necessitate the recommencement and repetition of much of the work already done.

SUMMARY.—In conclusion, it may be said that the main needs of viticulture in California are educational. Nature has done everything possible for us. All that remains is, first for the grape grower and wine maker to learn how to make the best of the great opportunities offered; how, with a soil and a climate that seem specially made for the development of the vine, to produce the finest grapes, raisins and wine at the least possible cost and, second, for the rest of the United States to learn how good these products of our State are.

In satisfying these needs the Agricultural College has an important role, and with the aid, sympathy and co-operation of the growers it will pay it well.

THE FIELD.

Rotation of Crops.

TO THE EDITOR: Could you kindly give information in regard to the use of the rotation of crops in California? I would like to know: 1. Is the rotation of crops in general use in your State? 2. Could you kindly name 10 important rotations in use in the State, stating type of soil and object, and whether good or poor for the purpose in view. For instance, taking our own it would read; Clay loam. Dairying. Four course: 1, Corn, manured, cut for silage; 2, oats; 3, wheat, manured; 4, timothy and clover, mown twice. Good results are secured here by this rotation.—AGRICULTURAL STUDENT, New York.

It must be acknowledged that systematic rotation of crops has not in general been used in this State; in fact, the course of agriculture hitherto has been to avoid rotation and to keep the land producing that to which it seems adapted and for which profitable prices could be had, for an indefinite period. There have been, of course, local changes of crops which might, perhaps, pass as very short rotations, such as getting an occasional grain crop from land which has been used for a good many years for beans, also growing grain on turned-over alfalfa land, upon which the stand has become scanty for some reason. There has also been a change of crop for the purpose of avoiding diseases and pests, such as moving watermelons and tomatoes on new ground and following with grain in their old places, etc. Recently the desirability of rotation has become more apparent and is commanding wider interest. This is especially true in connection with sugar-beet growing and something is being done in that direction. It may be interesting to know that our rotations probably will never be like yours, because it is only occasionally that a certain piece of land is suited to the growth of three different grains. Wheat and barley are interchangeable in many places, but oats are not grown in the general wheat districts, nor is corn (except for silage) successful in most places which grow one or two of the other grains. Timothy is not grown in California at all, except in the extreme north, where conditions resemble those of Oregon and Washington, and the clovers which you use as a summer crop do not thrive, except on low moist lands, in California without irrigation. Manifestly, California must devise rotations of her own, as agriculture advances, and the question will be quite as much what crop will succeed at all, as what crop will be best for the land. We would like to hear from readers what they have done with rotations in California. The general discussion of the subject would be interesting.

THE IRRIGATOR.

Teachings of Experience in Irrigation.

By MR. J. B. NEFF of Anaheim, Conductor of Farmers' Institutes in Southern California at the State Farmers' Institute at the University of California.

It is likely that irrigation has been practiced ever since the wants of man could not be supplied by the natural productions of the uncultivated land, as the earliest writings mention the pouring of water on the thirsty land, and there are remains of ancient irrigation works in various parts of the world; as in Egypt and the valley of the Euphrates, which likely are older than any written history; even in our own country there are remains of canals in Arizona which were made by some pre-historic race.

The irrigated area of the world has gradually grown until it now covers possibly 60,000,000 acres, of which India has more than half and the United States about one-eighth, being second in the number of acres.

The meaning of irrigation to the farmer is the method of applying water to land so as to produce the best results with the least amount of labor and water; the statesman views irrigation as a means of bringing waste land under cultivation, so as to sustain a dense population on territories that are otherwise practically a desert. The people generally are interested, because they are the owners of the public lands, and with irrigation these lands may become more valuable as well as more productive. In this way every individual as well as every locality is more or less interested in irrigation.

An adequate and perpetual water supply must first be secured before it will be wise to undertake any considerable outlay for other improvements on land, for in case the water supply should fail at any time the entire labor and previous expenditure of money may be a total loss, or if not entirely lost the returns may be so small that they will not be profitable. It is almost useless to undertake fruit growing without plenty of water that can be obtained at such time as the trees need it. Grain can be grown with a less certain water supply, as the water can be applied early in the season, when water is usually plentiful and the crop may mature without further irrigation.

Alfalfa will need a much larger quantity, and the supply must be at hand as often as needed, in order to produce the best results. Vegetable growers need water in smaller quantities, but at much more frequent intervals.

The quantity of water needed varies with the soil and climate. In some places a constant flow of one miner's inch, .02 second foot, or nine gallons per minute, is sufficient for ten acres. This means a depth of 8.8 inches from May to October, inclusive, or 17.6 inches for the season in addition to the natural rainfall. This will be sufficient for citrus and deciduous fruits if there is a rainfall of 15 inches which is evenly distributed, but it will not be at all satisfactory if alfalfa growing is attempted. In other places as much as one miner's inch to five acres is required.

In estimating the quantity of water needed, the seepage of canals and the evaporation from reservoirs must be taken into consideration. If canals have cement lining the seepage will be reduced to a minimum, which in some cases is as low as 6% of the supply, while in dirt ditches the loss sometimes reaches one-half of the amount turned in at the head of the ditch.

Evaporation from reservoirs varies greatly under different conditions. It has been determined that with a wind velocity of five miles per hour the evaporation is 2.2 as much as it is in still air, and with a wind velocity of 15 miles per hour the evaporation is increased nearly five times. Evaporation decreases with increase of altitude, because of lower temperature, so it will be seen that reservoirs in the mountains where they can be protected from wind are to be preferred to those

on the warmer and more open plains. Evaporation from water fully exposed varies in the western part of the United States from about 18 in. on Puget Sound to 100 in. during the year at Fort Grant, Ariz., and Keeler, Cal. The evaporation from ordinary soil is about the same as from water, and from sandy surfaces is about one-third as much as from water. A covering of any kind greatly affects the amount of evaporation. When the evaporation from bare uncultivated ground is called 100 the evaporation from sand will be 33% and from ground well covered with forest leaves only 10% to 15%. A covering of finely pulverized earth is even better than any other covering, showing the value of frequent and thorough cultivation.

Proper drainage is also needed where irrigation is practiced and where the soil is not sufficiently porous some system of drainage must be provided, otherwise swampy places may be formed or alkali salts brought to the surface and the fertility of the fields destroyed. Care is also needed that the soil may not be leached by the excessive application of water.

Several methods of applying water to the land are in use, depending on the needs of the soil and the convenience of the irrigators. Where large fields of alfalfa are to be irrigated with a large water supply, contour basins are frequently made to contain from 5 acres to 40 acres in one basin. Where the water supply is smaller, and in orchards, the irrigating is done either by basins of 10 ft. to 50 ft. square, which are filled to a desired depth, or in furrows from three feet to six or eight feet apart, in which the water is allowed to flow until the land is sufficiently wet.

According to statistics, the average cost per acre of the irrigating systems in California is \$10.30 per acre, and the average annual cost for maintenance is .69c. per acre. This does not include the systems which are supplied by pumping. These are often expensive, and a cost of \$50 per acre is not considered excessive for the installation of pumping plant and ditches.



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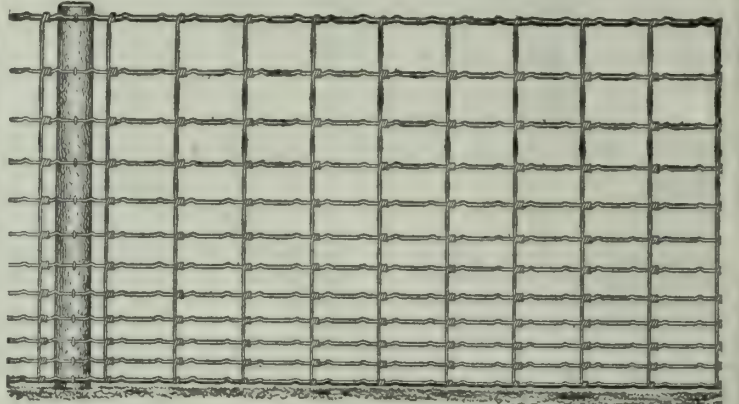


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20,000 strong-rooted Loganberry tips, 2 cts. each or \$15.00 per M. Cuthbert Raspberry and Lawton Blackberry 2 cts. each or \$5.00 per M. L. E. BARLOW, Sebastopol, Cal.

A PERFECT Musk Melon. Crenshaw's mammoth perfection. Write them for description and price of seeds. CRENSHAW BROS., Tampa, Fla.

Agricultural Review.

DECISION FOR SHEEP MEN.—The Appellate Court has handed down a decision declaring the sheep tax as levied by the mountain counties against sheep coming into said counties from the valley to be illegal. The court held that the ordinances levying such a tax were illegal on account of an amendment to the Political Code of 1901 repealing that section of the County Government Act of 1897, under which said ordinances were passed. Just what action can be taken to collect the amounts paid by the sheep men heretofore has not been determined.

WILL STUDY HOP INDUSTRY.—A bill appropriating \$5,000 for the study of the hop industry of the Pacific Coast will be introduced by Senator Perkins. He has written to Secretary Wilson suggesting that the department make a recommendation for that amount and pointing out the needs of that industry.

Butte.

BELIEVES BLIGHT RUINED ORCHARD.—Biggs special to Sacramento Bee, Jan. 12: Some days ago a representative of the Agricultural College visited the Reed ranch, northeast of this place, and inspected the large pear orchard which has been badly affected with blight for several years. Whatever hopes the Agricultural College people may have for saving the pear orchards from the blight find no echo in the mind of Frank Watson, the superintendent of the place. He is now engaged in pulling up by the roots some 6,000 of the pear trees in the orchard. There are 3,000 more which will be subjected to treatment in an attempt to stay the blight. The treatment consists in cutting out the affected parts, disinfecting the tools with bichloride of mercury. Watson says he has no hope of saving the pear trees and believes that ultimately they will have to be removed. The ground where the trees are to be removed entirely is to be planted to alfalfa.

TREE PLANTING BEGINS.—Gridley special to Sacramento Bee, Jan. 12: Tree planting will experience a boom now that the drouth has been broken by the generous rains of the past few days. Among those who will plant trees immediately are John Moreland and J. W. Gilstrap, who contemplate putting out 20 acres each in peaches. F. A. Cowee will also plant peaches and prunes.

BEST FRUITS FOR CANNING PURPOSES.—For the guidance of the orchardists around Chico, the Chico Chamber of Commerce asked M. J. Fontana, general superintendent of the California Fruit Canners' Association, for a list of the fruits most suitable for canning and, therefore, the best to sell to the canneries. The entire list submitted by him was not published, but the following were named as the best adapted to the climate and soil in that vicinity. Cling peaches, taken in the order of ripening: Yellow Tuscan, California, Nicholls, Sellers, McDevitts, Phillips, Levi; White McDevitts, Large White. Free peaches: Yellow, Elberta, Muir, Lovell. Pears: Bartlett. The Chamber of Commerce in a published statement says: Now, you will notice that this list is rather limited, but it contains everything we would recommend. In fact, we would reduce it still further by cutting out all the white clings and the Elberta freestones. The varieties we would specially recommend would be the Tuscan, Sellers, Levi and Phillips clings; Muir and Lovell frees, and Bartlett pears.

PEAR BLIGHT IS TOO MUCH FOR CHARLES WESLEY REED.—Gridley dispatch to Call, Jan. 12: Charles Wesley Reed of San Francisco, who has a ranch northeast of Gridley, has given up the fight against pear blight and 6,000 pear trees on the ranch are being pulled up. The land will be devoted to alfalfa. This has been one of the most prolific pear orchards in northern California and has been affected with blight for only a year or two.

Sacramento.

SEED WHEAT TESTS.—Sacramento Union, Jan. 12: George Coleman, who lives between Fair Oaks and Antelope, is not satisfied with the tests that have been made in this county of the seed wheat sent out by the United States Government. He insists that the tests made in Fair Oaks and elsewhere were not practical, inasmuch as the grain was planted in the choicest land owned by the parties making them; that extra care was taken in the cultivation and seeding; that the land was cultivated twice before the grain was planted; that the crop was tended like a garden, and that the results, under the circumstances, could not have been other than the best; that any wheat in California, given like care and attention, would have produced good results, and finally that the tests have been of no

practical value to the wheat farmers of the county. Mr. Coleman suggests that a practical test of the seed grain sent out by the Government, and one that will be of value to the farmers in the county, can only be had by planting a considerable area of land—something like 100 acres—using the methods employed by the farmers of the county; that the wheat should be sown in ground that is usually planted to wheat, and it should be cultivated in the customary manner. He says there is not a farmer in Sacramento county or any other county in the State who plows his land twice before sowing his wheat; that the California wheat crop is sown upon good, bad and medium land, and not upon the best little half-acre on the particular ranch, and that after it is planted no extra care or attention is given to it. He says he will, if arrangements can be made to that effect, buy enough wheat from the Government, paying a fair price for it, and seed 100 acres, planting it as the California farmer plants his wheat; that he will harvest it properly and that he will make an accurate return of the bulk and quality of the grain after threshing. He proposes to pay for the wheat when delivered, so that the Government will be out nothing, and he proposes that the report he will make will be of practical value to the farmers in the county and in the entire wheat-growing section.

San Joaquin.

TREES WERE DISEASED.—Lodi special to Sacramento Bee, Jan. 11: The almond trees in the Christian Colony have been found to be diseased with black knot.

Placer.

EXPERIMENTAL FARM FOR PLACER COUNTY.—Auburn dispatch to Call, Jan. 11: A dispatch from the Agricultural Department at Washington states that an experimental vineyard will be located at the Corto Passi ranch, near Colfax, in Placer county. The selection in a measure is due to the efforts of the Sacramento Development Association.

Shasta.

LIONS KILL CALVES.—Redding dispatch to Sacramento Union, Jan. 11: Two California lions are terrorizing the farmers and residents along the river south of Clear creek, and within the past four days several head of cattle have been sacrificed. Sunday a fine calf belonging to Farmer Johnson was slaughtered in the corral and another calf carried off bodily. Adam Fickas has had much trouble with the same two lions that visited the Johnson farm. On Tuesday the two lions were reported on the east side of the river, striking terror to the farmers on the east side. Charles Parsons, who was in Redding Tuesday afternoon, saw evidences of the animals' visit to his place Monday night. Mr. Parsons and his famous dogs, assisted by several of the neighboring farmers, have planned a campaign against the lions for Wednesday.

Solano.

HAD TO KILL LAMBS.—Suisun dispatch to Sacramento Union, Jan. 14: The driest season known in Solano county for over 20 years was broken yesterday by a copious downpour. The rain will have a beneficial effect upon the country in general, and especially on the stock ranges, where the feed had become very scarce, leaving stock, as a rule, in poor condition. The greatest suffering has been among sheep and cattle. In many instances young lambs have been killed to save the ewes, which were too poor to nourish their young.

Sonoma.

GRAPES REPLACING FRUIT.—Windsor Herald, Jan. 13: D. F. Fryer is pulling up a portion of his orchard and will plant the same to vineyard. W. C. Macy contemplates doing the same thing, as also does Charles Gordon, W. C. Chisholm, F. T. Brown, W. B. Rich, and others expect to increase their acreage of vineyard this spring. It does not look now as if the wine industry is on the wane in this section. The report that the Asti colony people were willing to contract grapes for ten years at \$15 per ton has done much to stimulate the growers in their intention to increase the acreage of grapes.

Stanislaus.

RANCHER ATTACKED BY A SOW.—Modesto Herald, Jan. 11: L. W. Hunsucker had a narrow escape from serious injury Saturday afternoon when he was attacked by a vicious sow. The animal had been running wild on the Hunsucker ranch for some time, and a few days ago the rancher drove her into a pen. On Saturday the animal broke out, and Mr. Hunsucker and son, on horseback, and armed with a pitchfork, started after her. They overtook the animal, and in attempting to drive her back to the pen the gentleman got off his horse. The sow charged him and Mr. Hunsucker

tripped and fell, and the animal stood over him and began to tear at him with her long tusks. Henry Crow, a neighbor, happened along at this time, and with the assistance of a dog drove the sow from her victim and helped the gentleman to his home.

Sutter.

PRUNING TREES.—Yuba City dispatch to Sacramento Union, Jan. 13: About three-fourths of the orchardists have finished pruning and are now gathering up and burning brush preparatory to spraying, while some of the orchardists are now in a position to commence spraying. The usual formula of lime, sulphur and salt will be used this season. As soon as the ground is in proper condition cultivating in the orchards will commence. At the various vineyards in this locality the grape-growers are displaying much activity in pruning, staking, re-setting and tying their grapevines and putting them in shape for the coming crop.

Tulare.

A CANTALOUPE MEETING.—Exeter Sun: The Exeter-Lindsay Cantaloupe Association met Saturday evening at the office of the Exeter Sun, there being quite a number in attendance, several growers from Farmersville attending, and nearly all of them signified their intention to join the Association, which, as now organized, includes all the large growers, and it is hoped will also include Arakelain Bros. & Co. In this event there will be no competition between the same goods in the market this year, and it will enable those handling the market to act more intelligently, preventing any market from being glutted with the melons. From the present indications there will be about six or seven hundred acres of cantaloupes planted in the Exeter-Lindsay district and it is thought that the present arrangements will be sufficient to dispose of all of them at fair prices.

Ventura.

OXNARD BEET OUTLOOK.—Santa Barbara Press, Jan. 11: Reports from Oxnard state that the outlook for the 1906 sugar beet campaign is very promising. J. A. Drifill, manager of the Oxnard plant, informs the Courier that there are 12,000 to 13,000 acres already contracted and it looks very bright for reaching the hoped-for acreage of 18,000 to 20,000. The new price scheduled is proving attractive.

Yuba.

GOOD DEMAND FOR OLIVES.—Marysville special to Sacramento Bee, Jan. 12: Despite the fact that climatic conditions this season have not been altogether favorable for the olive crop, and notwithstanding the fact that much of the fruit is leaving the tree shriveled, there is a demand for olives which cannot be met. The dealers in the southern portion of the State came into this section this summer and bought up the crops of the large growers, leaving the dealers and consumers here to depend for their supplies on the farmer who has put out the olive in small tracts.



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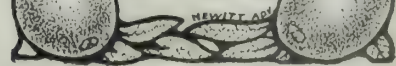
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The Home Circle.

When Johnny Spends the Day.

When Johnny spends the day with us,
you never see the beat,
O' all the things a-happenin' in this old
house an' street.

Ma she begins by lockin' up the pantry
door an' cellar,
An' ev'ry place that's like as not to inter-
est a fellow.

An' all her chiny ornyments a-stickin'
'round the wall,
She sets as high as she kin reach, fer fear
they'll get a fall.

An' then she gits the arnicky an' stickin'-
plaster out,
An' says, "When Johnny's visitin' they're
good to have about."

I tell you what, there's plenty fuss
When Johnny spends the day with us!

When Johnny spends the day with us,
Pa puts his books away,

An' says, "How long, in thunder, is that
noosance goin' to stay?"

He brings the new lawn-mower up an'
locks it in the shed

An' hides his strop an' razor 'tween the
covers on the bed.

He says, "Keep out that liberry, what-
ever else you do,

Er I shall have a settlement with you an'
Johnny, too!"

Says he, "It makes a lot o' fuss
To have him spend the day with us!"

When Johnny spends the day with us,
the man across the street

Runs out an' swears like anything, an'
stamps with both his feet;

An' says he'll have us 'rested 'cause his
winder-glass is broke,

An' if he ever ketches us it won't be any
joke!

He never knows who done it, 'cause
there's no one ever round,

An' Johnny, in particular, ain't likely to
be found.

I tell you what, there's plenty fuss
When Johnny spends the day with us!

When Johnny spends the day with us,
the cat gits up an' goes

A-scootin' 'cros't a dozen lots to some ole
place she knows;

The next-door children climb the fence an'
hang around fer hours,

An' bust the hinges off the gate an' tram-
ple down the flowers;

An' break the line with Bridget's wash,
an' muddy up the cloze;

An' Bridget she gives warnin' then—an'
that's the way it goes—

A plenty noise an' plenty fuss
When Johnny spends the day with us!

—Century.

The Story of the Violin.

A dark, chill, dreary November night it was. A cold rain, turning anon into a cutting sleet, pelted the dead leaves overhead and fell in grim persistency, glassing over the pavements with a thin layer of ice. The wind blew in fitful little gusts, lashing together the loose leaves and small twigs and hurling them, together with a disconcerting dash of rain, full into the face of the chance passerby.

Into this dreary scene shuffled a human apparition no less wretched and forlorn. The emaciated, shivering figure that stumbled along was clothed in rags, which covered but indifferently his shrinking form. His hair hung in a tangled mass about his shoulders; his face, dirty and unshaven, mirrored too accurately the life of intemperance and dissipation. Along the icy pavement he dragged his weary way. At length he stood before a brilliantly lighted saloon. Through the plate glass came a happy vision of laughter, and song and joy—and wine. The tramp stood shivering a moment in the doorway and then timidly opened the door and entered.

In an instant the revel had ceased. Gaily-dressed men paused with the glass half way to their lips to stare at the intruder. Then arose a shout of laughter, mingling with hoots of derision and angry threats. Another moment and the unfortunate wretch would have been thrown from the room by the aristocratic revelers, when they were arrested by a loud, "Ho! Ho! Look here, my merry friends!" A flashily-dressed young man, evidently

under the influence of liquor, had caught sight of a bulky object under the man's ragged coat, and, snatching it roughly away, waved it above the heads of the crowd. The object proved to be a violin of exquisite workmanship. The crowd gathered about the man, eyeing him suspiciously.

But the tramp, who had remained silent up to the present time, now sprang forward and cried imploringly, almost defiantly: "Give it back! Give it back, I say! Oh, give it back! I didn't steal it; indeed I didn't. It's mine, mine!" Then, as no move was made to return the violin, he continued, yet more beseechingly: "Oh, sirs, don't take it away from me. Indeed, indeed, I did not steal it. It is mine, mine—all mine. For the love of Heaven, do not take that away, too. It is all I have. It is everything to me—friends, home, mother, sweetheart, purity—and God! Oh, don't take it away!" The last few words had come almost as a wail. The man was white and trembling—almost gasping.

For a moment following this unexpected scene an intense stillness pervaded the room. At length the silence was broken by a voice, rough and brutal, but not so brutal as it would have been a few moments before. "Let the fellow give us a tune. If he can play it, why, we'll let him keep his fiddle; if not—" and the sentence ended in a muttered curse.

"And a glass of the best whisky I've got in the house if the tune be a merry one," said the barkeeper, not unkindly.

The man grasped his precious violin and began to play, his eyes wandering greedily toward the well-filled glass upon the counter. The selection was a stirring drinking song and pleased his audience greatly. At its conclusion there was ringing applause. But the old man did not seem to notice this. Instead, he drew the bow aimlessly across the instrument several times and a far-away look crept into his eyes. Then he began to play again. The revelers stopped their applause and listened.

Low and faltering, and yet tinged with an ineffable sweetness, sounded the first few notes. Then, as the trembling hand firmer grasped the bow, the broken strains gathered strength and volume. But still they sounded soft and far away, like the distant sound of falling water or the faint tinkling of a cowbell when long stretches of green meadows and fresh-plowed ground lie between. Still the strains poured forth with an intangible and elusive sweetness; sometimes loud and clear, but more often low and far away, as if wafted faintly from some distant land. The music told of flowers blooming in green fields, of fragrant patches of clover blossoms, of fruit trees bending under their weight of pink and white petals. In it you could hear the song of birds, clear and limpid, and as an undertone running through it all the humming of bees and the lapping of water.

The motley audience stood spellbound. The old, ragged musician seemed transformed—his tattered clothing, his surroundings, the glass of untasted liquor, all were forgotten. He was living again the innocent life of childhood. He romped again upon the hillside, plucked buttercups and violets and spring beauties in the cool, shady glens along the streams; waded once more in the rippling brook, knelt once more by his mother's knee. The tramp had become the poet; the man had become the master.

And still the inspired strains poured forth from the old violin. Now he has left behind his childhood days, and the strains breathed forth the buoyancy and light-heartedness of youth. Light and airy, charged with life and enthusiasm, the notes flooded the room. Occasionally a few measures would be tinged with an eager, unsatisfied longing or with a sad and pensive dreaminess—for even youth has its tragedies. But for the most part the melody was light and happy, and made one think of running brooks pushing their way through green meadows, or of the rainbow smiling after the storm.

Then it seemed that the bow faltered upon the strings. Was the wonderful

burst of melody to cease? No; it was but the solemn hush of the soul, awed for the moment by the sacredness of its theme. Soft and low, the notes trembled into life again, endowed with a richness of tone that was not in them a moment ago. A soft light was in the eyes of the tramp musician, and as he played a vision of his first love came before his eyes. And how he played! The melody flooded the barroom with all the warmth, the fervor, the ecstasy of first love, pure and holy. With what a lingering sweetness did the notes fall from the old violin! How they trembled, warm and sensuous, upon the pulsating air! How reluctantly they died away, leaving behind them the faint fragrance of crushed violets! The air became heavy with the incense of roseate flowers, vocal with the melody of song, pregnant with life and love.

While the mellow notes were still trembling upon the air, permeating everything with their sweet airiness, a wail of despair burst from the heart of the old violin. Oh, the pathos of that cry, the dumb, bewildering surprise, the wounded pride, the poignant pain, the hopeless sorrow, it expressed! How discordantly it struck upon the melody that had filled the room, causing it to vanish as if in terror! The next few strains were more subdued than the first wild cry, but breathed out, if possible, even greater intensity of passion. It was as though all the tears, all the heartaches, all the sorrow of the world, were blended into one despairing torrent of anguish, to adequately voice the cry of a soul suddenly defrauded of love's sweet birthright. The half score of men surrounding the tramp are leaning forward in the intensity of their emotions. All are in tears, and one elderly gentleman is sobbing audibly as the heartrending strains, full of poignant, biting, anguished sorrow, pierce through to their very hearts.

Then the music came crashing through the air—bitter, passionate, defiant. In angry, frenzied torrents it flung itself from the quivering instrument. It told of passions fierce and wild, of sin's dark reign, of crimes committed and darker crimes conceived. Like a flood of cold, black, seething waters it surged along, and swept before it mother, home, love, purity, truth—and God. So the music poured forth, intoxicated with a base and sensual pleasure tinged with a deadly cynicism.

Then a transformation came over the ragged musician and a new emotion breathed out from the instrument. The harsh and jangled notes died away and were followed by others in which there was something akin to regret. Then, as the music continued, the emotions deepened, the regret became sorrow, the sorrow remorse, the remorse ended in a cry that was almost despair. It was the awakening of the soul.

The awakening was followed by a prayer of forgiveness. Soft and pleading the notes fell upon the eager, listening ears of the motley crowd. How different the harsh, wild cry of passion and sin that had filled the room a few moments before from the prayerful,



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pleading notes that now welled forth from the heart of the violin! Then it was the cry of the flesh, debauched and degraded; now the language of the spirit, the voice of the soul. The old man was leaning forward, and with longing, pleading, tear-dimmed eyes was peering into the distance. Out of the blackness of despair he was straining his eyes to find somewhere, somehow, a ray of hope.

And the light came—dim and wavering at first, like the faint and uncertain flushes of dawn. But the man saw, and a new light was in his eyes and a soft-breathed hope was in his playing. Then, as the first faint streaks of light in the eastern sky blushed into a deeper crimson, and at last were merged into the full-grown radiance of the rising sun, so the first rays of the light of hope deepened and intensified into a more brilliant radiance, and, emanating from the cross of Calvary, flooded the room in a burst of splendor. Hope, joy, peace, ecstasy and awe blended into a psalm of triumph—and the tramp musician's soul swept through the gates of the New Jerusalem.—*Denver Times.*

Hints to Housekeepers.

Sprinkle salt on the carpet in several places. No bother from so much dust and brightens up the carpet.

Without care knives not in use soon spoil. Keep them in a box in which sifted quicklime has been placed. The blades should be covered with this, but it must not touch the handles, which should be occasionally exposed to the air to keep them from turning yellow.

The ascetic acid of vinegar is in request for all sauces. It mingles well with the citric acid of lemon juice. In making mayonnaise of any kind, this ascetic acid of the vinegar is required in mixture with as many flavors as possible, hence tarragon, chili and celery vinegars are used.

Unless washed with great care black stockings soon turn a greenish color. They should be washed in soap that is free from soda and rinsed in water to which a teaspoonful of vinegar has been added. When damp press them into shape, but do not iron, as the heat tends to destroy the color.

It is well that housewives should know that paper bags are made of a compound of rags, lime, glue and similar substances, mixed with chemicals and acids. When dry these can do no harm, but if allowed to become damp a paper bag is unfit to touch articles of food. Never, therefore, keep food that is of a damp or juicy nature in a paper bag.

Beeswax and turpentine polish for linoleum is hard to beat as far as its appearance is concerned, but it has one defect—it causes a slipperiness which may be very dangerous to children and old people. A polish which has no such objection is made of equal parts of linseed oil and vinegar. Apply a little to a flannel cloth, rub it well on the linoleum and polish with a clean, dry cloth.

The blanching of nuts is a process often thought difficult because not understood. The nuts should be covered with boiling water and should be allowed to stand for 10 minutes where they will keep hot but not cook. Then drain them, plunge them into cold water and chill them. A knife must be used with English walnuts because of their serrated surface. Pistachio nuts are hard to blanch, and the water in which they soak needs to actually boil while they are in it, although they must not cook.

FOR CHAPPED HANDS.—Delicate skins are very sensitive to the approach of cold weather, and, unless proper care is taken to prevent it, it will chafe the hands almost before one realizes the fact. If persons who are troubled with chapped hands would be careful to wash, first with warm water to cleanse, then immerse in cold water, to harden the flesh, dampen with three drops of glycerine, dissolved in one teaspoonful of water, and wipe perfectly dry, they would be surprised to see what soft, smooth hands they had.

What we might say here about the Studebaker line of farm wagons, carriages, buggies and harness, might or might not have much weight with you. What you can see with your own eyes will tell the story better than volumes of our talk. Therefore we say

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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, Jan. 17, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday	88 1/2 @ 87 3/4	85 @ 84 1/4
Thursday	88 1/2 @ 87 3/4	85 @ 84 1/4
Friday	88 1/2 @ 87 3/4	85 @ 84 1/4
Saturday	88 1/2 @ 87 3/4	85 @ 84 1/4
Monday	89 @ 88 3/4	85 1/2 @ 85 1/4
Tuesday	89 1/2 @ 88 3/4	85 1/2 @ 85 1/4

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday	45 @ 44 1/4	45 @ 45 1/4
Thursday	45 1/4 @ 45	45 1/4 @ 45 1/4
Friday	45 1/4 @ 45	45 1/4 @ 45 1/4
Saturday	45 1/4 @ 45	45 1/4 @ 45 1/4
Monday	45 1/4 @ 45	45 1/4 @ 45 1/4
Tuesday	45 1/4 @ 45	45 1/4 @ 45 1/4

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	Dec., 1905.	May, 1906.
Wednesday	—	81 40 @ 39 3/4
Thursday	—	1 39 3/4 @ 39 3/4
Friday	—	1 38 3/4 @ 38
Saturday	—	1 39 3/4 @ 39
Monday	—	1 39 3/4 @ 39 3/4
Tuesday	—	1 38 3/4 @ 38 3/4

Wheat.

There is nothing doing in the local wheat market. Buyers abroad have not made any new orders, and San Francisco local exporters are not making any offerings for wheat. From Northern points it is reported that nearly everyone in the trade there has plenty of wheat on hand, both at tidewater and in interior warehouses. It is hoped that when business affairs shape themselves in Europe offers will be on a more plentiful scale. There is a great deal of conjecture at present respecting the foreign markets, and especially that of the Russian trade. Exporters are wondering whether or not that country will export grain in the near future, and whether this country will be called upon to supply the demand. If so, evidently we will see higher prices. The crops of the southern hemisphere, namely, those of Australia and Argentina, are somewhat abnormal, and it is difficult at present to place the amount sold so far. These countries will cut an important figure in the wheat trade for the next few months. From all information that can be obtained, however, it looks as if the crops in both countries will be good, both in size and quality, and, as soon as the latter is definitely known, there will be a rush of offers to European markets. So far this month there has been buying of the hand-to-mouth variety abroad. Quotations are steady, with a generally stronger feeling in both spot and futures. There is some demand in California for Northern red wheat, and possibly a large quantity will be brought in later.

California Milling	81 42 @ 41 47 1/2
Cal. No. 1 shipping	1 40 @ 41 45
Northern Club	1 42 1/4 @ 43 3/4
Northern Bluestem	1 45 @ 41 47 1/2
Northern Red	1 35 @ 41 37 1/2

PRICES OF FUTURES.

Wednesday, at the forenoon session of Exchange, May, 1906, wheat ranged from 81.38 3/4 @ —.

Flour.

Flour markets all over the world seem to have lapsed into the dullness customary at this time of the year. Cables from the Orient are not forthcoming, and only routine shipments are being made to Central and South America. While conditions are very quiet, the present state of affairs was expected, and millers have no cause to complain. Even in the North the situation is quiet. The straggling cables coming to hand there are only for small lots, and it will be some time before a good-sized demand materializes. Nearly every mill in that territory has closed down for an indefinite period. Of course, a few are running, but these are very fortunate. A few old orders remain unfilled, and some will be shipped this month. What is true of the export trade is also true of domestic business, and it looks as if everybody is temporarily out of the market. Quotations, however, are steady.

Patents, California	— @ 4 85
Second Patents, California	— @ 4 60
Straights	— @ 4 25
Superfine No. 1	3 50 @ 3 75
Superfine No. 2	3 00 @ 3 40
Oregon Bakers	4 15 @ 4 50
Washington Bakers	4 25 @ 4 60
Eastern Patents	5 50 @ —

Barley.

The market is strong, and the demand is exceedingly good, though there are no changes in prices. In view of the fact that other feed stuffs are very firm, dealers would not be surprised to see an advance in the near future. Stocks remaining unsold in the North are in very strong hands; it may require higher prices to dislodge them.

Brewing	81 22 1/2 @ 25
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Feed, No. 1	1 20 @ 1 22 1/2
Feed, fair to good	1 15 @ 1 17 1/2
Chevalier, No. 1 to choice	1 25 @ 1 30
Chevalier common to fair	1 20 @ 1 25
December	98 @ —

Oats.

Orders for seeds, both blacks and reds, have increased since the rains and choice oats should move off more rapidly from now on. Choice reds for feed have advanced and northern whites are higher than last week. Washington oats cannot be landed here at less than \$1.60.

White oats	81 45 @ 1 65
Black oats	1 35 @ 1 70
Red oats	1 30 @ 1 60

Corn.

Western yellow corn has been arriving more freely in the last week, and consequently the market is easier. The same applies to the white, though in a less degree. It is generally held, nevertheless, that prices should be a little higher, and holders here are inclined to wait for a turn in the market. Small yellow is unchanged and with but little inquiry, largely because of the firm, high price. White and brown Egyptian are having a slow sale at quotations, and as Western White Kaffir corn can be landed here at \$1.25, it is quite likely that California White Egyptian will decline.

Large White, good to choice	81 22 1/2 @ 1 27 1/2
Large Yellow	1 22 1/2 @ 1 27 1/2
Small Yellow	1 50 @ 1 55
Egyptian White	1 38 3/4 @ 40
Egyptian Brown	1 25 @ 1 27 1/2

Rye.

The rye market is well cleaned up and handlers have little trouble selling at quotations. The demand for rye for seeding purposes is increasing and choice rye is very likely to advance.

Good to choice	81 47 1/2 @ 1 52 1/2
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Buckwheat.

There is but little trading and none at prices above \$1.65, as the millers are bringing in New York rye flour on the same basis.

Good to choice	1 50 @ 1 65
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Beans.

The market is steady with a little more activity in pinks, which are generally held a little higher. They are selling quite freely in the neighborhood of 2c. As these are the cheapest beans to be had, it is predicted that there will be some lively trading before long. The last crop was exceptionally large, and good stocks are still held. In view of this, it seems that while pinks may firm up a little, it is hardly possible that any marked advance will occur. Large and small whites are firm, owing to the small stocks of these on hand. The market in general has more chance to improve than decline. Bayos, red kidneys and blackeyes remain firm at quotations. Limas show no advance; but these beans are still largely in growers' hands, held up to 5c. in some instances.

Small White, good to choice	82 90 @ 3 10
Large White	2 10 @ 2 50
Pinks	1 75 @ 2 00
Pinks, damaged	1 00 @ 1 25
Bayos, good to choice	3 30 @ 3 60
Red Kidneys	3 50 @ 3 65
Reds	3 00 @ 3 10
Limas, good to choice	4 75 @ 5 00
Black-eye Beans	4 50 @ 4 60

Dried Peas.

Dried peas show no great change, although the top quotation is an outside one. The market remains steady, and considering the fact that Eastern peas cannot be landed here at less than \$2.50, it is quite likely that a high price will prevail before the new crop comes in. Niles are having a slow sale.

Green Peas, California	83 25 @ 2 35
Niles	1 60 @ 1 75

Hops.

The hop market seems to show considerable improvement. Transactions in California have been few and usually of small proportions, but the interest is increasing and advices both from the East and from northern coast points indicate a stronger market. A good sized sale of Sonoma county hops is reported from Santa Rosa where 1,000 bales changed hands at 9 and 10c. In the Salem, Oregon, district 400 bales were sold this week at 9c. In Portland, small sales are reported at from 8 1/2 to 10c., with but little changing hands at the latter figures. A bullish feeling prevails in Oregon and growers are generally holding for higher prices.

Medium to fair	6 @ —
Good brewing	8 @ 8 1/2
Prime	9 @ —
Prime to choice	9 @ 10

Wool.

The local wool market continues featureless, except for an occasional small sale. The ideas of buyers and growers seem as far apart as ever as regards values. Notwithstanding a strengthening of the situation in the East, local buyers are holding off, claiming that California fall wools are not affected by the recent changes in

Boston. Growers, on the other hand, are encouraged by the present outlook and as most of the holdings are in pretty strong hands, it looks as though buyers would have to change their views if any business is to be done in the near future.

Humboldt and Mendocino	15 @ 16 1/2
Northern, free	14 1/2 @ 16
Northern, defective	11 @ 13
Middle County, free	10 @ 14
Middle County, defective	11 @ 13
San Joaquin and Southern, free	9 @ 12
San Joaquin and Southern, defective	8 @ 10

Oregon, valley	23 @ 25
Eastern Oregon	15 @ 17
Nevada	15 @ 19

Hay and Straw.

During the week just ended, 2,550 tons of hay were shipped to this market, practically the same quantity as for the week preceding. The heavy rain of the past few days has interfered seriously with shipments by water, so everything marketed since Friday has come by rail. The ultimate effect of the rain on the hay market cannot be foretold as yet. Considerable quantities of hay are being held back for speculation, and all these will now be offered for sale here. On the other hand, farmers can now go to work putting in their crops, which will necessitate the feeding of much larger quantities of both hay and barley than would have been used had the weather continued dry. The general feeling of encouragement occasioned by the storm will help business in every line, which always means a greater consumption of feed than would have been noted under a discouraging season, so on the whole we may expect little change in prices until the extreme end of the season, at which time it is possible that any surplus that might be remaining may be rushed to market, producing a temporary decline.

Wheat, choice	81 40 @ 16 60
Wheat, other grades	8 00 @ 13 50
Wheat and Oat	9 00 @ 12 50
Timothy, fair to choice	8 00 @ 12 00
Wild Oat	7 00 @ 9 50
Barley	8 00 @ 9 50
Clover	6 00 @ 9 00
Alfalfa	9 00 @ 11 50
Stock hay	7 00 @ 8 00
Compressed	10 00 @ 13 00
Straw, 3/4 bale	30 @ 50

Millstuffs.

In the millstuffs the excessive rains in the valleys have not affected prices. During the dry weather the market did not stiffen, as would naturally be expected, and now it does not seem to have been weakened by the rain. To all outward appearances the market will remain steady for some little time yet, and there are some indications that prices will advance. In the North prices have an upward tendency, both bran and shorts having been marked up 50c. during the past week.

Alfalfa Meal, 1/2 ton	22 00 @ 22 00
Bran, 1/2 ton	20 50 @ 21 00
Middlings	27 50 @ 28 00
Shorts, Oregon	21 00 @ 22 00
Barley, Rolled, choice	26 50 @ 27 50
Cornmeal	28 50 @ 30 50
Cracked Corn	30 00 @ 31 00
Oilcake Meal	39 00 @ 40 00
Cocanut cake or meal	24 50 @ 25 50

Seeds.

The rain throughout the State has created more demand for seeds. The inquiry for mustard seed for shipment to the East is also on the improve. The market has gained some strength through the string of inquiries. There is only a small stock on hand which will probably be sold before the arrival of the new crop. The Lompoc valley has had good rains and to all appearances the usual crop will be harvested.

Alfalfa	81 00 @ 14 00
Flax	— @ —
Mustard, Yellow	3 50 @ 3 75
Mustard, Trieste	4 50 @ 4 75
Canary	6 1/2 @ 7
Rape	2 1/2 @ 3
Hemp	— @ 5
Timothy	5 1/2 @ 6

Honey.

California honey is moving off slowly on account of the recent arrival of 400 cases from Honolulu, which is selling at from 2 to 2 1/2c. There are no changes in quotations, but sales are hard to make at 5c. for water white. The heavy rains in southern California should improve the outlook for the future, and buyers here expect holders to show more of a disposition to sell. Local jobbers are cutting prices to work off stocks on hand.

Extracted, Water White	4 1/2 @ 5
Extracted, White	4 1/2 @ 4 1/2
Extracted, Light Amber	4 @ 4 1/2
Extracted, Amber	3 1/2 @ 4
Extracted, Dark Amber	3 @ 3 1/2
White Comb, 1-frames	9 @ 10
Amber Comb	7 @ 8

Beeswax.

Beeswax shows practically no change, although considering 25c. the top of the market on dark, there is likely to be a drop very soon in this grade. The top price for light has changed from 28 to 27c, with very little selling at that figure.

Good to choice, light 1/2 lb.	26 @ 27
Dark	24 @ 25

Live Stock and Meats.

There is no great change in the beef and mutton market since the last report. The demand is still good and prices are firm. Mutton is in good request and prices may advance slightly at any time. The hog market is unusually stiff, and prices have advanced slightly. To all appearances the present condition in the hog market will continue for some weeks. Buyers here anticipate a tendency to advance within the next few weeks.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net 1/2 lb.	5 @ 5 1/2
Beef, 2nd quality	4 1/2 @ 5
Beef, 3rd quality	3 1/2 @ 4
Mutton—ewes, 80 lbs; wethers	2 1/2 @ 3
Hogs, hard grain, 150 to 250 lbs.	6 @ 6 1/2
Hogs, large, hard, over 250 pounds	5 1/2 @ —
Hogs, small, fat, under 150 lbs.	6 @ 6 1/2
Veal, large, 1/2 lb.	6 @ 7 1/2
Veal, small, 1/2 lb.	6 @ 9
Lamb, spring, 1/2 lb.	10 @ 11

Hides, Skins and Tallow.

The hide market is appreciably weaker, owing rather to the poor quality of the stock now offered than to any falling off in the demand. Hide dealers admit the probability of a further drop in prices within the next few weeks. Tanners are not buying very freely at present owing to the slow leather market, and holders of hides will become anxious to dispose of their present holdings before the good quality hides begin to come in.

Nothing but select hides, clean and trimmed, will bring full figures. Culls of all kinds either from grubs, cuts, hair slips side brands or murrain, are not always readily placed at the lower figures.

	Sound.	Culls.
Heavy Steers, over 56 lbs.	13 @ —	12 @ —
Medium Steers, 48 to 56 lbs.	12 @ —	11 @ —
Light Steers, under 48 lbs.	11 1/2 @ —	10 1/2 @ —
Heavy Cow Hides, over 50 lbs.	11 1/2 @ —	10 1/2 @ —
Light Cow Hides, under 50 lbs.	11 1/2 @ —	10 1/2 @ —
Stags	7 @ 8	7 @ —
Wet Salted Kip	10 1/2 @ —	10 @ —
Wet Salted Veal	12 @ —	11 @ —
Wet Salted Calf	13 @ —	12 @ —
Dry Hides	13 @ —	12 @ —
Dry Kip and Veal, 11 to 16 lbs.	16 @ 17	15 @ —
Dry Calf, under 4 lbs.	20 @ 21	19 @ —
Pelts, long wool, 1/2 skin	1 50 @ 2 00	90 @ 1 25
Pelts, medium, 1/2 skin	90 @ 1 25	60 @ 90
Pelts, short wool, 1/2 skin	60 @ 90	20 @ 50
Pelts, shearing, 1/2 skin	20 @ 50	3 00 @ —
Horse Hides, salted, large prime, each	3 00 @ —	2 75 @ —
Horse Hides, salted, medium	2 75 @ —	2 25 @ —
Horse Hides, salted, small	2 25 @ —	1 75 @ —
Horse Hides, dry, large	1 75 @ —	1 50 @ —
Horse Hides, dry, medium	1 50 @ —	1 00 @ —
Horse Hides, dry, small	1 00 @ —	4 @ 4 1/4
Tallow, good quality	4 @ 4 1/4	3 1/2 @ 3 1/2
Tallow, poorer grades	3 1/2 @ 3 1/2	— @ —

Bags and Bagging.

The bag market is very quiet, with prices on the same high level as heretofore. Calcutta bags are in better demand and at better prices than was the case at this season a year ago. There is no demand for bean bags and none is anticipated for July and August. A few contracts have been taken for grain bags for June and July delivery. Fruit sacks, in both cotton and jute, are quoted a fraction higher.

Bean Bags	6 1/2 @ —
Fruit Sacks, cotton, No. 1, 80 @ 84; No. 2	7 1/2 @ —
Fruit Sacks, jute, as to quality	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 22x36, spot	7 1/2 @ 7 1/2
Wool Sacks, 4-b	36 @ 37
Wool Sacks, 3 1/2 b	32 @ 34

Poultry.

The market is generally firm, and there has been an advance in some lines. To all indications there will be a good, steady market for the coming week. The poultry receipts are lighter, owing largely to bad weather and the difficulty of getting stocks to market. Prices are correspondingly stronger. The entire trade is looking for choice poultry in all lines at good prices. The coming Chinese holidays are bringing certain lines into especial favor. The Chinese are paying top figures for fine large stock. The turkey market is, however, dull, and only rarely fancy stock is taken at appearing figures.

Turkeys, choice Young, 1/2 lb.	17 @ 18
Turkeys, live gobblers, 1/2 lb.	17 @ 18
Turkeys, live hens 1/2 lb.	18 @ 19
Hens, small, 1/2 dozen	4 50 @ 5 50
Hens, large	6 00 @ 7 00
Roosters, old	4 50 @ 5 50
Roosters, young (full-grown)	6 50 @ 7 50
Fryers	4 50 @ 5 50
Broilers, large	5 50 @ 6 50
Broilers, small to medium	2 50 @ 3 50
Ducks, old, 1/2 dozen	5 00 @ 6 00
Ducks, young, 1/2 dozen	6 00 @ 7 00
Geese, 1/2 pair	2 00 @ 2 50
Goslings, 1/2 pair	2 00 @ 2 50
Pigeons, old, 1/2 dozen	1 00 @ 1 50
Pigeons, young	2 50 @ 3 75

Butter.

Butter is in good demand, the medium and store grades of dairy and creamery butter being especially wanted. Receipts have not been large and there are no accumulations. Storage stocks are being drawn on to some extent. Increased receipts and lower prices are anticipated with the first fair weather.

Creamery, extras, 1/2 lb.	— @ 30
Creamery, firsts	— @ 27 1/2
Creamery, seconds	21 @ 25
Dairy, select	20 @ 25
Dairy, firsts	22 @ 25
Dairy, seconds	20 @ 22
California storage	24 @ 26
Mixed Store	19 @ 20

Cheese.

The cheese market this week seems to be a very little stronger in some grades, but, practically speaking, there is no change. The tendency, however, seems to be toward a higher level of prices, especially for the better grades.

California, fancy flat, new	14	@15
California, good to choice	—	@13
California, fair to good	11	@12½
California, "Young Americas"	13	@14
Eastern, new	16	@17

Eggs.

Receipts continue about equal to the present demand at prevailing quotations. The commission houses expect heavier receipts when the present stormy weather ends, and a decline in prices may be expected to come in with the first bright weather.

California, select, large, white and fresh	30	@32
California, select, irregular color & size	28	@29
California, good to choice store	26	@27
Eastern firsts	23	@26
Eastern seconds	19	@20

Potatoes.

Since the dropping off of the great demand from the Southern States and the Southwest for potatoes, there has been practically nothing of importance doing here in cheap grades, which are still in stock here in considerable quantities. Fancy stocks are still hard to procure and prices for these are high and steady.

River Burbanks, per cental	50	@ 70
Salinas Burbanks	1 25	@ 1 60
Oregon Burbanks	75	@ 1 25
Tomatoes	80	@ 90
Sweet Potatoes	1 25	@ 1 50

Vegetables.

Considering the poor quality of vegetables now arriving in this market, the market is reasonably firm. Most of the goods now being offered have been in cold storage for a long time and the condition is very poor. Green bell peppers are now out of the market. Some Oregon onions are now on the way from the Columbia river, and advanced reports indicate that the quality of the goods shipped is excellent. Stocks of string beans and green peas are very low and prices are high. Cucumbers are practically out of the market, being quoted as high as \$2 per dozen.

Cauliflower, per dozen	60	@ 75
Beans, String, per lb	—	@ 17
Cabbage, choice garden, per 100 lbs.	1 00	@ 1 25
Egg Plant, per lb	10	@ 15
Garlic, per lb	4½	@ 5
Onions, Oregon, per ctn	1 25	@ 1 50
Onions, New Yellow Danvers, per ctn	1 25	@ 1 50
Onions, Australian Brown, per ctn	1 25	@ 1 50
Peas, Green, per lb	—	@ 12½
Tomatoes, per box or crate	1 50	@ 1 75
Artichokes, per doz	50	@ 1 25
Carrots, per sack	65	@ 75
Hubbard Squash, per ton	—	@ 20 00

NOTE.—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top, with hand holes in the ends, and weigh when filled from 50 to 60 lbs gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 35 lbs gross.

Fresh Fruits.

Nearly all kinds of fresh fruits are out of the market, apples and pears being still the only deciduous fruits offering, except a little cold storage. The demand for both apples and pears has been fair, though the quality of the offerings are in some cases poor. Winter Neli pears shows a further slight advance. Some poor quality apples are now selling as low as 50c.

Apples, choice to select, per 50-lb bx	1 25	@ 1 75
Apples, good to choice, per 50-lb. box	75	@ 1 00
Apples, common	50	@ 75
Pears, Winter Neli.	2 25	@ 2 75

Dried Fruits.

The local market for dried fruits shows very little change, although the wet weather has a tendency to weaken those lines which are in good supply. As a rule, however, stocks are low and there is but little prospect of any being held over for the next year. Therefore, the rain will, in general, have but little effect on quotations. In fact, prices on almost all dried fruits continue very steady, though the amount of business done is small. Retailers are all taking stock at this time of the year, and they are not busying themselves with much buying. It is to be expected, however, that within a week or two there will be a marked change. Apricots are higher and are generally held at about half a cent above former quotations.

EVAPORATED OR BLEACHED.

Apples, 50-lb boxes, rings, pressed, good to choice	8	@ 8½
Apples, extra choice to fancy, 50-lb boxes	8½	@ 9½
Apricots, Royal, good to choice, per lb	8	@ 8½
Apricots, Royal, fancy	9	@ 9½
Figs, 10-lb box, 1-lb cartons	55	@ 62½
Nectarines, White and Stanwick, per lb	8	@ 8½
Nectarines, red, per lb	—	@ 8
Peaches, unpeeled, good to choice	8½	@ 9½
Peaches, unpeeled, fancy to extra fancy	9	@ 9½
Pears, standard, per lb	—	@ 8½
Pears, choice to fancy	10	@ 12
Plums, Black, pitted	5½	@ 6½

WOOL SALE.

The Century Mercantile Company is conducting regular sales at its warehouse. This interests all growers. Full particulars by mail. Office, 14 Sansome St., San Francisco.

Plums, Red, pitted	7	@ 8
Plums, Yellow, pitted	6	@ 8
Prunes, Silver, good to fancy	5½	@ 8½
Prunes, in bags, 4 sizes, —@—c; 40-50s, 5½@5½c; 50-60s, 4¼@4¼c; 60-70s, 4@4¼c; 70-80s, 3½@3½c; 80-90s, 3@3¼c; 90-100s, 2½@2½c; small, 2½@2½c.		
COMMON SUN-DRIED.		
Apples, sliced	5	@ 5½
Apples, quartered	4½	@ 5½
Figs, White, in bulk	2½	@ 3
Figs, Black	2½	@ 3

Raisins.

The raisin situation seems to have cleared and prices are now considered pretty well established. The Mercantile Company, which includes most of the big packing houses, which bought the stock of the Raisin Growers' Company last week, has named prices, which, it is believed, will be maintained for some time to come. These are generally a little lower than the ruling quotations for some time back. The outlook for the coming crop has been improved considerably by the rains, but as yet it is too early for the 1906 crop to have any bearing on prices. Holders of raisins believe that last year's crop will be entirely exhausted before the new goods come in.

(Fresno delivery except otherwise specified.)

London Layers, 2-crown, 20-lb box	1 25	@ —
London Layers, 3-crown, 20-lb box	1 30	@ —
Fancy Clusters, 4-crown, 20-lb box	1 75	@ —
Dehesas, 20-lb box	2 00	@ —
Imperial, 20-lb box	2 50	@ —
2-Crown Standard loose Muscatel	4½	@ —c
3-Crown Standard	4½	@ —c
4-Crown Standard	4½	@ —c
Seedless Thompsons, 50-lb boxes	4½	@ —c
Seedless Sultanas	4	@ —c
Seedless Muscatels	3½	@ —c
Fancy, 16-oz. Seeded	6	@ —c
Choice, 16-oz. Seeded	5½	@ —c
Fancy, 12-oz. Seeded	4½	@ —c
Choice, 12-oz. Seeded	4½	@ —c
Fancy Seeded, bulk	5½	@ —c
Choice Seeded, bulk	5½	@ —c
Seeded Seedl. Muscatels, 16 oz.	5	@ —c
Seeded Seedl. Muscatels, 16 oz.	5	@ —c
Seeded Seedl. Muscatels, 12 oz	4½	@ —c
Seeded Seedl. Muscatels, bulk	4½	@ —c

Citrus Fruits.

The orange market is weaker, the market having gone down for all, except strictly fancy grades, owing to the increased accumulations. A good deal of poor stock is coming in. Lemons are being held at former figures, and there is no appreciable change in this market. Grape fruit is up, some sales having been made at \$2.25, with the possibility of higher figures within a few days.

Oranges, fancy	2 00	@ 3 00
Oranges, choice	1 25	@ 1 75
Oranges, standard	1 00	@ 1 40
Oranges, Seedlings	65	@ 1 10
Lemons, California, fancy, per box	1 50	@ 2 00
Lemons, California, good to choice	1 00	@ 1 25
Lemons, California, standards	60	@ 75
Grape Fruit, per box, new	1 00	@ 1 50
Limes, per box	3 00	@ 4 00

Nuts.

There is but little movement in nuts, although the stocks on hand are gradually passing out of first hands. Prices are still holding at the old figures, though quotations may have been shaded by holders who came through the holidays with larger stocks than they had hoped for. Walnuts are in light supply and are being more firmly held than is the case with almonds. The outlook is for a bear walnut market before the next crop comes in, and prices may move up a month or two from now.

Peanuts, fair to prime	4½	@ 5½
Cal. Walnuts, No. 1 soft shell	—	@ 13
Cal. Walnuts, No. 2 soft shell	—	@ 9
Cal. Walnuts, No. 1 hard shell	—	@ 12½
Cal. Walnuts, No. 2 hard shell	—	@ 8½
Almonds, IXL, per lb	11½	@ 12½
Almonds, Ne Plus Ultra, per lb	11	@ 12
Almonds, Nonpareil, per lb	11	@ 13
Almonds, Languedoc, per lb	8½	@ —
Almonds, Golden State, per lb	8	@ —
Hard Shell, per lb	5	@ —

Transfers of Holstein Friesians.

Recorded sales of registered Holstein Friesian cattle in California, reported for the PACIFIC RURAL PRESS by F. L. Houghton, Brattleboro, Vt., secretary of the Holstein Friesian Association of America:

BULLS.

De Kol Hengerveld Burke Mechthide and Roubie Creamelle De Kol Prince, Chas. D. Pierce to Minor & Thornton, Fresno.

MAIL ORDER HOUSES.

Do you get the price list of the IMPERIAL CASH STORE? If not, better send for it to-day. The best, cheapest and most reliable Mail Order House on the Pacific Coast. 531 Washington Street, San Francisco, California.

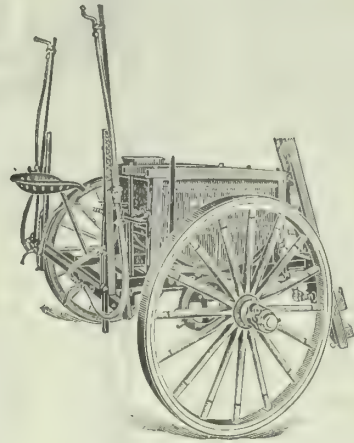
TURKEYS

We have been handling Turkeys in this market for the past thirty years, and with such a long experience can give you the best results. Full weight, full prices and prompt returns is our motto. Write us for information.

D. E. ALLISON & CO., Inc.
117-119 Washington St., San Francisco.

Traction, Orchard and Park Sprayer.

Two Horse.



WARRANTED to be MORE POWERFUL and of GREATER CAPACITY than any other traction spraying machine manufactured. For orchard and park use, and DESIGNED ESPECIALLY FOR LARGE OPERATIONS. Convertible for use in all field work, such as potatoes, grape vines, beans, beets, melons, cucumbers, wild mustard, and so forth.

There is every reason why our "Auto Spray" No. 23 should do and should be what we claim for it. The illustrations annexed are reproduced from actual photographs of the machine. Hence not a particle of exaggeration. A man with any idea of mechanics can see at a glance that this machine has been built on mechanical lines. The mechanism is equal to that of a modern locomotive. This machine is designed for use in extensive orchards with large trees, and of course will do smaller operations equally well. Just here we are going to ask you to read what Mr. Chas. W. Burnett of Phelps, N. Y., wrote us recently after having used this "Auto-Spray" No. 23 throughout one season.

"I am pleased to give you a report of my experience with your horse power machine the past season. In spraying apple trees it performed beautifully, carrying a pressure of 125 to 140 pounds on trees 30 years old and 33 feet apart in the row; in fact we had power to spare as the machine would build up 2 pounds pressure for every foot we drove. You have surely solved the problem of orchard spraying effectively and cheaply, and the manner in which your machine does its work is not only a credit to its builder but a lasting pleasure to the purchaser.

"In spraying potatoes the machine gives us equally good satisfaction. We found that one pump would carry 6 nozzles at a pressure from 110 to 150 pounds with an overflow. With this pressure at our command we did very thorough and rapid work. We ran the machine over something like 100 acres."

We have known all along that it was possible to build a traction machine capable of handling large trees and large orchards successfully. Some growers have favored gasoline outfits. From our standpoint we believe that even if a gasoline outfit could be bought for half the cost of our "Auto-Spray" No. 23, it would be a mistake to invest in one. As a matter of fact, however, a gasoline outfit will cost twice as much as this traction rig, and when you have a gasoline outfit you pay for every particle of power you generate. Not only that, but you have to pay large bills for repairs. Your outfit will likely break down in the middle of your spraying season, perhaps several times. It also requires an expensive and competent man to manage such an outfit. Any man who can drive horses or handle a plow can use our "Auto-Spray" No. 23 and without annoyance. If you have ever seen a gasoline outfit in operation you know that two horses can handle it only with the greatest difficulty, and this only when the ground is hard and the pull is short. Did you ever see a gasoline outfit mounted on four wheels turn at the end of a row? If so, imagine how much trouble is saved when you have your outfit mounted on two wheels. You notice that we are comparing "Auto-Spray" No. 23 with a gasoline outfit. This is because there is nothing else in capacity or power that compares with our traction machine.

Not only is this machine cheap as compared with a gasoline outfit, but it is still cheap as compared with any other traction machine on the market. It is cheap because every journal is machined to a fit. Every line is according to the rules of mechanics. There is not one ounce of waste material and yet every part is equally strong.

We do not ask you to take our word entirely about our machines. We can give you any amount of reference. For instance, we take the following statements from letters recently received from Mr. L. L. Crocker of Loomis, Cal. ".....I now claim I have the best and cheapest power spraying machine in California. It will cause a great many gasoline outfits in this State to hang up their tails. They are not in it alongside of this machine.....You see I am very much enthused over your power machines because I know they are the best spray outfit made in the world. Tell the people that your machine will spray two to four thousand trees per day with three men and one span of horses. There are no limbs or portions of the tree not thoroughly sprayed. Not one-half the spray is lost as is usual with hand machines. The tallest trees as well as the smaller ones get a thorough spraying. No labor. No expense for power."

A detailed description of the "Auto-Spray" No. 23 would call attention to the heavy Sarven wheels with 4-inch tread. Axle made of heavy cold rolled shafting. Independent eccentric drive to each pump. The eccentrics bored to a fit within three thousandths of an inch. The bed frame is steel, and both the pump and the axle upon which the eccentric is locked are joined to this steel bed frame, hence there is no chance of racking the tank. This simplicity of construction is fully illustrated in our circular No. 0 giving a representation of this bed frame with mechanical parts attached.

The pump is double acting with cylinder 8 inches long and full 6 inch stroke. The valves are all exposed and may be cleaned instantly. The suction is taken directly from the bottom of the solution tank, and the flow is controlled by a lever shut-off between the pump and the tank. The agitator works independent of the pump and is constant. The two pumps work independently and are thrown out and in action by simply moving a lever. There is also a hand lever attached to the right-hand pump by which it is possible to develop power while the machine is standing still. This is sometimes useful in field operations where one wishes to spray without driving to work up pressure.

The 30-gallon air chamber furnished with this outfit is another unique feature. This machine will develop pressure at the rate of 2 pounds for every foot of motion. To understand the wonderful capacity of this machine you must take into consideration the fact that this pressure is developed in an air chamber of 30 gallons capacity.

We would also call your attention to the complete equipment for controlling the flow and pressure. Also the convenience with which the valves, overflow, safety valve, shift levers, lever pump handle, etc., may be reached by the operator sitting in his seat.

One of the valuable features to be noticed in connection with this machine is the fact that it can be converted to use in the potato field, or in fact for any spray operation. A machine of large capacity can be used for small operations, but a machine of small capacity cannot be used for large operations. To convert this machine for use in the potato field one has only to detach the lead of discharge hose and extension pipe and substitute the ordinary potato nozzle frame; or for use in the vineyard the usual attachment for vineyard work is substituted. For prices of these extra attachments see our price list.

Our object in giving you a full description of this sprayer is to put you in the position you would occupy if you could go to some man who is using one of these machines and ask for his honest opinion after use and severe test. Whenever we can refer a man to a user who is near enough so he can call upon him, we always secure an order.

As in the case of all our sprayers, we warrant the "Auto-Spray" No. 23 to be as represented and to give satisfaction, and if it falls in any particular we will cheerfully refund the purchase price. This means that every user must be satisfied, and a satisfied user is our best advertisement.

PRICES.

"AUTO-SPRAY" No. 23—A brass piping, 30 gallon air chamber, pressure gauge, one 20-ft. lead of discharge hose, bamboo extension, nozzle cluster, 150-gallon solution tank, complete, as shown in illustration herewith.....\$215

SIX-ROW POTATO ATTACHMENT, complete with nozzles, if wanted as an extra.....\$10

VINEYARD NOZZLE FRAME, with six nozzles, three on a side, the nozzles complete, if wanted as an extra.....\$8

For Sale by

L. L. CROCKER, Loomis, Cal.

FORESTRY.

Grazing Fees on Reserves Upheld.

The policy of charging fees for live stock pastured on the forest reserves having been upheld by the sentiment of a majority of the stockmen using the reserves, and having been approved by the President, the efforts of the Forest Service are now directed toward rendering the grazing privileges so secured by permit of the fullest value to the user consistent with the permanent good of the reserves.

Since the first grazing regulations were issued by the Secretary of Agriculture on July 1 last the Forest Service has attentively watched their working in practice. It became evident that they would need certain modifications to assure to stockmen a more equitable use of the range without in the least loosening those essential restrictions on which the very existence of the live-stock industry depends. From the first, the main body of the grazing interests quickly grasped the advantages of grazing under a system of regulation, and justly appreciated the fairness of a reasonable charge which would secure both the grazing privilege and a permanent use of the range. Naturally enough, the terms of the grazing regulations have called forth discussion and suggestion, but, with the exception of Colorado, protests have been received from no grazing State calling for more than the amendment of certain of the restrictions under which the grazing privilege was to be paid for. The protest of Colorado grazing interests against the payment of any grazing fee whatever led to the conference held on December 1 at Glenwood Springs, at which representatives of live-stock owners conferred with the Forester. Certain concessions for which the experience of the Forest Service with the new regulations had paved the way were then agreed to by the Forester. These concessions will be included in the revised edition of the grazing regulations which the Secretary of Agriculture will issue on January 1, when the charge for grazing permits will go into effect as planned.

Among the new regulations to go in force on January 1 are these:

Regulation 14 provides for the construction and maintenance of drift or division fences, under certain conditions, without charge other than the regular grazing fee.

Regulation 17 has been amended so as to provide that: "Whenever any stock is removed before the expiration of the permit, it can be replaced by other stock to fill out the number covered by the permit, if the nearest forest officer is notified at once of such action." This amendment is designed to give permit holders the full use of their permits.

Regulation 21 is amended so that all stock will be required to conform not only to the quarantine regulations of the Bureau of Animal Industry, as heretofore, but to all live-stock laws of the State or Territory in which the reserve is located. Rangers will immediately report any violation of the live-stock laws, and will assist stockmen to protect their property against theft.

Regulation 22 is amended so as to allow more freedom in the use of private lands owned or leased within reserves by stockmen whose stock must cross reserve lands to reach such holdings.

The amendment to Regulation 24 defines more specifically the privileges allowed in the construction and maintenance of pastures, and provides that "The agreement for the privilege granted under Regulations 14 or 24 may be made to cover a period of from one to five years, provided it stipulates that failure to secure a renewal of the grazing permit in connection with which it is granted will cancel the agreement for the maintenance of the drift or division fence, or pasture."

A special concession was also made in grazing permits on cattle for the season of 1906, in order to protect and assist home builders by giving a half rate on cattle up to the number allowed in the highest permit of the lower half

24
YEARS
WEAR
NO
REPAIRS

SEPARATOR FACTS

43
YEARS
WEAR
75¢
REPAIRS

Just facts—that's all you want. Facts can't hurt you nor Tubular Cream Separators. Facts prove Tubulars outwear all other makes five to ten times over.

On August 2d, 1904, we started a No. 9 hand driven Dairy Tubular, rated capacity 900 lbs. per hour, on the hardest test a separator was ever put to—an endurance test to last until the wearing parts give way. This Tubular has now run 50 hours a week for 43 weeks—and is still running. Every week of this test is equal to a year's service in a ten cow dairy. No other separator made could stand such a test.

24 Years' Work—No Repairs		43 Years' Work—75¢ Repairs	
Hours run.....	1,200	Hours run.....	2,150
Pounds separated.....	1,080,000	Pounds separated.....	1,985,000
Turns of crank.....	8,155,760	Turns of crank.....	5,652,070
Turns of bowl.....	1,152,000,000	Turns of bowl.....	1,864,000,000
Oil used.....	8 quarts	Oil used.....	5 1/2 quarts
Time oiling.....	About 4 min.	Time oiling.....	About 7 min.
Time adjusting.....	None	Time adjusting.....	10 min.
Repairs.....	None	Repairs.....	75 cents

After 24 weeks, the balls in the frictionless bearing supporting the bowl showed wear. This was natural, for each had rolled over 32,000 miles. Renewing balls cost only 75 cents and ten minutes adjusting, yet made this Tubular as good as new. All Tubulars are equally durable. Catalogue P-131 tells about them. Write for it today.

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Toronto, Canada West Chester, Pa. Chicago, Illinois

**4 TO 1/2 BUTTER
LOST THIS
WAY**

WHICH?

Which way do you skim your milk?
It is hard sometimes to realize just how great the loss of cream is with crocks and pans. Some people may not believe that a

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LOST
THIS
WAY**

U. S. CREAM SEPARATOR

skims enough closer than the old way to increase their butter yield one-fourth or more. But it does. Users say so. Here's an every-day example—

"ALTURAS, CAL., Sept. 1, 1905.
"The U. S. Separator beats them all for ease of handling and clean skimming. When we got the No. 7 we were making 40 lbs. of butter per week with pans. The first week that we run the Separator we made 60 lbs. and with less work.—KELLY BROS."

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of all permits issued in each State or Territory. The limit, based on permits issued during 1905, is found to be as follows:

State or Territory.	Half-rate Limit.
Arizona.....	75
California.....	50
Colorado.....	60
Idaho.....	30
Kansas.....	50
Montana.....	60
Nebraska.....	50
New Mexico.....	30
Oklahoma.....	50
Oregon.....	30
South Dakota.....	30
Utah.....	30
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Wyoming.....	100

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"ROBS," a rust-proof, prolific, hardy, and very strong flour variety, bred by the Australian Government Expert; guaranteed pure and true to name; \$1.25 a Bushel f. o. b. Sydney.

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Apples, Pears,
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Walnuts and Chestnuts
On their own roots and grafted trees.

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Grafted on their own roots. All the leading table, wine and raisin sorts.

Berry Plants,
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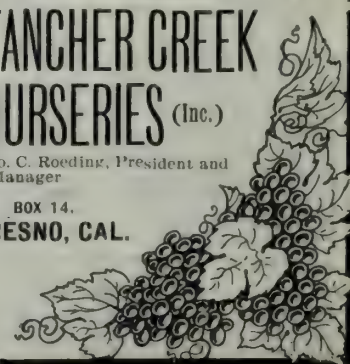
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CHERRIES and GENERAL NURSERY STOCK.

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REDUCED PRICES FOR LARGE ORDERS. ADDRESS: Manager, SPRING VALLEY RANCH Rocklin, Placer Co., Cal.

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ROSES Two-year-old field grown.

Rhododendrons, Camellias, Azaleas, Daphne, and other hardy flowering Shrubs and Vines.

Acacias, Pines, Cypress, and a large collection of Trees.

Cypress, Blue and Red Gums, Pines transplanted in boxes.

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IN VARIETY,

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Write for prices, stating quantity wanted.

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SEEDS: Australian Rye Grass, Alfalfa, Vegetable and Flower.

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Can be planted five feet apart each way.

Can be planted until August 1st and mature crop.

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Also MUIR PEACH TREES.

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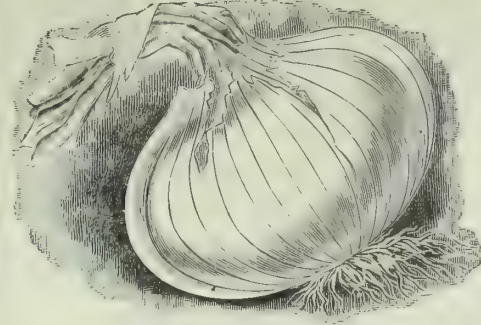
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Citrus Trees : : Ornamental Trees

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THE CROCKER BARTLETT PEAR
Is out of sight compared with other pears. GOLDEN RULE NURSERY, Loomis, Cal.

Choice Tulare Lake or Utah ALFALFA SEED.

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Patrons of Husbandry.

Tulare Grange Meeting.

TO THE EDITOR: Tulare Grange installed its officers for the ensuing year, yesterday, the sixth. The retiring Worthy Master, Emmet Barber, being the installing officer. There was a large attendance to witness the installation services and the usual exceptionally good lunch afterwards.

The following officers were installed: Worthy Master, Sister Amanda O. Swanson; Overseer, Brother T. J. Lawson; Lecturer, Bro. John Tuohy; Steward, Bro. E. C. Shoemaker; Assistant Steward, Bro. F. H. Styles; Chaplain, Sister Caroline P. Styles; Treasurer, Bro. E. E. Davis; Secretary, Sister Bertha I. Morris; Gate Keeper, Bro. A. J. Woods; Ceres, Sister Emma Isley; Pomona, Sister Ada Griffith; Flora, Sister Myra Field, L. A. Steward, Sister Ella Nelson; Organist, Sister Ella Styles.

The new Worthy Master makes a dignified presiding officer and impressively conferred the third and fourth degrees on a class of two.

After installation Bro. E. C. Shoemaker, on behalf of Tulare Grange, presented the retiring Worthy Master with a Past Master's badge.

Bro. E. C. Shoemaker reported obituary resolutions on the death of Bro. Wm. Johnston, Past Worthy Master of California State Grange.

The program committee reported a program of subjects to be considered at the several meetings of the Grange for the next six months.

Jan. 6th, National Grange topic. National Grange topics will be considered at the first meeting of each month; local Grange topics will be considered at the second meeting each month.

Jan. 20th, 'What are the advantages of an agricultural education to the young man who follows farming?' Assigned to Dr. Field.

Feb. 17th, 'In the distribution of water for irrigation, should the allotment be in accordance to the requirements of the crop to be grown?' Assigned to Dr. Field.

March 16th, 'Should Tulare Grange encourage the culture of sugar beets in Tulare county?' Assigned to Bro. Henry Hunsaker.

April 21st, Does it pay farmers to import high-priced stock? Bro. E. C. Shoemaker.

May 19th, 'For income purposes, what fruits should we raise on our Tulare farms?' J. Forrer.

June 16th, 'Do good roads add to the value of the farm and promote the enjoyment of farm life?' Assigned to E. E. Davis.

The necessity of the Grange sustaining the efforts of the President favoring Congressional legislation enabling the Interstate Commerce Commission to enforce its rules and orders was discussed thoroughly without bias or partisanship, all agreeing that the recommendations of the President are right and should be sustained.

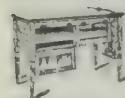
After the meeting closed a public meeting was held to hear Mr. Dyer, manager of the Pacific Sugar Company, on the adaptability of the soil and climate of Tulare county to the growth of sugar beets, the cost of their production and the price the company will pay for the beets.

Mr. Dyer's address was listened to with marked attention and will doubtless cause many sugar beets to be planted in this district. T. J.



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From the State Lectures.

To all Members, but Especially Lecturers,
of Subordinate and Pomona Granges,
Greeting:

Since last writing to the PACIFIC RURAL PRESS and other agricultural papers in California, I have not been overburdened by communications. One direct enquiry by an outsider and Sister Twitchell's letter in the last issue of this paper, are all. But, then, the new Lecturers and officers are not yet installed. Today I am at Dinuba, Tulare county, to install. Master of State Grange Griffith is doing the same for San Jose, and he was to supply Santa Rosa with an installing officer. Doubtless other Granges are inducting their newly elected into office. So now we hope all will 'get off on their right foot' and keep things moving.

First, in reply to Sister Twitchell, of Grass Valley: Thanks for prompt response. So long as the faithful few, the old guard, are at their posts, nail to the mast your motto, 'Don't give up the ship.' If there are but a few that meet, make it so social, so interesting, with profitable informal discussions, or comparing of notes and experiences, that all will want to come again. Then tell all of the absentees you can individually reach, so that some of them will conclude that they can't afford to stay away. Announce and report in your local paper. You might try, if convenient, an occasional meeting at some member's home with that magic drawing announcement, 'basket dinner,' or, at least, 'light refreshments.'

We should all emphasize that while we most of us need to learn how to raise the most possible and best produce per acre, and to secure the highest prices therefor, these are not the only or main motives that actuate the true Patron or Matron of Husbandry. We aim to raise the profession of farming till young men and women shall realize that it takes as much brain-power, is as fascinating and may be made as remunerative as other professions. Try hard to inaugurate or assist in some useful public improvement—better roads or sidewalks, ornamenting or beautifying the school house or God's Acre, as the last resting place of the loved ones is sometimes called. Talk up and get the public to investigating and discussing the parcels post; or circulate some petition for some worthy object. Do something, and let the public know that the Grange is up and doing.

I am glad to report that Dinuba Grange, Tulare county, as doing well and going to do better. They have a good, influential membership. An active canvass is being made and new proposals are received at nearly every meeting. I saw the editors of the two local papers and found they had already promised ample space under the heading of 'Grange Column' if members will give matter and news therefor. I handed in enough for the first issue of each. In talking with public men it was easy to discern that they recognize the local, State and National Grange as potent factors for good. It was my pleasure to install an excellent set of officers, among them a wide-awake Lecturer. They are to be congratulated as being in the same county as Tulare Grange. They will co-operate and fraternize. The officers are: Master, F. S. Clifton; Overseer, W. F. McCracken; Lecturer, James N. Patterson; Steward, C. B. Cone; Assistant Steward, J. W. Fraser; Chaplain, Rev. E. E. Fix; Treasurer, J. H. Ramm; Secretary, W. A. Bates; Gatekeeper, W. T. Pyott; Lady Assistant Steward, Mrs. S. A. Gordon; Ceres, Mrs. G. W. Wylie; Pomona, Miss Lizzie Patterson; Flora, Miss Pearl Hamm. They meet in Odd Fellows' Hall at 2 P. M. each second and fourth Saturdays.

I add the subjects suggested by the Lecturer of the National Grange for discussion during January and February:

1. 'Why does the Grange favor the

removal of the revenue tax on denatured alcohol?'

2. 'What can the Grange do, in view of the present status of railroad-rate legislation, to promote it?'

3. 'How can farm-fuel supply be obtained at least cost?'

For February:

1. 'Why should a parcels post be established by the Government?' (A good subject for public discussion; some merchants will be ready to take the negative.)

2. 'How can inspection (visitation by State deputy) of Granges be made most helpful to the Order?'

3. 'What rules should be observed in providing a supply of seed for the season's crop?'

Let these be supplemented by others of local and State interest. Don't fail to have a question box.

J. W. WEBB,
Lecturer State Grange.
Modesto, Cal.

FLORIN GRANGE has adopted resolutions of respect to the memory of Senator James R. Clark, an old member, whose death is sincerely mourned.

FIGHT PEAR BLIGHT.—Sacramento dispatch to *Chronicle*, Jan. 16: A supreme effort to secure effectual control of the pear blight, which threatens the destruction of the pear orchards of California, was determined upon at a meeting of the Sacramento Valley Development Association held in Sacramento, which was attended by representatives of prominent fruit interests, including Lieutenant-Governor Anderson, manager of the California Fruit Distributors. The Department of Agriculture at Washington expressed a willingness a short time ago to send four experienced pathologists to aid in directing the fight now being waged against this disease, but has been deterred by the fact that no moneys are available in the department for this purpose. At the meeting the development association decided to assume the responsibility of the field expenses of these men, estimated at \$1,200, and so wired the department. This action will result in an increase in the working force now combating the blight, and will bring to California some of the men noted for successes in fighting other plant diseases. The Bartlett pear orchards of this State, which are threatened with destruction, are estimated to be worth \$10,000,000. The effort to stamp out the pear blight is being carried on jointly by the State University, the State Horticultural Commission and the United States Department of Agriculture. The disease has practically destroyed the pear orchards of the San Joaquin valley, and only the most vigorous effort will prevent the destruction of the entire pear industry, one of the most important of California's horticultural industries; and the prompt action of the valley organization is regarded here as one of the most important steps ever taken by this body.

He that Loves

a rosy cheek and a soft,
smooth face uses nothing
but the old reliable

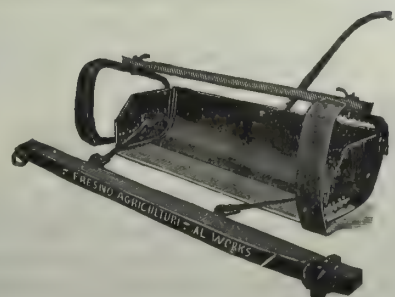
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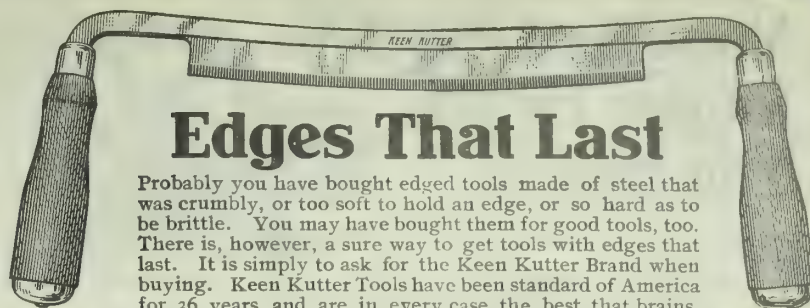
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ORANGE LAND DEAL.—Porterville *Enterprise*, Jan. 12: W. A. Hall sold for R. E. Hyde, 100 acres of his land north of Tule river, near Globe, to D. A. Russell of Palo Alto. Mr. Russell will make arrangements to put out all the land to oranges. He intends putting down a well.

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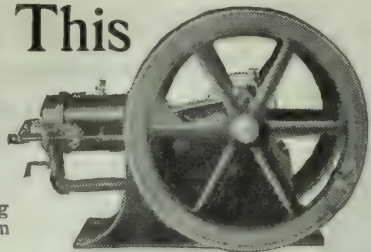
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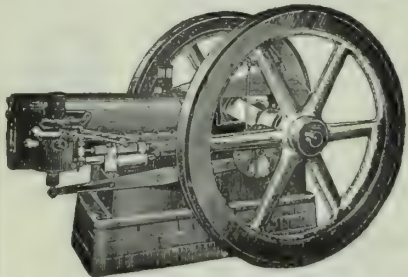
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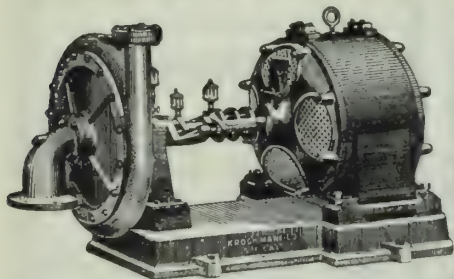
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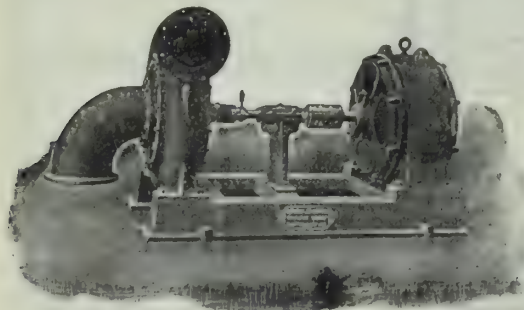
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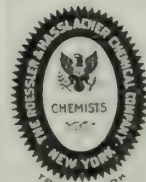
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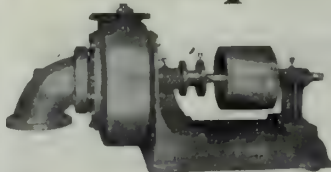
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THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 4.

SAN FRANCISCO, SATURDAY, JANUARY 27, 1906.

THIRTY-FIFTH YEAR.
OFFICE: 330 MARKET ST.

The Fruit Box Industry.

We have already followed the lemon from picking to packing for shipment, illustrating the various steps of the producing process by reference to the operations of the Limoneira Company of Santa Paula, Ventura county, which is one of the leading enterprises of its kind in the State. This week we allude to a very important incidental branch of the industry, that of making the boxes required for the deliv-

set-up boxes. Many labor-saving devices in forms, clamps, etc., are employed in the final making of the box; one of the most recent is the nailing machine which is being introduced in some packing houses.

At a recent convention of California fruit canners held in this city a very interesting paper was read by Mr. G. X. Wendling, vice-president of the California Pine Box & Lumber Co., from which we shall take a few statements of importance in this connection: In the early days of the fruit industry, says

transported to all parts of the globe, came to the struggling box industry of California, Oregon, Arizona and Nevada a new life, welcomed by the lumbermen. In 1896 the consumption of pine boxes for the movement of California fruits was approximately 50,000,000 feet of finished shook. In 1897 the producers of pine boxes were successful in the formation of the Pine Box Manufacturers' Agency, the first year's production of the association being about 57,000,000 feet. The fruit industry has grown by leaps



Box Making at the Limoneira Lemon Packing House in Ventura County.

ery of the fruit to consumers thousands of miles away. And in this connection we make allusion to box making in general as related to fruit products. It is, indeed, one of the most interesting of the many industries which has been encouraged by the growth of the fruit interests, and without which the growth could not have been attained.

Obviously, fruit box making at the packing house is only the closing act in making the box. The lumber is milled hundreds of miles away and is cut to sizes also at the mills. The box comes to the grower or packer with all its parts true to size, but "knocked down," and only the assembling of the parts and nailing are required. The technical term is "in the shook," and in this form a car holds, of course, many times the number it would contain of

Mr. Wendling, the call for boxes was of necessity limited to a small production of fruits distributed locally throughout the State to serve a scattered population found mainly in the cities and towns. For many years the box factory was looked upon as the general scavenger to a lumbering plant; on the theory that what could not be used for building lumber could be put through the box factory, and whatever was realized was so much to the good, as otherwise it would be a total loss. With the invention of the refrigerator car, providing safe and satisfactory transportation for green fruits over arid plains and desert wastes, and, concurrent therewith, the drying of fruits, and last but not by any means least, the discovery of safe and economical methods of so canning fruits of all kinds that they could be safely

and bounds until with the close of 1905 fruit box making is consuming approximately 160,000,000 feet. Perhaps nothing more graphically illustrates the growth of the fruit industry than these totals, as they lie within the short span of nine years, and these figures refer only to shook manufactured from soft pine lumber.

It is a strenuous life for the pine lumberman. The saw-milling season in the altitudes where white and sugar pine grows is short, usually opening about the first of April and closing about the first of November, hence effort is required through this brief operating season to produce sufficient raw material for the following season's approximate requirements. The products are highly perishable and require a comparatively perfect service in shook delivery.

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E. J. WICKSON Horticultural Editor

SAN FRANCISCO, JANUARY 27, 1906.

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The Week.

Since the storms, the lengthening sunshine and increasing temperature have induced a doubling of effort at field work, and every animal is now earning his barley and his owner is trying his best to make him do something which will pay for all the barley he ate during the long idle spell. It looks as though the effort would succeed, for the outlook could not be better at this season. The prospect is that, as usual in the third week of January, the lowest temperatures of the winter have been reached and a quick growth of grass and grain may be expected from the coming of the February springtime. Planting of trees and vines should now proceed rapidly in all except west coast situations, because root growth now will be the measure of the summer endurance of the new plant. It is expected, therefore, that our agricultural population will be as busy as they can possibly be during the next few weeks.

Have you thought recently of what a tremendous agricultural advantage it is to California that temperatures are so steady, extremes not far apart, cosmically speaking, and oscillation between them gradual? This last proposition is perhaps one of our best endowments. See what has happened during the past week at the East. On Sunday, the Weather Bureau says, a warm wave, scoring the highest record in temperature since 1890, prevailed throughout the region between the Mississippi valley and the Atlantic Coast. Its crest was in Ohio, where the temperatures ranged from 70 to 74°. South of the Ohio river it was less warm because of heavy rains and thunder showers. In Washington the weather was spring-like, with a maximum temperature of 63°. Two days later there came a sleet storm of almost unprecedented severity in the Mississippi valley and the Great Lakes region, with heavy snow in all sections between the lakes and the Mississippi, heavy rains and high winds between Chicago and the Atlantic Coast. The Polar waves sweeping down from the Northwest threw a large section of the United States into the icy grip of the worst winter day experienced in years. This is the condition which largely limits the endurance of arboreal vegetation on the Atlantic side of the Sierra Nevada. To awake to activity in midwinter thaws and to perish in the following freezing is the fate of many deciduous growths. The telegraphed reports say that the loss to fruit and ornamental trees and shrubbery will be enormous, as the unusually warm weather had coaxed the sap into the trees and all over the valley regions trees were ready to blossom. The sudden arrival of the cold wave will destroy millions of trees. This is indeed a calamity and likely to considerably affect the produc-

tion of fruits in regions where such severe fluctuations of temperature occurred.

There is no excuse for having an "opinion" as to whether the climate is changing or not. It is not a matter of opinion; it is a thing of the record. A Sacramento man had an opinion that the winters at the capital were getting colder and the record showed that there was no foundation for it in the facts. Still we are quite in sympathy with the man in his conclusions, although his premises were wrong, because he insisted that when a horse is shorn of the natural covering which gives protection against the sweeping winds of winter some provision ought to be made to prevent chilling of the animal, which inevitably would lead to suffering and ailments. To guard against these dangers proper coverings should be provided. "It may not injure a horse to clip him in this way if he is treated right afterwards," said our humanitarian. "It might not hurt any of us if we should strip for a race even on a chilly day, provided we put on the requisite clothing afterwards. The cases are analogous. The horse is entitled to some sort of protection. That is strictly true, and however men may quarrel as to the tendency of the climate to change, they should cover up the clipped horse while they are struggling with the issue. That is simply a case of horse sense.

And while we are talking about the weather, it may be just as well to go on to another phase of it, and that is the wet and dry of it. A very important new phase of the Irrigation Investigations of the United States Department of Agriculture is coming into proper prominence. In all the irrigated districts there will always be land above the water—even in the present cavortings of the Colorado river we hope that will be the case. When there is every effort being made to develop irrigation practice, there should be corresponding effort for the better handling of the adjacent land above the ditches. This problem is now exciting much attention throughout the plateau region from the Sierra Nevada to the Rockies, and California is interested in it also, for her high mesa and foothill lands, as well as for the plains beyond the reach of water. We notice that there was recently a conference of the irrigation and drainage engineers of the Department of Agriculture to determine the location and character of the field work to be carried on during the year 1906. Among the questions under consideration was the investigation of irrigation as related to dry farming. This is a most important line of work. Utah has already taken it up by State appropriation. It will strike nearly everywhere in time.

There is another irrigation proposition telegraphed from Washington which we are not so sure about. The Senate Committee on Irrigation has referred to a sub-committee a bill providing for the withdrawal from public entry of lands needed for townsite purposes in connection with irrigation projects. The purpose of the bill is to bring in an amendment which will deal with the subject of disbursing public money from the irrigation fund. Several members of the committee took the position that the control of these funds should not be left to the Geological Survey without supervision by Congress. There is now about \$32,000,000 in the funds affected, and it is not surprising that Congress should prick up its ears and snort at all that money being spent without its participation. Perhaps it is all right to look into it, but our first impression is that the reason why the people look so complacently upon the spending of all that money for interior development is because the enterprises are believed to be in the hands of disinterested and public-spirited experts, and not in politics. We believe that if these irrigating millions go into the hands of politicians the whole national irrigation will go to smash. However, we shall know more about this measure later.

State Horticultural Commissioner Ellwood Cooper does not receive much encouragement from the Massachusetts authorities as to the acceptance of his proposition to eradicate the brown and gypsy moths, whose depredations have caused such extensive damage. Mr. Cooper offered to do this work for \$25,000, of which the payment was to be deferred until success was assured. Possibly the laws would not permit the entry into such a contract on the part of the

authorities aforesaid, but the proposition is intensely interesting and we would like to see it put on trial. Mr. Cooper's confidence in his ability to settle the question for that sum, though nearly a million in insecticidal plans have failed, lies in the fact that the brown and gypsy moths exist in various parts of Europe, but they have never assumed the dimensions of a pest upon the other side of the Atlantic. Mr. Cooper argues from that that there must be some parasite in Europe which serves to keep them in check, and he is confident that if this parasite is searched for it will be found. Its introduction into Massachusetts would then be a very simple matter, and its efficacy could hardly be doubted. Mr. Cooper thinks he can do this for less than \$25,000 and we wish the Yankees would give him a chance to try. They can certainly lose nothing by it, and they are losing enough in other ways.

The Washington crop statistics are receiving rather sharp blows. It is telegraphed that Mr. Charles Hallam Keep, Assistant Secretary of the Treasury and chairman of the so-called Keep Committee on Department Methods, has submitted to the President the committee's report of its investigation of the methods employed by the Bureau of Statistics of the Department of Agriculture in estimating crops, and especially the cotton crop. The report says that in every instance, except in the case of three cotton reports, in the last six years the Bureau of Statistics' estimates have been underestimated. The underestimating has been especially great in the case of cereal crops and livestock. The conclusion of the committee is that the methods of the Bureau of Statistics must be greatly improved or the service discontinued. This is, of course, worthy of close attention, but is not to be hastily settled. Statistics should be correct, of course, but at the same time in the agricultural interest must be conservative. That the estimates were too low, rather than too high, has been worth whole bunches of millions to the farmers, and they have saved them from the overestimates which the trade naturally inclines to. Agriculturists should not forget that these estimates have erred upon the right side.

QUERIES AND REPLIES.

About Fertilizers.

TO THE EDITOR: Will you please let me know if the fertilizer, of which I send sample, is good for hay and grain, also berries and truck of all kinds? It is made by the company whose name I have written on it. They claim it contains 8% nitrogen and 10% phosphoric acid, which they quote me at \$35 per ton f. o. b., city. Do you think it is as good as the truck and berry fertilizer made by another company? Please let me know which is the better and oblige.—AN OLD SUBSCRIBER, Healdsburg.

We cannot undertake to answer such questions. The State has provided for such matters by organizing the fertilizer control work at the Experiment Station at Berkeley. All interested should apply there for the bulletins on fertilizers, which show how the products of all manufacturers stand. Because of this law, you can depend upon it that the goods sold by different parties are up to the representations, but if you wish to have analysis made in your own interest at any time, you can get it done for the price prescribed by law at the Experiment Station. When a dealer recommends you a fertilizer for a special purpose, he does the best he can to give you what you need, but the ultimate test of the matter is the one you make yourself. See what the plants tell you about it!

Frozen Oranges—Peach Spraying.

TO THE EDITOR: Will leaving the orange crop on the trees in any way hurt the tree, or effect next season's crop? Also, is it a good or bad plan to leave the oranges on the ground, providing we cut them from trees? Our oranges are frost bitten and we do not care to pick, if it is not necessary. Kindly tell me the proper proportions of lime, salt and lye for spraying peach trees?—GROWER, Lone Star.

We do not know of any injury, except from the distribution of mold spores as the fruit decays. It is, however, better horticulture to remove the fruits and to plow it in. In this way it will decay without harm and with some advantage as a fertilizer—though the fertilizing value of orange fruits is not large. To leave the fruits molding on the ground is

a menace to the new crop by the spread of spores. If you are only growing oranges for home use you will find that the frozen oranges will refill with juice to some extent after a few months, though there is no commercial advantage in this, probably. The spray for peach trees is lime, salt and sulphur (not lye), and the formula was given in full in these columns on January 6.

Sprouting Locust Seed.

TO THE EDITOR: I want to start a small grove of black locust to use for fence posts in the future, as good post timber here is scarce. Some time ago I read in some paper to put the seed into a vessel and to pour boiling water on it for five or six mornings in succession, stirring it up well each time until the water became cool. It seems to me that pouring boiling water on it like that would surely kill the germ.—FARMER, Paso Robles.

You need not be afraid to pour boiling water on the locust seed. It is not always necessary to repeat the operation so many times, but as the seeds of leguminous trees become dry they are exceedingly hard to start and recourse to boiling water is more necessary. This is also true of the seeds of the acacia trees, and these seeds have actually been allowed to boil for a little time without injury. The advice which you have received is not dangerous.

Grape Grafting.

TO THE EDITOR: I have some Rose of Peru grape vines that have been growing for 10 years, and have never done well. They ripen very late in the season, but the vines grow very large. I have Isabella grapes on the same soil and they grow nicely, and I thought of grafting the Isabella grape on the Rose of Peru. Which would be the proper way to graft, and at what time of the year? They are on sediment soil.—A READER, Salinas.

You are too near the coast to get summer heat for the Rose of Peru. You can graft in the Isabella. Cut off the old vine below the ground surface, split the stock, as in ordinary top-grafting of fruit trees, put in scions about eight inches long, tie around with a strong cord and plaster over with clay. Grafting wax is not necessary. The grape is usually easy to graft.

Poultry Manure.

TO THE EDITOR: Is there any special use made of hen manure in any way in the city that it would pay to barrel, ship or haul 20 miles? If not, what particular crops is it best adapted for?—INQUIRER, San Mateo.

Hen manure is good for any purpose that any other manure is used, but it has to be used carefully, because it is very irregular in composition and sometimes very concentrated. We know of some being sold at \$6 per ton, which was worth by analysis about \$9, but it may contain so much dirt and trash that one is hardly safe in buying it without analysis. The best thing to do with it is to use it to grow more feed for the poultry, and not to think of hauling it off the land where it is made.

Summer Cover-Crop Proposed.

TO THE EDITOR: I am trying to use a 'cover-crop' in the lemon orchard and wish to know if I can drill in the cow pea in spring, after turning my field peas under, to keep our southern sun from burning the humus from the soil, and dispense with early summer cultivation if possible.—A. R. K., San Diego county.

You can certainly grow cow peas in your lemon orchard after the danger of frost is over if you have water enough to supply both the cow peas and the trees. If you are at all short of water this should not be undertaken because the trees will suffer. At the same time you must remember that cow peas do not enjoy dry air and that for this reason they are seldom satisfactory for summer growth on uplands, even where irrigation water is supplied.

Transplanting Orange Trees.

TO THE EDITOR: Please give me information as to the best time for planting orange trees. Is it practicable to move an orange tree 10 ft. high, or would it pay better to plant young trees? Also give me information as to moving. The information given me a few months ago for moving two palms 30 years old was very successful. I had the palms moved according to your instructions and both are doing well. What are the best varieties of grape fruit, lemons and oranges?—READER, Salinas.

Large orange trees, even much larger than those you mention, can be successfully moved by taking a ball of dirt with the roots, practically the same way

that you moved the palm trees some time ago. It is better to move them later in the season; after the surplus winter water has gone out of the soil and it becomes somewhat warm. The trees can, in fact, be moved at any time of the year, except when the hole is likely to fill up with water, because that has a tendency to cause the roots to rot rather than to grow. The best oranges are the Washington navel and the Valencia Late. The best lemon for the coast district is the Villa Franca and the grape fruit which is most generally successful is the Florida seedling.

Peach Planting and Windbreaks.

TO THE EDITOR: How far apart should peach trees be planted? How prepare the hole in which they are planted? What tree or shrub is best to plant for windbreak—what I mean, that will not absorb strength from soil, or the roots interfere with fruit tree roots? Do you think common willow injurious? They make rapid growth and a good windbreak.—A SUBSCRIBER, Modesto.

We should put peaches 24 ft. apart in valley situations. As for windbreaks, we do not know any plant which makes quick, large growth and therefore suitable for windbreaks which will not root after moisture and keep all it can get. You can restrict the spread of the roots by irrigating close to the row and cultivating just as you do fruit trees. Windbreak trees usually have to root widely, because they are given neither water, cultivation nor manure and therefore have to range after what they need, and they find it, of course, just where you have put it for other trees. Some willows might do, if you like them, but you can grow better fuel by putting in eucalyptus, walnuts, maples or elms, etc. Many other trees might be named. Look about the older plantings in Modesto and pick out the kind of tree which strikes you as best.

Stocks for the Almond.

TO THE EDITOR: I wish to have almond trees raised for our own planting. The man engaged to do this for me insists upon planting nuts of the Muir peach for the future budding to almonds. Is he correct in insisting upon a peach root? I want to plant nuts of almond for the future budding; but, unfortunately, I saved seeds of softshell, which I now know will not do. Can you tell me where to get bitter almonds? Why cannot I plant nuts of any hard-shelled variety, say, Drake's or Languedoc? What is the correct name of the 'horse bean'? I cannot find the same listed in catalogues.—READER, Sutter county.

The almond works well on the Muir seedling, and your man has probably had experience with that combination and therefore favors it. But the almond root is on the whole better for the almond and also for the peach and the prune when the soils are light, deep and well drained, for the almond starts for the center of the earth in great shape. Bitter almonds and hard-shell sweet almonds are believed to be stronger and more uniform in growth, more hardy and "nearer to Nature" than the improved varieties. We should not call either the Drake or the Languedoc hard shelled—they are medium shelled as compared with the paper-shell varieties. There are only a few bitter and hard-shell sweet almonds grown, but you can usually find such nuts by enquiring in an almond-growing district, or perhaps the seedsmen advertising in our columns can furnish them. The horse bean—a variety of the English or Windsor bean—is *vicia faba*.

The Uses of Gypsum.

TO THE EDITOR: Will you please tell me what effect gypsum has on land? Last year here it had a splendid effect on alfalfa land, but there are many opinions regarding it. Some tell me it will ruin or spoil the land so that alfalfa will not grow. Before I use it I would like to hear from headquarters and know your experience as to its after-effect on land.—FARMER, Stanislaus county.

Gypsum is not a plant food. It is, however, a stimulant to the plant and it acts upon other materials in the soil, making them available to the use of the plant. This being the case, one can not depend upon gypsum to restore to the soil the materials which the plant removes, and the ultimate result of the use of gypsum is the impoverishment of the soil, because it continually helps the plant to take more out of it. This is the reason why the use of gypsum, or land plaster, which was very popular in some of the Eastern States thirty or forty years ago, is now practically abandoned, and, instead of using gypsum,

fertilizers really containing the material which the plant requires are resorted to. While this is true, it may be of advantage to persons operating on rich soil and wishing to get large and splendid returns to employ gypsum to a certain extent. Gypsum also has a very good effect on heavy soils by making them more mellow and friable, and for this purpose gypsum is sometimes very valuable.

WEATHER AND CROPS.

Report of the U. S. Weather Service for Week Ending January 23, 1906.

ALEXANDER MCADIE, Forecast Official and Section Director.

Sacramento Valley.

Warm weather and heavy rain continued nearly all the week, with much cooler weather and heavy frosts at the close. The heavy rains caused considerable damage by the overflow of creeks and rivers, and there were some breaks in the levees, but all streams commenced falling Friday evening. Grain fields on low lands were flooded, but it is probable the damage to grain will be offset by the improved condition of the soil. It is reported that several hundred sheep perished in the severe storms in the foothill ranges, and there was much damage to railroads and bridges by high water. Farm work was suspended owing to the continuous rains. The soil is now thoroughly saturated and crop prospects are better than at any time during the season. The warmer weather caused rapid growth of grass and early grain. Orchards and vineyards continue in good condition.

Coast and Bay Sections.

Warm rains continued nearly all the week, with cooler weather and frosts Saturday night. In some of the northern districts the rains were very heavy and the rivers were higher than for several years, causing considerable damage through overflow. Sheep and cattle on the ranges suffered severely from the storms and scarcity of feed. The rainfall extended all through the section, and has now been sufficient to thoroughly saturate the soil and practically insure good crops. Farm work will be resumed as soon as possible. Grain and grass made a good start during the warm weather. Feed is still scarce, but a few days of warm, sunny weather will make new feed plentiful.

San Joaquin Valley.

Cloudy weather with generous rains prevailed during the past week. The rains were steady and the ground has been thoroughly soaked. Rivers and creeks are running full blast and there has been some slight damage from washouts, but the rains have been of the greatest benefit to farmers, miners and stockmen. Heavy snow fell in the mountains. The ground is too wet at present for farm and orchard work. Grass and early sown grain are making good growth and a few warm days will make green feed plentiful. Stock are healthy but thin. Packing houses are busy with the raisin crop and large shipments are being made to Eastern points. Heavy shipments of potatoes continue from Stockton.

Southern California.

Warm weather continued, with light showers at the beginning of the week and heavy, warm rain toward the close. The rains caused some damage to streets, railroads and bridges in Los Angeles and other places, but there was no serious damage to crops. In the interior the soil quickly absorbed the rainfall, with very little run-off, and crop conditions were much improved. Orchards and vineyards were also greatly benefited. Early grain is looking very well and making good growth. Valleys and hills are green and pasturage is plentiful. Stock are in good condition. Prospects were never better at this date for excellent crops of all kinds. Orange picking and shipping are progressing.

EUREKA SUMMARY.—Farming operations suspended. Grass and grain are making slow growth. Stock are in poor condition. Heavy rains overflowed streams and much bottom land was submerged, but water is rapidly receding. Considerable damage was done to property.

LOS ANGELES SUMMARY.—Generous rains in all sections thoroughly soaked the earth and the soil is in fine condition for cultivating. Grain and grass, which were at a standstill, received new life. Should warm weather follow, vegetation will make vigorous growth.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, January 24, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.	Total Seasonal Rainfall to Date.	Total Seasonal Rainfall Last Year to Same Date.	Average Seasonal Rainfall to Date.	Maximum Temperature for the week.	Minimum Temperature for the week.
Eureka.....	2.67	17.72	21.58	23.21	62	36
Red Bluff.....	1.82	10.43	21.52	14.32	54	30
Sacramento.....	2.00	8.42	11.89	10.12	56	34
San Francisco.....	1.37	6.87	14.10	11.95	70	38
San Jose.....	.85	6.13	9.13	.....	70	38
Fresno.....	1.54	3.54	6.99	4.46	60	34
Independence.....	1.34	3.54	.....	2.02	60	26
San Luis Obispo.....	3.69	8.36	8.66	10.27	72	38
Los Angeles.....	2.18	7.06	6.16	7.29	68	44
San Diego.....	.72	5.64	4.79	4.40	68	44
Yuma.....	.02	3.47	1.87	1.88	72	34

ENTOMOLOGICAL.

Quarantine Co-operation.

By E. M. EHRHORN, Deputy State Commissioner of Horticulture at the Santa Rosa Fruit Growers' Convention.

It is estimated that California produces annually between fifty and sixty millions worth of fruit. If this is true, and I have not the slightest doubt that it is, then we have a most wonderful industry, one which makes California the fruit garden of the world. Many of the older members of this convention remember California before fruit growing became an industry and could fully appreciate the conditions which would follow should some pest or disease cause the destruction of the industry which has done so much in the upbuilding of the State. Some of our pioneers have assured us that they never knew what scale insects were in the early days and that other injurious pests were very rarely noticed. This is no doubt correct, for in those days the few home orchards were small and were located miles apart. The early plantings were made under trying conditions and most of the early settlers brought seeds and plants either overland by ox-team, around Cape Horn by sailing vessel, or across the Isthmus on burros, and thence by vessel here. How different it is today, with our modernly equipped train service and rapid trans-Pacific ocean liners through the medium of which fruits and plants now arrive at their destination in a very short time.

The injurious pests of today are natives of other countries and the pioneer grower little realized the importance of watching plants and fruits which travelers or sailors were bringing as curios or wonders of distant shores and upon whose foliage and bark were hidden the small but active foe, which now costs our growers many thousands of dollars to fight.

Only since fruit growing became a profitable industry, since our fertile valleys have been changed from golden grain fields to forests of luscious fruits, and since our Eastern neighbors became interested and sought our products, thus encouraging us and causing large areas to be planted, has the pest problem become noticeable and threatening.

Our struggle is reported in the reports of the State Horticultural Commission, and it is not necessary to go into detail about the destructive Icerya or the wonderful Vedalia; it is not necessary to review our first attempt at horticultural quarantine—we all know the good work that has been done, but we must do more.

California's industry is growing and growing rapidly, her population is increasing daily, new ports are being opened, new steamship lines established, and our little Quarantine Bureau, although lately enlarged, is unable to attend to all the ports and shipping points in our State. We need help, we must co-operate. Other countries have been watching our industry grow, and have already copied our methods and are rapidly becoming our competitors. Our insular possessions have increased their plantations with these, have increased the pests. Tropical fruits have found a good market with us, the shipments are increasing every day, and as the population grows the demand for tropical fruits will naturally increase also.

OUR HORTICULTURAL LAWS.—The horticultural laws of the State, re-inforced by the various county ordinances, have been adequate up to the present time, but I believe some additions and several alterations are necessary and will have to be made in the very near future. Especially is this true of the law establishing county boards of horticulture and the uniformity of county ordinances.

As you are well aware, the appointing power of County Horticultural Commissioners rests with the Board of Supervisors, and, upon petition of twenty-five or more orchardists, the Commission is usually established, and I may state here that some counties have not as yet availed themselves of the advantages and protection offered a county by an active working Board of County Horticultural Commissioners. Although these appointments have given satisfaction in many counties, yet, as I have stated above, something more should be done; a change in the law to make these appointments more uniform, qualified and sincere should receive the attention of our next Legislature, and I consider it the duty of all those interested in fruit growing to think over this matter now and help formulate some definite change for the consideration of our law makers when they next meet.

The question now before us is, what can be done to strengthen the work of the State and County Horticultural Commissions? Admitting that some additional laws should find the approval and support of the State Legislature, I fear that this alone will not suffice for ideal results, but that it will be absolutely necessary to bring the grower and the Commissioners in closer touch; in other words, they must become one working unit. This can and should be extended to a much wider field. Each County Commissioner should co-operate with other County Commissioners, and all should be in constant touch with the State Commissioner, who is the chief director of our horticultural quarantine work. It is manifestly time for decisive action on the question of co-operating on

horticultural lines. Especially is this true of pest eradication, and, most important of all, the quarantining of fruits and plants from outside of our State.

GROWERS' HELP NEEDED.—Co-operation without principle or system is always a failure. The success of co-operation is measured by the spirit of the individuals working together. Therefore organization under a definite system, in this instance our horticultural laws, will first be necessary, and then establishing a thorough co-operative movement will in the end lead to successful work. It is an educational movement, and forms, so to speak, an endless chain, which, if thoroughly carried out, will result in unlimited power to the grower. You may ask, what can the grower do to bring about this movement?

The Horticultural Commissioners have done and will continue to do good work if the grower will co-operate with them and will show these men that they are upheld in the performance of their duty. The grower should never antagonize the Board of Horticultural Commissioners, even if he be the unfortunate individual whose orchard has been ordered sprayed or fumigated, but he should lend every possible assistance to promote the good work. From the very beginning the grower should take interest in the selection of the Commissioners, for the most important step is the appointment of good men, and the grower should not be satisfied to merely put his name to a petition for this purpose, but he should go in person, accompanied by many of his fellow workers, before the Supervisors and assist in the selection of the proper men.

The Board of Supervisors realize that the fruit grower is a great help in the upbuilding of a county, and they readily concede to his demands, but not generally through a petition alone. In the selection of the personnel of the Commission, the very best men, not necessarily scientists, should be chosen. They should be honest, firm, of sober habits and sufficiently versed in the various branches of horticulture as to be able to serve the grower and the county in the best possible manner. After the proper appointments have been made, the grower should not go home and let this important matter rest, but he should continue to co-operate with and aid the County Horticultural Commissioners in every possible way. The Commissioners in turn should endeavor to enlighten the growers, call them together whenever opportunity offers itself, and place before them matters pertaining to pests or diseases, drawing their attention to any new phases that may develop.

I am sorry to say that some conscientious Commissioners have become disheartened by the uncalled-for rebuke of growers, who, instead of showing their willingness to do their duty toward a clean-up and thus aid the Commissioner, have sometimes filed a protest, created discord, and, in a few instances, caused the abolishment of a good commission, which always means a setback and a great loss to the county. This conduct on the part of the grower should be discouraged, and all misunderstandings should be thoroughly thrashed out, so that all joining in harmony may continue to upbuild the growing industry under one law, a uniform ordinance, unity of action, and especially a well-organized system of inspection, as this will do much to make co-operation possible.

Some will say that it is of no use, that you cannot get the grower to co-operate, that you will never get him to take interest in matters which are not directly affecting his own individual self. While this is true to a certain extent, we cannot afford to give up or despair. We cannot expect to make a great showing in the beginning—Rome was not built in a day—but man is always ready to pattern after others, and as soon as a good showing is made through a co-operative movement, as above proposed, others will fall into line, and we will soon have a great army of workers, and before long the grower will soon be able to show his power and influence, which generally remains hidden without co-operation.

THE FUTURE.—I hope the day is not far distant when the County Horticultural Commissioner will be looked upon, not as a mere inspector of bugs, but as the true horticultural adviser of the growers in his county; and, being in close touch with the State Commissioner's office, with which there should be the most sincere co-operation, he should be able to protect his county and guide his constituents in a firm, just and fearless manner.

The joint action of the State Commissioner's office with every County Commission should place California under the most perfect quarantine against foreign pests, and the most sincere action of all Commissioners in this regard cannot help but culminate in the formation of the strongest organization yet established for the grower. The State Commissioner of Horticulture always invites any authentic information, and is ready to listen to any recommendations, so that all who are interested in the preservation of fruit growing should encourage and uphold all efforts which will tend to accomplish co-operation, always bearing in mind that men cannot co-operate successfully for any purpose if the sole bond between them is self-interest, and that no industry which requires the hearty support of its workers will ever be a complete success without co-operation, whether it be for the marketing of fruit or the protection of orchards against insect pests.

HORTICULTURE.

Pacific Coast Walnuts and Filberts.

TO THE EDITOR: With the present, I send you by mail a little box of Chaberte walnut cream candy, and another of Aveline filbert candy—both home-made and with nuts, of course, raised on my own place—for you to sample and ascertain by yourself what nice dainties can be made with Pacific coast grown walnuts and filberts. Now you will allow me to add a few words of explanation.

I presume that your readers are well aware of the enormous quantities of walnuts used in this country for the manufacturing of walnut cream candy, mostly all imported, shelled or unshelled; but they may not have a very clear idea as to what constitutes the best nuts for the making of such candy, so I will tell them. In the first place, the walnuts have to be from small to medium, round, if possible, the shell thin, easy to crack, which is done by striking it on the face with a hammer and not on the seam or small end, so as to get the meat out entire or by halves; it is better if the meat does not fill the shell too tightly. The pellicle of the meat, for obvious reasons, has to be of a light yellow color, surely not brown like the nuts grown in a too warm climate are liable to be; and last, to obtain a perfect candy, the meat should be sweet and nutty. Well, I do not know of any variety of walnuts filling the bill so well as the little Chaberte, grafted or seedling, and which, beside, is of late vegetation and quite prolific. Otherwise, the Mayette, for instance, which is called the 'Queen of the Market,' because of its elegant shape, size, thinness of shell, beauty of the kernel, and also of late vegetation and quite productive, would not do so well as the Chaberte, as the candy would be too big, and the Franquette, another very fine dessert nut, still less, because of its very elongated shape, and so on of all other large-fruited varieties. Through the box of Chaberte cream candy I am sending you, you will be able to see at a glance whether I am not right with that proposition, and in sampling them whether it is not a nut of first quality.

As to filbert candy, of which I send you a little box, also home-made, you will admit that if there is a high-grade candy, that is it, and Aveline filberts, you know, are high-priced nuts. The candy I send was made with White and Purple-leaved Avelines, the former with a kernel invested with a white pellicle, the latter with a pellicle flesh-colored, while the Red Aveline has it of a dark red; for that reason only did I use the white and purple-leaved varieties. Avelines fill the shell well, so that unshelled they make as good a show as large nuts, then the meat is smooth and clean, and the flavor perfect.

I send you also two boxes of filberts, in six varieties, to-wit: Du Chilly, Cob-nut, Barcelona, Red Aveline, White Aveline, Purple-leaved Aveline, and Emperor, just to show you what can be done in that line on the Pacific Coast. I had this year the greatest crop I ever had. It was relatively enormous. Finally I have found, I think, after years of expectation, that the States of Washington and Oregon are the best ones adapted in this country to the raising of filberts, and as the same States are singularly adapted to the raising of walnuts, thanks to the late vegetation French kinds, like Mayette, Franquette, Parisienne, and the like. It will be news, I expect, to many of your readers to hear of the great Northwest having developed by degrees to a regular walnut-growing district. The filberts raised in that part of the Pacific Coast I regard as the equal of those I am sending you; and, as to walnuts, they compare most favorably with any samples sent to me from any parts of this State; and the walnuts grown in the Willamette valley, Oregon, have the advantage on the walnuts grown in southern California, in having a smooth and white shell without a prominent seam, while the meat is fat, the pellicle of a pale yellow, and the quality fine; and, though all those French varieties are of late vegetation, still the nuts mature there very well. Even in the eastern part of Washington, where sometimes the thermometer in winter goes down to 20° below zero, are fine walnuts raised, like Franquettes, and the equal of any raised by me or sent to me from the counties of Sonoma or Tehama, for instance. At present walnut trees in Oregon and Washington are being planted by the thousand, so splendid and little dreamed of were the results obtained from the large groves planted in that part of the Pacific Coast many years ago.

Filberts are also planted in both States, not by the thousand as walnuts, for they cannot be had in quantities but by the hundred. I have an idea that the country around the mighty sound in Washington is splendidly adapted to filbert culture. Filberts being solely propagated from layers, which require old and large roots to grow shoots to be in the fall laid in the ground to root, is the reason why they are so scarce; otherwise, seedlings will not do, and better plant no filberts at all than plant seedlings.

As much as 1,000,000 lb. of shelled filberts are imported into this country from the Levant (Turkey and Asia Minor) for the manufacturing of filbert can-

dy and cake, besides 6,000,000 to 7,000,000 lb. of unshelled nuts, but I do not go much on shelled nuts of any kind, and am certain that the candy made with the Levant nuts would not compare with the home-made candy I am sending you.

The conclusion of all this, however, is that there is money for us on the whole Pacific Coast in the raising of such nuts as walnuts, almonds and filberts.

Nevada City, Dec. 30, 1905. FELIX GILLET.

Mr. Gillet's candy samples bear out all that he claims for the suitability of the varieties which he discusses, and the confectioner's art displayed in the preparation compares well with the best of the professionals. The specimens were as delicious as the account of the nuts used is interesting.—Ed.

Strawberry Growing at Florin.

A Florin correspondent gives the Sacramento Union an account of the local strawberry interest which will be widely acceptable to our small fruit growers. The cultivation of the strawberry on the plain lands lying southeast of Sacramento and centering at Florin has been successfully carried on for a number of years. Among the early settlers here were such men as George Rich, James Rutter and some others, who soon discovered the great advantages of the never-failing, underground water supply and its relation to the growing of small fruits. In place of dug wells, that require two or three men as many days to reach water, a well could be bored in a half day giving a water supply sufficient to irrigate an acre or more of land. The household Douglas pump of those days, to which was attached any kind of a home-made windmill, later gave way to more modern wind-power, to be in time supplanted by steam and then by the modern gasoline outfit. The pioneers in strawberry culture were satisfied to market their crops in Sacramento, and an acre of land was sufficient to engage the whole attention of the family during picking season. The Florin strawberry crop of today runs into several hundred acres each season, is marketed by the carload, and finds its way into every town in northern California, Nevada, Utah, Montana, Oregon and Washington.

With the advent of Japanese help in California the labor question, which cuts no small figure in strawberry growing, was speedily solved. With the increased number of acres devoted to strawberry culture the daily supply could be depended upon, and the whole territory above mentioned was opened, people paying almost any price for early berries. To meet this demand the Japanese do not depend upon a hit-and-miss policy in planting. The rows of plants run east and west to prevent shading, and more readily get the early sun. The strawberry being a shallow rooted plant, the prevailing method formerly was to make shallow ditches between every other row, the more readily to reach and moisten the plant. By this method the plants were short-lived and the crop of short duration. The heat of mid-summer soon exhausted the intermittent water supply, plant growth was checked in the midst of fruiting, and what appeared to be a promising crop to-day was unfit for market tomorrow. In addition to the loss of the crop, the plant is checked in its growth, and sometimes dies. The acre which had been set with 10,000 plants had now been reduced one-half, and in another year became unprofitable. The Japanese method is a ditch almost two feet deep between every other row. By this means the moisture is conserved, the plants grow continuously, the first crop is succeeded by a second and a third, and the plants, after fruiting, continue to multiply until the matured strawberry patch has increased its plants an hundred fold and multiplied its yield correspondingly.

The varieties of berries grown are the Jessie and Dollar exclusively, the former for an early crop, and the latter as the regular shipping berry. The cultivation of the strawberry, except as to the picking, is not confined entirely to the Japanese, several large tracts annually being operated by the land owners or worked on shares.

Wyoming Horticultural Laws.

Prof. Aven Nelson, secretary of the State Board of Horticulture, Laramie, Wyo., has just issued a pamphlet giving the laws and regulations recently enacted by the Legislature of that State. He will send a copy to any of our readers who may apply.

Man is but a microscopic being relatively to astronomical space, and he lives on a puny planet circling round a star of inferior rank. Does it not, then, seem as futile to imagine that he can discover the origin and tendency of the universe as to expect a housefly to instruct us as to the theory of the motions of the planets? And yet, so long as he shall last, he will pursue his search, and will no doubt discover many wonderful things which are still hidden. We may indeed be amazed at all that man has been able to find out, but the immeasurable magnitude of the undiscovered will throughout all time remain to humble his pride.

THE VINEYARD.

Danger in Buying Abroad.

TO THE EDITOR: Mr. Kirkman's interesting article on the risks of importing peach trees into California, buying them from little-known agents of people we don't know at all across the Rockies, tempts me to give a few extracts from No. 527 of the *Revue de Viticulture*, published in Paris. It seems that there is 'graft' even in some French nurseries:

Last year, thanks to the high price of resistant cuttings, unscrupulous dealers have had a fine chance to cheat on cuttings. The region of Bar-sur-Seine has been flooded with cuttings of the worthless Clinton, sold under the names of 3,309, Rupestris St. George, or of 1,202. The fraud was discovered, the news spread like a train of powder and the law has been set in motion. The cheats should be punished and a long sojourn in the shade of four walls given them, in which to reflect on the sad consequences of their crime.

The consequences of this fraud are the gravest for the French vineyard industry in general and for the poorer vignerons in particular. These are making heavy sacrifices to replant their vineyards, often spending their last savings to buy resistant cuttings or grafted vines. If they are deceived in the authenticity of the varieties they should employ on their soils, they will never grow a crop of grapes, and at the end of two or three years they will see their young vineyards, replanted at great cost, disappear either from phylloxera or chlorosis, because these worthless varieties that are being sold for good ones resist neither calcaire nor phylloxera, nor even, sometimes, grafting. How frequently are vignerons thus deceived and complain of the good varieties that they think they have planted. Here the '3,309' dies! Farther on the 'Rupestris St. George' can hardly mount the stake. There the '1,202' yellows and fails—all the while the soil is such that these kinds ought to succeed. He pulls them up, studies the roots, finds suckers showing leaves—so that at last the fraud is found out. Bad stocks of no value at all have been substituted.

The fraud in the sale of cuttings is still continued this year in the making of bench grafts, where it is harder to discover. To illustrate, we will cite a particular incident in Vaucluse: They have grafted many hundred thousands stocks of Alicante Terras No. 20, which often gives 80% of good unions. This stock has a fleshy root, looking just about like that of Mourvedre x Rupestris 1,202.

All these grafts have been sold for grafts on 1,202. They can be profitably sold at 100 fr. per 1,000 when grafts on the real 1,202, which gives a less percentage, and of which the cuttings cost more, are always sold at 160 to 180 fr. These nurseries of Terras (alias 1,202) are in an important nursery center, where most of the population live on the results of this culture and risk losing the profits of their labor, from the inevitable discredit attaching to the whole region, when the frauds become generally known.

MORE ALARM.—In the *Revue* of the following January there is some comforting news for Californians. I quote a few sentences:

The high price of resistant cuttings has brought back the practice of frauds that we once thought abandoned. In the southeast a scandalous and shameful trade is carried on of varieties of 'any old kind,' which are sold for the varieties ordered. Complete carloads of bogus cuttings are being shipped. The Clinton and other worthless sorts are masquerading under various names, and particularly as the Coudere hybrids (3,306 and 3,309, for example).

The great majority of these shipments are destined for export to foreign countries; but this is no excuse for the dishonest traffic. Our nurserymen who have built up an important export trade abroad can only suffer discredit which the frauds referred to throw on the whole industry.

If the California planter finds himself unable to procure the varieties of grafted vines he desires from California nurseries, whose stock can be inspected and determined, he ought, in the face of the above information, to secure the fullest guarantees from the agent importing the stock. If the California nurseryman fools him, the courts are handy and he can sue him. But when vines are ordered from a little-known agent, who may buy from a broker in Paris, who may pick up the stock that can be bought cheapest, the chances of mistakes, frauds and disappointments are multiplied. It would be pretty hard to take a trip to France to sue the man who sent the stock that wasn't what you ordered.

France is like all other countries—there are some reliable and honorable nurserymen there, just as there are in California. Importers should know beyond a doubt that stock comes from the few reliable houses, and not trust to the vague idea that anything must be better than home goods because it comes from a place 7,000 miles away.

I once wrote to the famous firm of Vilmorin of Paris for some grape cuttings, specifying that I should be informed what nursery grew them. To my surprise I received the answer: "We never tell our customers where cuttings are grown; it is contrary to the rules of the firm." As I didn't want cuttings that came from nowhere in particular, the order was promptly cancelled.

Is it any wonder that vineyardists in Mexico, who are planting on an immense scale after careful investigation, have placed large orders in California for grafted vines, paying a considerably higher price than French vines would cost them?

Martinez, Jan. 15.

FRANK T. SWETT.

CEREAL CROPS.

Cereal Improvement.

By GEO. W. SHAW, Assistant Professor of Agricultural Technology, University of California, at the State Farmers' Institute in Berkeley.

In the strenuous endeavor to introduce into California new crops, and to hasten the time when the extensive system of wheat farming shall give place to the more intensive culture of fruits and numerous other crops, suited to more limited areas, the underlying principles which make for profit in the culture of cereals have been well-nigh lost sight of, until neither the quality nor quantity of our wheat is what it might be.

The standard of quality has not kept pace with the more advanced demands of the milling trade. To such an extent is this true that notwithstanding this State in 1903 produced 18,760,000 bushels and exported 14,300,000 bushels, she was under the necessity of importing, to maintain the trade standard of our flour, 2,265,600 bushels of Eastern-grown wheat, amounting to one-seventh the entire consumption in this State.

If we could stop these importations and supply the milling trade entirely from California-grown wheat, it would mean a saving to our people of over \$1,500,000, now passing out of the State, annually.

While wheat farming on an extensive scale is not a thing to be highly encouraged when the natural conditions are such as to make more intensive crops safe, yet it is still, and is destined to be for all time, a very important industry in California, and, as one of the important staples of a general farm, is worthy of not only much encouragement, but also the greatest aid that can be given by scientific research. Further, on account of climatic and other conditions, there will be, at least for many years to come, sections of the State in which wheat growing will be the principal interest.

The particular feature which has dominated wheat growing in California, and on the Pacific coast generally, has been mass production, rather than maximum production per unit of area or quality of the product. But with the inevitable deterioration of soil under such a system, heightened by the encroachment of other crops, and the continued open-culture practiced with this crop, there has been a notable falling off in the production in total, as well as in yield per acre, during recent years.

This condition, taken together with the need of a large production of stronger gluten wheats to supply the increasing needs of the millers, led the writer, as representative of the Experiment Station, to attempt to unite the several interests in the State, that is, the millers, shippers and growers, as well as such institutions as the State Board of Trade, the Merchants' Exchange and the Sacramento Valley Development Association, in a concerted movement toward cereal improvement. This having been accomplished, it should be said the United States Department of Agriculture, through its Bureau of Plant Industry, has been enlisted to the extent of active and substantial participation in the proposed work.

WORK FOR IMPROVEMENT.—Through the active co-operation of parties interested in the cereal industry, the station was enabled to begin work last year. Under private subscription it has been possible to thoroughly equip two cereal stations in the large wheat-growing sections of the State, and also a cereal laboratory, where milling and baking tests, as well as the necessary chemical work connected with these investigations, can be conducted. A large part of the equipment being already in hand, we are thus able to devote practically all of the appropriation of \$10,000 made by the last Legislature for this purpose to the real work connected with these investigations.

Inasmuch as the work was only begun last fall, it is impossible at this time to present any positive results from field work, for, whatever might be the results obtained, they must needs be verified by repetition a number of times before it would be safe to draw conclusions.

I propose at this time rather to give you some idea of how the work is being conducted, that you may the better understand why it is that time is an essential factor to success in such work, and that results of permanent value cannot be obtained by the mere turning of a hand.

In a general way, it may be said that the work involves determining what varieties of wheat are best adapted to the principal wheat sections of California, the relative merits of these varieties for flour and bread-making, the improvement of varieties through selection and plant breeding, the dissemination of varieties that may be of greater value than those generally cultivated, and, finally, the solution of numerous cultural problems connected with the cereal industry.

TWO LINES OF EFFORT.—The farmer's special interest in these investigations lies in the attempt to increase the per acre returns, while the miller is most vitally interested in improving the gluten quantity

and quality. Consequently, the investigation necessarily must embrace two general lines of work:

(a) The cultural.

(b) The technical.

Under the former head, it is in the attempt to obtain such generally improved conditions as to secure a larger per acre return that the farmer is most vitally interested. There are numerous factors which bear more or less directly upon this point, and which for the most part are still mooted questions among farmers.

(TO BE CONTINUED.)

THE DAIRY.

California's Butter Product for 1905.

The State Dairy Bureau has completed its compilation of statistics relating to the dairy industry of California, and an interesting review has been prepared for publication by Mr. W. H. Saylor, secretary of the Bureau. It covers the year ending October 1, 1905, and is full of interest, especially in case of the production of butter. In this article a remarkable advance in production has been made that places California well to the front as a dairy State. This production is given by counties in the following table:

County.	Pounds.
Alameda	886,315
Alpine	26,060
Amador	266,656
Butte	166,652
Calaveras	153,241
Colusa	234,819
Contra Costa	557,114
Del Norte	644,112
El Dorado	351,584
Fresno	2,166,048
Glenn	178,456
Humboldt	4,289,739
Inyo	137,442
Kern	323,363
Kings	1,444,218
Lake	124,042
Lassen	389,891
Los Angeles	1,431,045
Madera	75,424
Marin	3,959,641
Mariposa	14,638
Mendocino	793,122
Merced	1,786,082
Modoc	136,444
Mono	22,642
Monterey	534,241
Napa	738,083
Nevada	139,623
Orange	585,268
Placer	253,544
Plumas	380,941
Riverside	411,148
Sacramento	1,578,751
San Benito	142,155
San Bernardino	181,216
San Diego	759,111
San Francisco	1,468,991
San Joaquin	1,369,881
San Luis Obispo	306,261
San Mateo	687,304
Santa Barbara	242,648
Santa Clara	455,778
Santa Cruz	11,312
Shasta	113,123
Sierra	486,692
Siskiyou	675,714
Solano	4,156,750
Stanislaus	2,006,171
Sutter	683,884
Tehama	133,053
Trinity	15,686
Tulare	1,785,888
Tuolumne	29,468
Ventura	189,632
Yolo	1,124,607
Yuba	83,648
Total	41,961,047

With but few exceptions there has been an increased production in every county. In most of the so-called older counties in the dairy business this increase is attributable to a favorable season, but the most of the increase is attributable to establishing the dairy business in these counties where irrigation is making dairying possible within recent years. A further explanation of the increase is to be found in the fact that the Dairy Bureau is in a better position to secure accurate statistics than heretofore, when it had to depend upon reports that were voluntarily mailed to it by the producers. Under the law that provides for the Bureau to send sanitary inspectors to producers, advantage was taken of their visits among these producers to secure a report of the amount of their output of dairy products, and in this way much of the production has been reported that may have been overlooked in former years.

Compared with former years the total above is shown in the following table:

Year	Pounds
1897	28,678,439
1898	23,691,028
1899	24,868,684
1900	28,783,859
1901	29,701,202
1902	31,523,762
1903	34,790,289
1904	35,686,909
1905	41,961,047

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Pacific Coast Office, Portland, Oregon.

THE DEERE IMPLEMENT CO., Agents, San Francisco, Cal.

The increase over last year's report is over 17%. Among the counties that show a remarkable rate of gain are Colusa, which increased over last year at the rate of 28%; Fresno, 25%; Humboldt, 11%; Kern, 37%; Kings, 24%; San Joaquin, 30%; San Luis Obispo, 25%; Sonoma, 45%; Stanislaus, 22%; Sutter, 101%; Tulare, 15%; Yolo, 26%.

The remarkable rate of gain in Sonoma county is one of those cases attributable to the fact that complete returns were not secured from the nearly 400 individual large producers in the county. This year the figures reported are those given to the inspectors of the Bureau or reported by mail. Not a pound was estimated. While the rate of growth in Sutter county has been remarkable, it should be explained that until during the past year the production has not been very large, so that what would be a small increase in the large butter-producing counties was sufficient to make a large showing in the rate of growth.

That the reader may see more clearly the rapid growth of dairying in those districts of the State where irrigation is revolutionizing their agriculture, the table below is presented, which gives the production in pounds of several counties during the past season and that of just five years ago as reported by the State Dairy Bureau:

County.	1900.	1905.
Fresno	604,861	2,166,048
Kern	129,848	323,363
Kings	258,750	1,444,218
Me ced	623,608	1,786,082
Sacramento	742,443	1,578,751
San Joaquin	506,047	1,369,881
Stanislaus	423,185	2,006,171
Yolo	533,525	1,124,607
Total	3,822,967	11,898,541

The remarkable growth in the butter output of these eight counties shows a gain in five years of 211%, or an average of over 40% a year. All of these counties are located in the San Joaquin and Sacramento valleys, and their remarkable progress in butter output is the best proof of their adaptability in the way of profitable dairying.

Only a few counties retrograded in their butter output and these are of little consequence in the dairy line. Los Angeles, which has been an important dairy county, is the most conspicuous one that went backward. The explanation, however, is not difficult to find. The population of that county has increased rapidly, especially in the cities and towns. This draws more than previously on the cows of the

county for milk and cream at the expense of butter output. In addition to this is the fact that numerous dairymen have found it to their advantage to move from the high-priced lands of Los Angeles county to the San Joaquin valley, where opportunities are just as good on land selling at one-fifth to one-tenth of what land is valued at in Los Angeles county. It is these two factors that have, temporarily at least, checked the growth of butter production in that county.

Balanced Rations.

TO THE EDITOR: I learn that in securing a balanced ration for producing milk a certain amount of protein is needed. One table that I have gives: Alfalfa hay, 11% protein; wheat bran, 12.6% protein; oilmeal, 29.3% protein; cotton-seed meal, 37.2% protein. Please inform me if this is substantially correct. Also what percentage of protein in wheat hay and oat hay?

3. What percentage cocoanut oilcake contains?
4. What amount of protein should be furnished daily to a milk cow weighing 1,000 pounds?
5. In feeding the requisite amount of oilmeal, cotton-seed meal or cocoanut oilcake to give the requisite protein, is there any danger of causing scouring? If so, what should be fed to correct this?
6. What attention, if any, should be paid to the carbohydrates and fats in the food used to secure the required protein?—M. D. S., Walnut Creek.

TO THE EDITOR: Answering the above letter I would say that the following tabulated statement answers the first three questions, and shows that the figures given by your correspondent for the different foods are lower than they ought to be:

	Protein.	
	Total.	Digestible.
Alfalfa hay	17.6	12.3
Wheat bran	14.1	11.2
Linseed oilcake meal	30.7	26.1
Cotton-seed oilcake meal	47.3	41.1
Cocoanut oilcake meal	30.0	16.5
Wheat hay	5.6	3.6
Oat hay	7.5	4.5

4. The amount of digestible protein necessary for a milch cow weighing 1,000 pounds is usually taken at 2½ pounds, but it would, perhaps, seem more in the line of progress to use the figures given in the Wolff-Lehmann standard for a cow of the above weight, which are as follows:

RATION.	Dry Matter	Digestible Nutrients.			Nutritive Ratio.
		Protein	Carbohydrates	Ether Extract.	
1. When giving 11 lb. milk daily	25.0	1.6	10.0	0.3	1:6.7
2. When giving 16.5 lb. milk daily	27.0	2.0	11.0	0.4	1:6.0
3. When giving 22 lb. milk daily	29.0	2.5	13.0	0.5	1:5.7
4. When giving 27.5 lb. milk daily	32.0	3.3	13.0	0.8	1:4.5

5. No danger need be anticipated in a healthy animal from scouring if only about two pounds of linseed oilcake meal are fed daily. On the other hand, cotton-seed meal will, if fed in excessive amounts, tend to cause constipation. Two pounds of this meal is generally sufficient to add to the other ingredients of the ration. Cocoanut oilcake meal, when fresh, possesses a sweet flavor which is highly relished by the stock. It is doubtful, however, if more than four pounds daily per

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head should be fed. The one objection to this meal is the lack of keeping qualities. It is likely to become rancid, in which condition it is not a good feed for milch cows.

6. There should be a generous supply of carbohydrates in the ration. It has been the experience of those who have conducted experiments along this line that it is almost as necessary to ensure a proper amount of carbohydrates as it is an adequate amount of protein.

With reference to the fat it might be said that in all rations this ingredient is present in sufficient quantities. If the protein and fuel value of a ration are fully up to the standard, then fat and carbohydrates are present in the proper proportions. Fat and carbohydrates can replace each other in the ratio of 1 (fat) to 2½ (carbohydrates).

M. E. JAFFA.
University of California, Berkeley.

Transfers of Holstein Friesians.

Recorded sales of registered Holstein Friesian cattle in California, reported for the PACIFIC RURAL PRESS by F. L. Houghton, Brattleboro, Vt., secretary of the Holstein Friesian Association of America:

BULLS.

Gerben Kornelyk Sir Paul de Kol, Wis. Live Stock Assn. to Simon Easthouse, Laton.
Keto Chief, R. F. Guerin to Chas. H. Hausch, Tulare.
Romeo De Lone, J. F. Rouch to John E. Lewis, Selma.
Sunyside Chief, R. F. Guerin to B. E. Lamb, Visalia.

COWS.

Mountain View Rose, J. F. Rouch to John E. Lewis, Selma.
Primrose of La Siesta, A. B. Powell to John A. Stewart, Colony Center.
Sharon Buttercup, A. B. Powell to John A. Stewart, Colony Center.

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Agricultural Review.

Alameda.

NO LAMB LOSSES.—Livermore *Herald*, Jan. 20: Reports from the lambing camps on the Corral Hollow and Midway ranges indicate that the heavy rains have had little effect upon the young lambs, as the weather has been warm. There have been practically no losses on this account and some of the owners are confident that it will be the best season since 1884, as the feed is growing well and will soon be strong enough to sustain the ewes without extra feeding.

Butte.

PRIZE LEMON.—Chico Weekly *Enterprise*, Jan. 19: C. L. Stilson of Chico is in possession of a lemon which is covered with a very thin rind, is 14 oz. in weight and measures 12 in. in circumference. The tree upon which it was grown is on the Old Wendell Miller place, near Yankee Hill, and was brought to town by Joseph Miller.

Kings.

PLANTING EUCALYPTUS TREES.—Hanford *Sentinel*, Jan. 18: The Experimental Forestry Co. is taking advantage of the season, and is planting about 11,000 young eucalyptus trees on the ranch of the company southwest of Hanford. Last season the company planted about 6,000 trees, and made a great success of the venture. The success came about from good attention paid the young trees that were sprouted from the seed. The Experimental Forestry Co. plants the seed of the several varieties of eucalypti in Hanford, and take great care of the plants until they grow to a height of from 4 to 20 in., and then they take the plants out to the farm and place them where the trees are to grow. At this particular time the rains have made it desirable for tree planting, and the young plants are going out to the experimental farm in wagon loads. The plant of last season, should the same percentage of success follow up this season, will make a forest of about 15,000 trees growing on the farm.

Lake.

HARVESTING OLIVE CROP.—Middleton *Independent*, Jan. 20: D. M. Hanson, who recently came up from Vallejo to harvest the olive crop on his ranch near Lower Lake, states that the olives on his place are very large and firm in quality and that there is an abundance of them.

San Joaquin.

MILKING COWS WITH BULLS.—Modesto *Herald*, Jan. 18: At the Riverside ranch, near Stockton, C. D. Pierce two weeks ago installed a mechanical milker. A vacuum pump is connected with the pail, that acts as a receptacle for the milk as it comes from the cow. From this pail there extends rubber tubes that are connected with the cows' udders by means of rubber nipples, so flexible that the operation of the pump causes them to expand and contract in a manner that brings the milk freely from the cow and transmits it to the pail without danger of contamination with the bacteria or other elements of disease in the atmosphere. Unless the most rigorous conditions of sanitation are maintained, milking by hand carries with it a constant danger of infection of the fluid by bacteria. Even when the most careful order prevails at a dairy there is always a likelihood of bacteria getting into the milk, either from the hands of the milker, possibly from the cow itself, or perhaps from a gust of wind or disturbances in the atmosphere. By the use of the new machine, however, it is claimed that this danger is eliminated, in that the milk passes directly from the cow into a closed can. From this can the milk is transferred to porcelain vats, thence to the separators and from them to cold storage. Another advantage, and one that appeals to all dairymen, is that of economy, which is accomplished in the new machine, for one man takes the place of six at a dairy. When the machines were installed at the Riverside ranch, the question of motor power was an important matter for consideration. Several of Mr. Pierce's friends suggested a gasoline engine and he was preparing to follow their advice when he suddenly spotted one of his prize bulls proudly strutting around his corral. "By Jove! I've got a better idea," he exclaimed. "What is the matter with engaging the services of those bulls for needed power?" His friends doubted the feasibility of his scheme, but he was more confident of its success, and a week later he ordered a treadmill, which is to serve as a means of motor power for his milking apparatus.

FARMERS BUYING SEED.—Stockton *Independent*, Jan. 20: Farmers came into the city yesterday from all directions to buy seed for sowing immediately. Reports

from all sections were encouraging and the rain measurements showed a sufficient downpour to make the next crop season a reasonably safe one. The storm was general and San Joaquin county was given a good wetting. Farmers who had put their grain in early and feared their seed had been rotted by the long spell of cold and retarding weather report that they have not been able to find any spoiled seed. Many of them have been out digging up seed the past two days to settle that question. From Stockton north to New Hope very little land has been plowed, but a large portion of the county south of Stockton has been seeded. Plowing will be rushed from this time on and farmers say they can sow throughout January and get good crops, but most of them will put in barley.

Sonoma.

MORE ABOUT VINEYARDS.—Ukiah *Press*, Jan. 19: J. B. Cooley, the manager of the branch winery at Cloverdale for the Asti people, was in town Monday on a business visit. When spoken to about the movement on foot in this county to plant grapes on the hill lands, he said that grape crops were the best paying crops in the country. He also stated that it would pay the hop men better to plant vineyards on their bottom land than to raise hops. He said that in one instance in Cloverdale there was a three-acre tract which produced 21 tons of grapes to the acre. This is of course the finest land there is in the valley, and while there is not so much sugar in the grapes and they bring a little less than the grapes raised on the high land, the abundance of the crop repaid the difference. He said that while the upland, that was scarcely fit for anything else, would produce grapes, the bottom land would do proportionately better.

MAN TOSSED BY AN ANGRY BULL.—Press-Democrat, Jan. 20: To be tossed into space and descend on the teeth of a harrow is not the most pleasant of experiences, and Edward Peter, who resides on the Peter ranch, at the end of Sonoma avenue, near the pumping station, who figured in just such an exciting episode, has no desire to repeat it. The bull, a three-year-old Durham, suddenly became infuriated and charged on Mr. Peter. The man dodged and tried to escape. He stumbled, and before he knew what was happening the bull was mauling him. The next moment the animal tossed him into space onto the harrow. Then he was rescued and the bull driven off. Dr. Jesse attended to Mr. Peter's injuries.

Sonoma.

WINE COMPANY FINED.—Santa Rosa *Republican*, Jan. 19: The French-American Wine Co. was fined \$250 on Wednesday afternoon by Judge Albert G. Burnett, they having pleaded guilty to the charge against them of having polluted the waters of Russian river. It is alleged that refuse matter was permitted to run and be dumped into the stream, which was deleterious to fish and that the company had repeatedly been warned.

Stanislaus.

GRAPES.—Modesto *Herald*, Jan. 18: One of the most successful growers of Emperor table grapes for shipping is G. W. Wylie of Tulare county. A few years ago he sold his Muscat vineyard, near Fresno, and moved to Dinuba. He decided to put out mostly Emperor, a fine purple table grape, and some Flaming Tokays. He finds that the former do the best for that locality, but thinks that Tokays might be profitable in Stanislaus, being further north and slightly cooler. They are somewhat better bearers and sellers, but spoil more easily with rain and, consequently, must be packed and shipped earlier. Off an 18-acre patch, notwithstanding that it was scorched by some frost, both at the beginning and close of the season, on three-year-old vines the gross income was \$9,000, or \$500 per acre. As they are a very hardy grape, and will stand lots of hard usage if it cannot be avoided, the expense of handling and shipping is not excessive. On a 12-acre piece that almost escaped the frost he grossed \$14,000.

Tehama.

STOCK FARING WELL.—Red Bluff *News*, Jan. 19: Contrary to all expectations, the stock of Tehama county have generally survived the trying weather of the past few weeks and the new growth of grass gives the cattle and sheep a new lease of life. Reports from the ranges show that the Cone sheep are in splendid condition, considering the kind of a season they have had, and all other large flocks have withstood the unusual cold and drouth. The warm rain has been a

blessing to all owners of live stock. The smaller holders of cattle have suffered the most and some cows and steers have been rendered so weak that they might be drowned in the rapidly rising creeks. Hopeful reports have been received from the Diamond Range country, although stockmen are not yet out of the woods.

Tulare.

GRAPES IN ALTA DISTRICT.—Alta *Advocate*: A large additional acreage to grapes will be planted in the Alta district this spring. This statement is made by a resident of that section, who claims that a number of tracts, both large and small, in the Dinuba, Sultana and Orosi country are now being and will be set out. The grapes will include many varieties, among them being the Mission, Muscat, Emperor, Tokay, etc. The high prices obtained for table grapes during the past several seasons have proven an incentive to plant these varieties. Not only grapes, but many varieties of deciduous trees, will be set out, a large part of which will be peaches, including Muirs, and Philipps and Orange Clings. As regards grapes, they do especially well, it is stated, in the dry bog land, some of the Armenians in the vicinity of Churchill having raisins in the sweatboxes last year before those in some other sections had begun to pick.

NOB HILL VINEYARD CO.—Lindsay *Gazette*, Jan. 17: McLees Brothers, A. J. Hutchinson and Ed. McLees have organized the Nob Hill Vineyard Company with a capital stock of \$10,000. The object of the company is to plant and grow Emperor grapes at Nob Hill. Sixty acres will be planted this spring by the company and N. S. Marshall and Daniel Myers, who own land adjoining, will put in 15 acres, the former 10 and the latter 5. Although quite a number of grapes have been planted here in former years, the new company will practically start a new industry in this section. Considerable acreage will be put out this spring at El Mirador also and as a whole the new industry will furnish an incentive for plantings by others, which will in a very short time grow to such magnitude that employment will be furnished to a greater number of people during a longer period in each year.

Ventura.

MORE IRRIGATION.—Oxnard *Courier*: Another irrigation company has been organized near Ventura for the purpose of supplying a large tract of land with water. R. H. Valentine, H. S. Valentine, James Ward and Sylva Heiss have formed a company known as H. S. Valentine Co., and have sunk a large well on the Harry Valentine place near Montalvo and are now spending several thousand dollars on a pipe line to supply a large section of land in that vicinity with water for irrigation. They are putting in two large gasoline engines and pumps, and will cover some 250 acres of bean land and 50 acres of walnut orchard.

Yuba.

THOUSANDS OF SHEEP KILLED IN STORM.—Marysville dispatch to Sacramento *Union*, Jan. 21: Thousands of

sheep are reported killed by the heavy storm on the ranges of this county during the present week. Some owners lost one-third of their flocks. But few lambs lived through the storms. The loss will amount to many thousands.

TREE CRASHES UPON HOUSE.—Marysville *Democrat*, Jan. 16: A large walnut tree that has stood in the back yard of the residence of H. Cheim on D street was uprooted by the heavy south wind and crashed down upon the back roof of that portion of the house that is occupied by W. E. Langdon and family. The roof was wrecked, but the walls, being of brick, withstood the shock and prevented what might under other circumstances have been a disastrous accident.

NEVADA.

TO PLANT AFRICAN TREES ON DESERT.—Reno special to Sacramento *Bee*, Jan. 21: Senator Nixon has induced the Agricultural Department to make extensive experiments in Nevada with desert trees which grow without water. From a British army officer in Africa the Department has ordered several thousand seeds of the deodar tree and these will be planted in the Las Vegas section, where their growth will be carefully watched by the Department officials. There are millions of acres in Nevada where no vegetation except sagebrush and similar plant life is found, to the great inconvenience of miners and stockmen, who often are put to enormous expense to secure timber for their uses. It is also believed that if desert trees can be induced to grow that they will cause precipitation of moisture where there is now none. It is the intention of the State experiment stations to secure some of these seeds in order to give them a trial in western Nevada.

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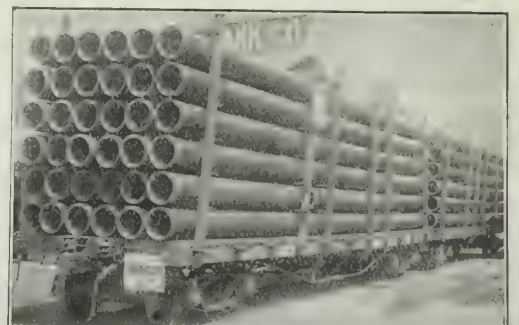
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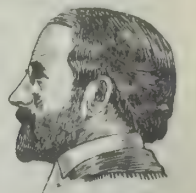
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The Home Circle.

Heir of the Ages.

Little store of wealth have I,
Nor a rood of land I own;
Not a mansion fair and high,
Bullt with towers of fretted stone;
Stocks, nor bonds, nor title deeds,
Flocks nor herds have I to show;
When I ride, no Arab steeds
Toss for me their manes of snow.

Yet to an immense estate
Am I heir, by grace of God—
Richer, grander, than doth wait
Any earthly monarch's nod.
Heir of all the ages, I—
Heir of all that they have wrought,
All their store of empires high,
All their wealth of precious thought.

Every golden deed of theirs
Sheds its luster on my way;
All their labors, all their prayers,
Sanctify this present day!
Heir of all that they have earned
By their passion and their tears;
Heir of all that they have learned
Through the weary, toiling years!

Heir of all the faith sublime
On whose wings they soared to heaven;
Heir of every hope that Time
To earth's fainting sons hath given—
Aspirations pure and high;
Strength to dare and to endure;
Heir of all the ages, I—
Lo! I am no longer poor!

—Julia C. R. Dorr.

The Farmer's Blessings.

None can describe the sweets of country
life
But those blest men that do enjoy and
taste them.
Plain husbandmen, tho' far below our
pitch
Of fortune plac'd, enjoy a wealth above
us,
To whom the earth with true and boun-
teous justice,
Free from war's cares, returns an easy
food;
They breathe the fresh and uncorrupted
air,
And by clear brooks enjoy untroubled
sleeps,
Their state is fearless and secure, enrich'd
With several blessings, such as greatest
kings
Might in true justice envy, and themselves
Would count too happy, if they truly
knew them.

—F. May.

Work.

Let me but do my work from day to day
In field or forest, at the desk or loom,
In roaring market-place or tranquil room;
Let me but find it in my heart to say,
When vagrant wishes beckon me astray,
"This is my work—my blessing, not my
doom;
Of all who live, I am the only one by
whom
This work can best be done, in the right
way."

Then shall I see it not too great nor small
To suit my spirit and to prove my powers;
Then shall I cheerful greet the laboring
hours,
And cheerful turn, when the long shadows
fall

At eventide, to play and love and rest,
Because I know for me my work is best.

—Henry Van Dyke.

The Most Beautiful Poem.

Now, as the time was come for
Prince Hemmi to think of marrying,
counselors and courtiers besought him
to choose a bride. The prince, how-
ever, gave them no satisfaction. In-
differently he glanced at the portraits
of the young princesses which gold-
trimmed ambassadors brought him.
Blondes there were and brunettes; thin
ones and fat, pretty ones and ugly.
And even in the latter the painter had
found a way to bring out some beauty,
and had exaggerated it in order to turn
attention from the others. For in-
stance, from the midst of irregular
features looked out deep eyes; in an-
other, a too-large nose was offset by
cherry lips.

But Prince Hemmi preserved his
weary attitude. He sighed, shook his
head, and, shutting himself up in his
apartment, took his lute and began to

sing, leaving to his prime minister the
care of dismissing the ambassadors as
best he could, by covering with words
of flattery the refusal of the prince to
fall in love.

The whole court was filled with
lamentation. The entire kingdom
groaned at having so morose a prince
for sovereign. The old King and the
Queen-mother being dead, no one had
the power to make the prince listen to
words of wisdom.

One alone could influence him. This
was his favorite, Olle, more of a bard
than a courtier, more of a poet than a
statesman, who liked better to sing
with the prince than to weary him with
talking.

However, as the two hundred and
ninety-seventh ambassador took his
leave, carrying away the two hundred
and ninety-seventh portrait of the re-
jected princesses, Olle roused himself.
He laid down his lute, stopped singing
the verse he was composing, and sat
listening pensively to the horses of the
escort as they hurried away at an
angry gallop.

"Well," said the prince, "of what
thinkest thou?"

Olle sighed without replying. Like
the prince, he was but twenty, and his
youthful face had the beauty of a girl's
among its light blonde curls.

Hemmi was dark, grave and pale,
with dreamy eyes.

"Of what thinkest thou?" repeated
the prince, impatiently.

"I am thinking it is sad that such a
prince as you should have taken upon
himself the vows of chastity."

Hemmi began to laugh. "I have
taken no vow." Then growing sad, he
added: "My heart is filled with love:
only—Olle, will you understand me?—I
do not wish to give my beautiful love to
a doll without soul or mind."

"For mind," said Olle, "I see no
necessity! She whom one loves always
has enough of that, provided she has
the sense to let herself be loved."

"Undeceive thyself! I want the one I
choose to understand me and be able to
respond to my thoughts and feeling,
even when the days of our first passion
are over. Olle, thinkest thou of the
horror of passing one's life with a
statue whom one would have to ani-
mate oneself, and which, as soon as one
ceased to give it life, would fall back in-
to its inert doll state!"

"Tra la-la! la! la!" sang Olle, touch-
ing the strings of his lute.

"Thou mockest, instead of consoling
me."

"I do not mock. I sing, because in
singing my most precious thoughts
come to me—and I would find some
way of drawing you out of your diffi-
culty. But wait, Prince Hemmi, here
is the plan I have been seeking."

"Tell it quickly!"

"Why not arrange a tourney of
ladies for which your heart shall be the
prize?"

The prince shrugged his shoulders.
"I mean," continued Olle, "a gallant
tourney; a sort of a court of love to
which those who wish to be queen shall
bring poems composed by themselves.
Poetry is never found in vulgar souls.
One must love in order to sing."

"Thy idea is good, but who will
guarantee that the poems brought by
these ambitious women were written
by themselves?"

"That can be easily proved. When
the three best poems are chosen by
you, the three authors shall be shut up
in your palace, each in a separate
room where no one can approach them.
We will leave them there a whole night,
merely taking care that they may have
ink, pens, parchment and a comfort-
able supper, for the mind needs to be
sustained by the body."

"Olle, dost thou really think I can
do this?"

"Why not? Trust to me. Make
known throughout your palace that the
first day of the new moon you will
receive all women who wish to try their
luck. Only, Prince Hemmi, do not ex-
pect all the candidates to be noble, for
very few could combine birth, intellect
and heart with courage enough to con-
fess to their wish to be chosen."

"I ask for nothing except a loving
heart."

"Be at peace, then," said Olle.

And humming a virelay, he gave
orders to announce this remarkable
tourney, the reward of which was to be
a throne, and, better still, much love.

The candidates came in crowds. Not
the daughters of great lords, for, as
Olle had predicted, these were too
proud to compete. In anger at not
daring to do so, they made fun of the
Prince. "What a fool he was, and
how the unhappy woman he chose was
to be pitied!" Thus wagged the kindly
tongues against the daughters of the
lesser nobles and the bourgeoisie.

There came also intriguing women,
beautiful, bold creatures, who were dis-
missed without pity as soon as one of
the courtiers recognized them. On
arriving, all handed to Olle, who had
been charged to read them, their rolls
of parchment. The manuscripts were
thrown into a covered basket. Olle
took them out at random and began to
read. "What wretched verses! What
vapid thoughts!"

When he heard them, Hemmi began
to regret having attempted the im-
possible; he was sorry he had consented
to this court of love at which no one
seemed worthy of the offered reward.

"Oh, such wretched verses! Such
vapid thoughts!"

Three manuscripts only remained to
be read. Olle unfolded one and began,
whereupon the prince took courage.
The lines burst forth in a proud song,
the sonorous rhymes of which fell to-
gether like tinkling cymbals.

A murmur ran through the crowd.
At a sign from Olle the applauded muse
advanced.

She was tall, lithe and straight as a
beautiful lily. She raised her haughty
head, and beneath the shadows of her
black braids shone proud eyes—velvety
eyes streaked with gold. She was
dressed in scarlet, as if she had donned
the royal cloak in advance.

The prince admired her superb pres-
ence.

"Your poem is beautiful, madame,"
said he. "Whence came such wonder-
ful inspirations?"

She smiled a haughty smile and re-
plied, "From my wish to be queen."

Then the prince thought, "What
brow would better wear the diadem?"
and the ministers whispered in low
tones.

"She's a queen! A true queen!
Choose her, prince! Choose her!"

But Olle had taken another poem and
was again reading.

This one resembled a bird-song in a
sunbeam.

Of her own accord, when Olle had
finished, the happy muse advanced.
She was fair, a smile was in her eyes
and on her lips. She wore rose-color
like the spring.

"Your poem is charming," said
Hemmi. "Be so good, madame, as to
tell us what breath inspired you?"

She smiled and her smile won the
prince.

"I thought," said she, "of the pleas-
ures with which my life would be filled
if I were a princess, and I sang!"

"Oh, the pretty creature!" mur-
mured Olle. "If I were king!"

And he hesitated to read the last
poem, so great was his desire to see the
poetess of the golden hair triumph.

But the prince signed to him to con-
tinue.

And this time on hearing the verses
which Olle read the heart of the prince
was filled with a deep joy. In the lines,
sweet, as caressing as kisses, he felt
the throb of a soul.

When the third muse came forward
there rose among the crowd of courtiers
a dull groan of anger. How did the
woman dare to present herself there?

She was clad very simply in a white
woolen robe. The bedraggled fringe
as well as her dusty slippers showed
that she had walked a long way like a
beggar. But Hemmi saw only the dark
hair, the color of ripe blackberries in
the moonlight, lips trembling in a pale
face, and above all, great, beseeching
eyes in which lay one knew not what
tender longing.

"And you whose poem is infinitely
sweet, tell us, madame, who inspired
you?"

Calmly she raised to the prince her
soft glance and said:

"I dreamed of love."

So much meaning thrilled through
this reply that the heart of the prince
bounded in his breast.

He no longer saw the haughty muse
in the red glory of her royal robes, nor
the other smiling in her flower-hued
gown. He saw nothing but the pale
woman, the audacious beggar of love.

Into the chamber to which they were
to lead her of the proud eyes, the prime
minister glided furtively, and in place
of the black ink already on the desk,
put some golden ink.

He said to himself, in his narrow
reasoning, that brilliant letters would
make the words more precious, and he
thought that the unknown woman with
the queenly brow would be grateful to
him and would help him in regard to his
position with the prince.

Olle's choice was the blonde woman
with the luminous eyes. And in order
that the poem she was to write might
delight the more, he placed on the table
colors and brushes. Thus she could
adorn with arabesques the graceful lines
she was about to trace.

As for the pale woman with the be-
seeeching eyes, no one thought of her—
no one, alas! but the valet, whose duty
it was to make ready the necessities—
ink, pens and parchment. "What!"
said he to himself, "make a queen out
of a beggar! Compel me to serve her!"

In order to insure himself against
this the valet thought he had found a
way—he overturned the ink.

She would defend herself in vain the
following day, the adventurer; every
one would think that she had made up
a pretext to excuse her inability to com-
pose verses without aid.

Before an expectant court Prince
Hemmi himself unrolled the three parch-
ments. The first was in ink of gold,
admirably suited to the beauty of the
poem. In sonorous, well-rhyming lines,
it celebrated the glory of being king,
the pride of being master.

The second parchment was covered
with flowery arabesques. But of
verses, none. The blonde muse excused
herself, saying, that, like certain birds,
she was unable to sing when caged.

Olle sighed.
Hemmi unrolled the last manuscript.
The letters were traced in red ink
which in many places was partly rubbed
off.

The prince read, and when he had
finished the poem:

"Come! Oh, come," cried he, "thou
who knowest how to love; thou whom I
recognized."

She came to him slowly, and at her
coming the courtiers stood back with
words of terror.

She no longer wore her faded robe,
but a purple tunic, which made her pale
face whiter than ever.

"My one love!" exclaimed Hemmi.
She smiled.

Larger, more luminous opened her
eyes. Suddenly she staggered. The
prince held out his arms, she glided into
them, still smiling her wonderful smile.

At their feet the manuscript had
fallen, as red as the dress she wore.

Hemmi gave a cry of anguish. The
purple robe clung to him, and beneath
the torn folds a yawning wound showed
itself.

Then the prince knew that the woman
had written the most beautiful poem
with her heart's blood.—Translated
from the French for Short Stories.

Tender-Hearted Bess.

She wouldn't beat the carpets,
She wouldn't whip the cream,
She wouldn't pound the beefsteak—
Too cruel it did seem.
She wouldn't strike the matches,
She'd give hot tea no blows;
She made no hit at baking,
She wouldn't wring her clothes,
She wouldn't cut a chicken
Or think of drowning care;
She wouldn't mash potatoes
Or bang her golden hair.
She wouldn't do all these things,
My tender-hearted Bess,
And so she smashed all records
At downright laziness.

—New York Sun.

Things to Remember.

AN EXCELLENT MOUTH WASH.—Add a teaspoonful of tincture of myrrh to a cupful of warm water. It will harden the gums, sweeten the breath, and, if teeth have been extracted, will heal the mouth.

FOR THE EYES.—If the eyes lack luster, it is an indication that you need anti-dyspeptic medicine. For sick headaches, accompanied by dancing before the eyes of sparks, take a seidlitz powder, tying a towel over the eyes and remain in a darkened room. For tired eyes, try bathing them in hot water and resting them.

THE VALUE OF CHARCOAL.—Charcoal is one of the best known purifiers of water, which, if allowed to percolate through it, will be freed of all foreign particles or animal organisms. For sweetening the breath it has no equal, and when used for cleansing the teeth it removes fungous growths that tooth powder fails to reach. If frequently applied to a burn it will relieve the pain.—*Vick's.*

THE WELL KEPT HANDS.—A piece of pumice stone, to rub off ink and other stains, should be found on every toilet stand, also a lemon to rub on the nails and under them, to remove any stain or discoloration. Then wash the hands perfectly clean, rub with almond cream, in order to make plump and healthy looking, scrape the flesh back from the nails, trim properly and polish with a chamois polisher. This treatment will insure well-kept hands.

HOW TO BREATHE.—When not talking, the lips should be well closed and the breathing should be entirely through the nostrils. In order to reach all points of your physical system, try slow, measured, deep breathing, that covers the entire lung surface; when once you have established this habit of breathing, you will realize the benefits that occur from a healthy condition of blood, for the manner in which the inspired air comes in contact with the blood in the lungs, is of the utmost importance to every vital process. The perfection of breathing depends upon the purity of the air and the manner of inhaling it.

THE WAY TO GET EXERCISE.—Women cannot get the proper kind of exercise by performing household duties, for physical exercise, in order to be beneficial, should be taken with the mind at rest, and the woman who cannot spare the time from her household duties for systematic exercise is the one most in need of it. A quick, brisk walk of 30 minutes duration daily, in the open air, should be considered absolutely necessary to the health of all housewives. And the anæmia girls should stay out of doors, in the fresh air, as much as possible, walk slowly and practice deep breathing; this, with the proper diet of milk, farinaceous food, etc., will restore the bloom of health to the palest complexion, which is a sign of anæmia. Walking in the open air is the best exercise woman can engage in for the development of her physical charms.

The Sailor's Prayerbook.

A sailor entered a church with a pack of cards in his hands and spread them out on the seat. He was arrested and carried to court next morning. The judge asked him what he meant by handling cards in church.

The sailor replied: "Your Honor, I was shipwrecked once and cast upon a desert island and the only thing I saved was a pack of cards. These proved to be my Bible, my prayerbook and my almanac."

"Explain yourself," said the judge. The sailor then continued: "When I look at the ace, it reminds me of the Father, the one God. The two reminds me of the Father and Son; the three of the Trinity—the Father, Son and Holy Ghost. The four reminds me of the four evangelists, Matthew, Mark, Luke and John; the five of the five wise virgins and the five foolish ones. The six reminds me that the world was made in six days; the seven that the Lord rested

on the seventh day, the Sabbath. The eight reminds me of the eight progenitors of the world—Noah, his wife, his three sons and their wives; the nine of the nine lepers who failed to bless and praise Jesus for healing them. He healed ten, but only one thanked him. The ten reminds me of the ten commandments; the queen of the Virgin Mary, mother of Jesus, the Queen of Heaven, and also of the Queen of Sheba. The king reminds me of the wisest man that ever lived—King Solomon. The fifty-two cards in the pack remind me of the fifty-two weeks in the year; the twelve picture cards of the twelve months in the year. The four suits—hearts, diamonds, clubs and spades—remind me of the four seasons—spring, summer, autumn and winter. The thirteen cards in each suit remind me of the thirteen weeks in each season, and the 365 spots on the cards of the pack remind me of the 365 days in the year."

"Well," said the judge, "you have made a very satisfactory explanation, but you have omitted the knave. What of that?"

"Don't you think the man who arrested me is more of a knave than I am?" asked the sailor, and the judge then discharged him.

To Make Colors Fast.

To preserve the colors of gingham, printed lawns, etc., and before washing almost any colored fabrics, it is recommended to soak them for some time in water to every gallon of which is added a spoonful of ox gall. A strong, clear tea of common hay will preserve the color of French linens. Vinegar in the rinsing water for pink and green fabrics will brighten these colors, and soda answers the same purpose for both purple and blue. The colors of the above fabrics may be preserved by using a strong, milk-warm lather of white soap, putting the dress into it instead of rubbing it on the material, and stirring into a first and second tub of rinsing water a large tablespoonful of ox gall. To prepare ox gall for washing colored articles, empty it into a bottle, put in it a handful of salt and keep it closely corked. A teaspoonful to five gallons of the rinsing water will suffice.

Proving One's Identity.

Paradoxical as it may seem, says a writer, the most difficult thing to prove in court is who you are. Public records are of value for this purpose, but not conclusive, neither are family records, unless they be in the handwriting of a parent or relative who has known one from birth. One's own testimony is hearsay, as being outside of personal knowledge. Only the testimony of parents or other relatives who have personal knowledge of the fact can furnish evidence which courts deem conclusive. Many great estates have been lost to their rightful owner solely because of their inability to prove their identity.

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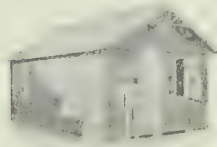
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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, Jan. 24, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday.....	88 1/2 @ 87 3/4	85 1/2 @ 84 3/4
Thursday.....	88 1/2 @ 87 3/4	85 1/2 @ 84 3/4
Friday.....	88 1/2 @ 87 3/4	85 1/2 @ 84 3/4
Saturday.....	87 1/2 @ 86 3/4	84 1/2 @ 83 3/4
Monday.....	87 1/2 @ 86 3/4	84 1/2 @ 83 3/4
Tuesday.....	87 1/2 @ 86 3/4	84 1/2 @ 83 3/4

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday.....	45 1/4 @ 45	45 1/4 @ 45 1/2
Thursday.....	45 1/4 @ 45	45 1/4 @ 45 1/2
Friday.....	45 1/4 @ 45	45 1/4 @ 45 1/2
Saturday.....	45 1/4 @ 45	45 1/4 @ 45 1/2
Monday.....	45 1/4 @ 45	45 1/4 @ 45 1/2
Tuesday.....	45 1/4 @ 45	45 1/4 @ 45 1/2

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	Dec., 1906.	May, 1906.
Wednesday.....	1 32 1/2 @ 1 32	1 38 1/2 @ 1 38 3/4
Thursday.....	1 32 1/2 @ 1 32	1 38 1/2 @ 1 38 3/4
Friday.....	1 32 1/2 @ 1 32	1 38 1/2 @ 1 38 3/4
Saturday.....	1 32 1/2 @ 1 32	1 38 1/2 @ 1 38 3/4
Monday.....	1 32 1/2 @ 1 32	1 38 1/2 @ 1 38 3/4
Tuesday.....	1 32 1/2 @ 1 32	1 38 1/2 @ 1 38 3/4

Wheat.

No rainstorm in California was ever more timely than that of last week. The entire prospects of the farming districts have been changed by it. The rain has been general throughout the entire State, and many think it came in the nick of time for the grain growers. We have passed through another week of dullness. Selling has been slow, and only a few sales are reported. Offerings are light and prices unsatisfactory to holders, who want more money for their wheat and absolutely refuse to let it go at present values. Shippers have more wheat purchased than they have tonnage. Tonnage at present is too high for an exporter to take up, considering the price he has paid for his wheat and the values of cargoes abroad. Pacific Coast wheat is now in competition with Argentine. Shippers abroad are more willing to transact business with that country, on account of cheaper wheat, and it is stated that the Argentine crop will have from 12,000,000 to 14,000,000 quarters for export. Australia will also have a surplus of 4,000,000 quarters, and this will have to find a market in Europe. Coast shippers are aware of this, and are very reluctant to purchase wheat at the present prices. They claim that with the high freight rates prevailing they could hardly come out even on present values of cargoes, and that prices must give way before a good demand can be relied upon from Europe. Stocks held in country warehouses and at tidewater points in the North are very large; in fact, the largest for a great many years past, and with the dragging market the outlook is that this will continue for some time to come. There is no call from Japan at present.

California Milling.....	1 42 @ 1 47 1/2
Cal. No. 1 shipping.....	1 40 @ 1 45
Northern Club.....	1 42 1/2 @ 1 43 1/2
Northern Bluestem.....	1 45 @ 1 47 1/2
Northern Red.....	1 35 @ 1 37 1/2

PRICES OF FUTURES.

Wednesday, at the forenoon session of Exchange, May, 1906, wheat ranged from \$1.37 1/2 to \$1.37.

Flour.

On the whole, the milling situation is dull, and it is doubtful whether there will be any renewed activity for some time to come. From the United Kingdom there is no inquiry whatever, and the same can be said of South Africa. Central and South American demand is only fair. The heavy shipments noticed some time ago have fallen away, and it looks as if the demand from there has been satisfied. Millers are somewhat discouraged over the outlook in China, and would like to see the Government at Washington take active hold and try to remedy the troubles now existing. The general opinion among the leading millers is that the boycott is more serious than is actually known. Some few millers at Puget Sound points have orders that remain to be filled for China, but if they desire to crowd their mills these could be filled this week. As to the demand from Japan, very few orders are coming to hand, as buyers over there will endeavor to dispose of the large stocks now on hand before putting in any fresh supplies. Stocks there are very large at present, owing to the heavy shipments from the Pacific Northwest during the month of December. Steamers going to Oriental ports are not taxed to capacity, and, if there was any demand for flour, space could readily be obtained. At Northern points export brands are held steady at \$3.30 to \$3.35.

Patents, California.....	4 @ 85
Second Patents, California.....	4 @ 60
Straights.....	4 @ 25

Superfine No. 1.....	3 50 @ 3 75
Superfine No. 2.....	3 00 @ 3 40
Oregon Bakers'.....	3 00 @ 3 25
Washington Bakers'.....	4 00 @ 4 40
Eastern Patents.....	5 50 @ —

Barley.

Very little change has been noticed in the barley market, and sales are mostly of a scalping character. Good feed is in good demand at from \$1.21 to \$1.23 1/2 per cental. Otherwise buyers are only moderately interested. Offerings are fair, but very little selling is going on. Prices are entirely too high for export, and the rains will tend to induce holders to let go shortly, owing to the improved prospects for the new crop. There is said to be considerable barley unsold in Oregon and Washington, but nevertheless some Portland houses are shipping in Eastern corn largely for feed as a substitute for barley.

Brewing.....	1 22 1/2 @ 1 25
Feed, No. 1.....	1 21 @ 1 23 1/2
Feed, fair to good.....	1 17 1/2 @ 1 20
Chevalier, No. 1 to choice.....	1 25 @ 1 30
Chevalier, common to fair.....	1 20 @ 1 25
December.....	88 1/2 @ 88 3/4

Oats.

The market is generally firm on all varieties, though not a great deal of trading is being done owing to light supplies. Advices from the North show a strong market, with a good quantity of Eastern stock being shipped in. Cereal millers at Portland are offering \$28 for choice No. 1 oats, but are not finding much at that figure.

White oats.....	1 45 @ 1 65
Black oats.....	1 35 @ 1 70
Red oats.....	1 30 @ 1 60

Corn.

The corn market in San Francisco is very active, as there has grown up quite a heavy demand for corn for shipment to interior points, where it is being used as feed, owing to the high prices asked for barley. Large consumers of feed barley have been heavy buyers of corn this week, a single shipment of 25 cars having gone to one party for cattle feed. Large importations are being brought in from Kansas and Nebraska, and still larger quantities are on the way. This situation has eased the market to a certain extent, and prices are quotably about as heretofore. Kafir corn is now selling at \$1.20.

Large White, good to choice.....	1 22 1/2 @ 1 27 1/2
Large Yellow.....	1 22 1/2 @ 1 27 1/2
Small Yellow.....	1 50 @ 1 55
Egyptian White.....	1 38 1/2 @ 1 40
Egyptian Brown.....	1 35 @ 1 40
Kafir.....	1 20 @ —

Rye.

There is but little change in the rye market, though the situation is probably a trifle easier than last week. Good quality rye is now worth \$1.45 to \$1.50, with the bulk of the sales at the higher figures.

Good to choice.....	1 45 @ 1 50
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Buckwheat.

Buckwheat is still practically out of the market, as has been the case for some time, and prices are largely nominal. The last sale reported was made at \$1.60. Nothing new is reported in regard to the coming crop.

Good to choice.....	1 50 @ 1 65
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Beans.

Lima beans have been easier, owing to advices of a weaker feeling in the growing sections south. Other varieties are reported firm, with but little business doing. It appears that shipments of Santa Barbara and Ventura beans East have been checked, and that California beans are now quoted lower in Chicago and New York than in California. So far about two-thirds of the crop has gone East, and unless California is able to absorb the remainder, local prices will have to come down to an Eastern shipping basis. Nevertheless, southern holders are demanding as high as 5c for limas, and some sales are claimed at \$4.85 per hundred.

Small White, good to choice.....	22 @ 30
Large White.....	20 @ 30
Pinks.....	1 75 @ 2 00
Pinks, damaged.....	1 00 @ 1 25
Bayos, good to choice.....	3 30 @ 3 60
Red Kidneys.....	3 50 @ 3 65
Reds.....	3 00 @ 3 10
Limas, good to choice.....	4 75 @ 5 00
Black-eye Beans.....	4 50 @ 4 60

Dried Peas.

The market for dried peas shows little change. Indications continue to point to a firm market, with possibly higher prices before the new crop comes in. Nevertheless some sales of California green peas are reported as low as \$1.75. Some marrowfats have been sold at from 8 to 10c per pound.

Green Peas, California.....	1 75 @ 2 35
Niles.....	1 60 @ 1 75

Hops.

The hop market continues to be rather more favorable to sellers. Prominent growers are expecting a slight advance in prices about the middle of February. Dealers here are, however, slow buyers

and decline to take any decided interest in hops even at present prices. The first contracts of the year in Oregon were made this week, some 20,000 bales of 1906, 1907 and 1908 hops having been contracted for by New York parties at 10c. In Portland quotations for Oregon hops are ranging from 9 1/2 to 10c. Most growers, however, who have hops to sell are holding off in the hope of an advance. Washington hops are selling at from 10 to 11c, with some large holders claiming that the statistical position of Northwestern hops justifies 15c.

Medium to fair.....	6 @ —
Good brewing.....	8 @ 8 1/2
Prime.....	9 @ 10
Prime to choice.....	10 @ 11

Wool.

There is practically no business doing in the San Francisco market. Both buyers and sellers are watching developments in the East, where California wools are selling steadily, though not in large amount. One Boston sale, however, affecting 1,000 lb. of nice Northern wool, is reported at 30c. Some good-sized business in California wool is also understood to be pending in Boston. Little is doing in Oregon wools in the East. In general, it may be said that wool buying is more free than it was, although there is not as yet a large trade in progress.

FALL.	
Humboldt and Mendocino.....	15 @ 16 1/2
Northern, free.....	14 1/2 @ 16
Northern, defective.....	11 @ 13
Middle County, free.....	10 @ 14
Middle County, defective.....	11 @ 13
San Joaquin and Southern, free.....	9 @ 12
San Joaquin and Southern, defective.....	8 @ 10
SPRING.	
Oregon, valley.....	23 @ 25
Eastern Oregon.....	15 @ 17
Nevada.....	15 @ 19

Hay and Straw.

The past week has been an uneventful one with hay. Shipments show some little advance over last week, being 2,800 tons, as compared with 2,550. Receipts are ample for all demands, excepting for the choicest grades of wheat and tame oat, which seem to become more and more scarce. Although present arrivals are all readily absorbed, any further supply would probably lower the market. Plowing and seeding have been resumed and reports state that a large acreage of wheat, barley and oats will be planted.

Wheat, choice.....	14 @ 16 00
Wheat, other grades.....	8 00 @ 13 50
Wheat and Oat.....	9 00 @ 12 50
Tame Oat, fair to choice.....	8 00 @ 12 00
Wild Oat.....	8 00 @ 9 50
Barley.....	7 00 @ 9 50
Clover.....	6 00 @ 9 00
Alfalfa.....	9 00 @ 11 50
Stock hay.....	7 00 @ 8 00
Compressed.....	10 00 @ 13 00
Straw, 1/2 bale.....	80 @ 50

Millstuffs.

The market is stronger and prices very firm, with light receipts. The fact that the majority of the mills all over the coast have either closed down, or are running light, has caused stocks to run very low. A good demand exists from the interior of the country, but the output is insufficient to supply the wants of shippers. In the North a shortage of bran and shorts is reported.

Alfalfa Meal, 1/2 ton.....	21 00 @ 22 00
Bran, 1/2 ton.....	20 50 @ 21 00
Middlings.....	27 50 @ 29 00
Shorts, Oregon.....	21 00 @ 22 00
Barley, Rolled, choice.....	26 50 @ 27 50
Cornmeal.....	29 50 @ 30 50
Cracked Corn.....	30 00 @ 31 00
Oilcake Meal.....	39 00 @ 40 00
Cocoanut cake or meal.....	24 50 @ 25 50

Seeds.

The seed situation is featureless, with light stocks in almost all varieties and with only a small amount of trading. There will probably be but little interest taken in seeds for some time to come. Quotations show no change.

Alfalfa.....	11 00 @ 14 00
Flax.....	— @ —
Mustard, Yellow.....	3 50 @ 3 75
Mustard, Trieste.....	4 50 @ 4 75
Canary.....	6 1/4 @ 7
Rape.....	2 1/2 @ 3
Hemp.....	— @ 5
Timothy.....	5 1/4 @ 6

Honey.

California honey is still moving rather slowly, although the market has recovered from the reaction caused by the arrival of a lot of extracted honey from Hawaii. This latter has now been put on the market and is regularly quoted at 23c. California honey is generally a little higher, although little business is being done, and prices are hard to fix.

Extracted, Water White.....	4 1/4 @ 5 1/4
Extracted, White.....	4 1/2 @ 5
Extracted, Light Amber.....	4 @ 4 1/4
Extracted, Amber.....	3 1/4 @ 4
Extracted, Dark Amber.....	3 @ 3 1/4
Extracted, Hawaiian.....	2 1/4 @ —
White Comb, 1-frames.....	12 1/4 @ 15
Amber Comb.....	9 @ 12

Beeswax.

The beeswax situation is in the same sluggish situation as heretofore. Holders, however, seem to have acquired a little

more confidence, and prices are considered about 1c. higher than earlier in the month.

Good to choice, light 1/2 D.....	27 @ 28
Dark.....	25 @ 26

Live Stock and Meats.

The meat market is considered in excellent shape, with conditions generally favorable to sellers. Beef, lamb and mutton are especially firm, with the hog market also in good shape, though perhaps not quite so active as last week. Meat prices are generally expected to continue firm, with the possibility of a rise.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net 1/2 D.....	5 @ 5 1/2
Beef, 2nd quality.....	4 1/2 @ 5
Beef, 3rd quality.....	3 1/2 @ 4
Mutton—ewes, 80 lbs; wethers.....	9 1/2 @ 10
Hogs, hard grain, 150 to 250 lbs.....	6 @ 6 1/2
Hogs, large, hard, over 250 pounds.....	5 1/2 @ —
Hogs, small, fat, under 150 lbs.....	6 @ 6 1/2
Veal, large, 1/2 D.....	6 @ 7 1/2
Veal, small, 1/2 D.....	5 @ 9
Lamb, spring, 1/2 D.....	10 @ 11

Hides, Skins and Tallow.

The hide market continues rather weak with very little doing. Arrivals are poor and each lot is now bought on its own merits, with little regard to quotations. These are nominally as heretofore, though none are changing hands at the top quotations except, perhaps, a few of last summer's hides when these can be found.

Nothing but select hides, clean and trimmed, will bring full figures. Culls of all kinds either from groves, cuts, hair slips, side brands or murrain, are not always readily placed at the lower figures.

	Sound.	Culls.
Heavy Steers, over 56 lbs.....	13 @ —	12 @ —
Medium Steers, 48 to 56 lbs.....	12 @ —	11 @ —
Light Steers, under 48 lbs.....	11 1/2 @ —	10 1/2 @ —
Heavy Cow Hides, over 50 lbs.....	11 1/2 @ —	10 1/2 @ —
Light Cow Hides, under 50 lbs.....	11 1/2 @ —	10 1/2 @ —
Stags.....	7 @ 8	7 @ —
Wet Salted Kip.....	10 1/4 @ —	10 @ —
Wet Salted Veal.....	12 @ —	11 @ —
Wet Salted Calf.....	13 @ —	12 @ —
Dry Hides.....	19 @ —	19 @ —
Dry Kip and Veal, 11 to 16 lbs.....	17 @ —	15 @ —
Dry Calf, under 4 lbs.....	20 @ 21	19 @ —
Pelts, long wool, 1/2 skin.....	1 50 @ 2 00	1 00 @ 1 25
Pelts, medium, 1/2 skin.....	1 00 @ 1 25	90 @ 1 25
Pelts, short wool, 1/2 skin.....	60 @ 90	60 @ 90
Pelts, shearing, 1/2 skin.....	20 @ 50	20 @ 50
Horse Hides, salted, large prime, each.....	3 00 @ —	— @ —
Horse Hides, salted, medium.....	2 75 @ —	— @ —
Horse Hides, salted, small.....	2 25 @ —	— @ —
Horse Hides, dry, large.....	1 75 @ —	— @ —
Horse Hides, dry, medium.....	1 50 @ —	— @ —
Horse Hides, dry, small.....	1 00 @ —	— @ —
Tallow, good quality.....	4 @ 4 1/4	— @ —
Tallow, poorer grades.....	3 1/4 @ 3 1/2	— @ —

Bags and Bagging.

There is absolutely no change in the bag market, everything continuing at the same high level as heretofore. There have been no further contracts for grain bags, and in fact there have been no transactions of movement in any line.

Bean Bags, cotton, No. 1, 80 lbs; No. 2.....	8 1/4 @ —
Fruit Sacks, cotton, No. 1, 80 lbs; No. 2.....	7 1/2 @ 8
Fruit Sacks, jute, as to quality.....	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 22x36, spot.....	7 1/4 @ 7 1/2
Wool Sacks, 4-b.....	36 @ 37
Wool Sacks, 3 1/2-b.....	32 @ 34

Poultry.

The poultry situation is still dominated by the Chinese New Year, and prices for good fat chickens and ducks have an upward tendency. The fact that receipts of California stock have also been light, has also tended to make the situation very firm. Dressed turkeys have a poor sale. Some Eastern arrivals of chickens have come in, but these have not been sufficient to swamp the market.

Turkeys, choice Young, 1/2 D.....	17 @ 18
Turkeys, live gobblers, 1/2 D.....	17 @ 18
Turkeys, live hens 1/2 D.....	18 @ 19
Hens, small, 1/2 dozen.....	4 50 @ 5 50
Hens, large.....	6 00 @ 7 00
Roosters, old.....	4 50 @ 5 50
Roosters, young (full-grown).....	7 00 @ 8 00
Fryers.....	5 50 @ 6 50
Broilers, large.....	4 50 @ 5 50
Broilers, small to medium.....	2 50 @ 3 50
Ducks, old, 1/2 dozen.....	5 00 @ 6 00
Ducks, young, 1/2 dozen.....	6 00 @ 7 00
Geese, 1/2 pair.....	2 @ 2 50
Goosings, 1/2 pair.....	2 @ 2 50
Pigeons, old, 1/2 dozen.....	1 00 @ 1 50
Pigeons, young.....	2 50 @ 2 75

Butter.

Butter has gone up about 1c. since last week, though some grades are unchanged. Receipts have continued rather light, and at present the demand and supply may be said to balance each other at ruling prices. There is some talk that lower prices will follow the present fair weather, but San Francisco holders do not seem to be uneasy.

Creamery, extras, 1/2 D.....	30 @ 31 1/4
Creamery, firsts.....	29 @ 29 1/4
Creamery, seconds.....	24 @ 25
Dairy, select.....	20 @ 25
Dairy, thirds.....	22 @ 25
Dairy, seconds.....	20 @ 22
California storage.....	24 @ 26
Mixed Store.....	19 @ 20

Cheese.

The upward tendency noted last week has made itself felt, and prices have moved up about 1/2c. in all California grades. New Eastern is selling well at former prices.

California, fancy flat, new.....	15	@15%
California, good to choice.....	13	@14
California, fair to good.....	12	@13
California, "Young Americas".....	14	@15
Eastern, new.....	16	@17

Eggs.

The egg market is making a change both ways; the best grades of eggs are getting cheaper in price and the cheapest grades are higher. The reason for this is that chickens are now beginning to lay, making the receipts a little heavier on fine ranch eggs, while the turnout of the cold storage eggs is smaller, storage stocks being about gone. At the present rate the cold storage eggs now on hand will not last more than two weeks longer.

California, select, large, white and fresh.....	28	@30
California, select, irregular color & size.....	26	@28
California, good to choice store.....	26	@27
Eastern firsts.....	23	@24
Eastern seconds.....	20	@22

Potatoes.

While there is practically no demand from the Southwest and Southern States for potatoes, the market is very firm on fancy stuff, with a little better feeling on the large stocks of cheap grades on hand. These are being reduced a little, and a good part of them will go into consumption before the new stock comes in. New potatoes are quoted at from 2½ to 3c. per pound.

River Burbanks, ½ cental.....	50	@ 75
Salinas Burbanks.....	1 25	@ 1 65
Oregon Burbanks.....	1 00	@ 1 30
Tomatoes.....	90	@ 1 00
Sweet Potatoes, fancy.....	1 25	@ 1 50
Sweet Potatoes, good to choice.....	75	@ 1 00

Vegetables.

The quality of the vegetables showing up in the market continues in general very poor, and, as a result, things are quiet. The cold storage stuff is showing up a little worse than usual, and is meeting with slightly lower prices. The receipts of Oregon onions are a little heavier, and the market is weaker. Prices for the best quality have been cut down about five cents. Green bell peppers and cucumbers are hardly to be had at any price. Stocks of green peas and string beans are very low, with correspondingly high quotations.

Cauliflower, ½ dozen.....	60	@ 75
Beans, String, ½ lb.....	—	@ 17
Cabbage, choice garden, 100 lbs.....	1 00	@ 1 25
Egg Plant, ½ lb.....	10	@ 15
Garlic, ½ lb.....	4½	@ 5
Onions, Oregon, ½ ctl.....	1 30	@ 1 45
Onions, New Yellow Danvers, ½ ctl.....	1 25	@ 1 50
Onions, Australian Brown, ½ ctl.....	1 25	@ 1 50
Peas, Green, ½ lb.....	—	@ 12½
Tomatoes, ½ box or crate.....	1 50	@ 1 75
Artichokes, ½ doz.....	50	@ 1 25
Carrots, ½ sack.....	65	@ 75
Hubbard Squash, ½ ton.....	—	@ 20 00

NOTE.—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top, with hand holes in the ends, and weigh when filled from 50 to 60 lbs gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 35 lbs. gross.

Fresh Fruits.

Business in the fresh fruit market continues at a low ebb, even cold storage stocks of everything except apples and pears being practically cleaned up. Sales have not been quite so heavy as earlier in the month, but quotations are steady and unchanged, owing to steadily diminishing supplies.

Apples, choice to select, 50-lb bx	1 25	@ 1 75
Apples, good to choice, 50-lb. box	75	@ 1 00
Apples, common.....	50	@ 75
Pears, Winter Nelis.....	2 25	@ 2 75

Dried Fruits.

The prominent feature in dried fruits seems to be the general shortage in all lines. The market is decidedly firm and quotations are being well maintained. Prunes are moving out well to Eastern points, where a good jobbing demand exists, and where stocks are running light. There is a small but steady demand for apricots, especially in choice and extra choice grades, and prices are very firm. Evaporated apples seem to be a little easier.

EVAPORATED OR BLEACHED

Apples, 50-lb boxes, rings, pressed, good to choice.....	8	@ 8½
Apples, extra choice to fancy, 50-lb boxes.....	8½	@ 9½
Apricots, Royal, good to choice, ½ lb.....	8	@ 8½
Apricots, Royal, fancy.....	9	@ 9½
Figs, 10-lb box, 1-lb cartons.....	55	@ 62½
Nectarines, White and Stanwick, ½ lb.....	8	@ 8½
Nectarines, red, ½ lb.....	—	@ 8
Peaches, unpeeled, good to choice.....	8½	@ 8½
Peaches, unpeeled, fancy to extra fancy.....	9	@ 9½
Pears, standard, ½ lb.....	—	@ 8½
Pears, choice to fancy.....	10	@ 12
Plums, Black, pitted.....	5½	@ 6½
Plums, Red, pitted.....	7	@ 8
Plums, Yellow, pitted.....	6	@ 8
Prunes, Silver, good to fancy.....	5½	@ 8½
Prunes, in bags, 4 sizes, —@—c; 40-50s, 5½@5½c; 60-80s, 4½@4½c; 60-70s, 4@4½c; 70-80s, 3½@3½c; 80-90s, 3@3½c; 90-100s, 2½@3c; small, 2½@2½c.	—	@ 3

COMMON SUN-DRIED.

Apples, sliced.....	5	@ 5½
Apples, quartered.....	4½	@ 5½
Figs, White, in bulk.....	2½	@ 3
Figs, Black.....	2½	@ 3

WOOL SALE.

The Century Mercantile Company is conducting regular sales at its warehouse. This interests all growers. Full particulars by mail. Office, 14 Sansome St., San Francisco.

Raisins.

Although the supply of raisins is comparatively light and all indications point to a thorough cleanup, there seems to be little speculation indulged in at the reduced prices, and the sales now being made are for legitimate business purposes. The Eastern trade has been carrying very light stocks, and considerable business from that quarter is being looked for the next two months. Already some orders have come in.

(Fresno delivery except otherwise specified.)

London Layers, 2-crown, 20-lb box.....	1 25	@ —
London Layers, 3-crown, 20-lb box.....	1 30	@ —
Fancy Clusters, 4-crown, 20-lb box.....	1 75	@ —
Dehesas, 20-lb box.....	2 00	@ —
Imperial, 20-lb box.....	2 50	@ —
2-Crown Standard loose Muscatel.....	4½	@ —c
3-Crown Standard.....	4½	@ —c
4-Crown Standard.....	4½	@ —c
Seedless Thompsons, 50-lb boxes.....	4½	@ —c
Seedless Sultanas.....	4	@ —c
Seedless Muscatels.....	3¼	@ —c
Fancy 16-oz. Seeded.....	6	@ —c
Choice, 16-oz. Seeded.....	5½	@ —c
Fancy, 12-oz. Seeded.....	4½	@ —c
Choice, 12-oz. Seeded.....	4½	@ —c
Fancy Seeded, bulk.....	5½	@ —c
Choice Seeded, bulk.....	5½	@ —c
Seeded Seedl. Muscatels, 16 oz.....	5	@ —c
Seeded Seedl. Muscatels, 12 oz.....	4½	@ —c
Seeded Seedl. Muscatels, 12 oz.....	4½	@ —c
Seeded Seedl. Muscatels, bulk.....	4½	@ —c

Citrus Fruits.

Large Navel oranges are the leading feature in the citrus fruit market. Attractive offerings of this stock find a ready sale at good prices in the open market as well as in the auction sales. In the auction sale Monday four cars of assorted Navels were sold as follows: Fancy, \$2.10 @2.45; choice, \$1.10@1.80; Standard, 75c. @1.40. Grape fruit is firm at former prices, the fancy seedless being possibly a little higher. Limes are practically out of the market. Lemons have been easier for common stock, though good stock is bringing full figures.

Oranges, fancy.....	2 00	@ 3 00
Oranges, choice.....	1 25	@ 1 80
Oranges, standard.....	1 00	@ 1 40
Oranges, Seedlings.....	65	@ 1 10
Lemons, California, fancy, ½ box.....	2 00	@ 2 50
Lemons, California, good to choice.....	1 00	@ 1 25
Lemons, California, standards.....	60	@ 75
Grape Fruit, ½ box, new.....	1 00	@ 1 50
Grape Fruit, seedless.....	2 75	@ 3 25
Limes, ½ box.....	3 00	@ 4 00

Nuts.

Walnuts seem to be a little easier this week and prices may possibly come down a little, owing to the failure of the expected big Eastern demand to develop. A little shipping of walnuts to Missouri river points is reported this week, but it is understood that these went at prices somewhat below ordinary quotations. The East is apparently able to supply its wants at better figures elsewhere. Almonds are in good supply and those now offering are of fine quality. The market for almonds should clean up nicely at present prices before the new crop comes in. The walnut situation is a little uncertain, owing to the fact that some lots were kept out of the local market in the hope of bringing better prices East. These, however, will probably go into consumption before the new crop is on the market.

Peanuts, fair to prime.....	4½	@ 5½
Cal. Walnuts, No. 1 soft shell.....	—	@ 13
Cal. Walnuts, No. 2 soft shell.....	—	@ 9
Cal. Walnuts, No. 1 hard shell.....	—	@ 12½
Cal. Walnuts, No. 2 hard shell.....	—	@ 8½
Almonds, IXL, ½ lb.....	11½	@ 12½
Almonds, Ne Plus Ultra, ½ lb.....	11	@ 12
Almonds, Nonpareil, ½ lb.....	11	@ 13
Almonds, Langue-doe, ½ lb.....	8½	@ —
Almonds, Golden State, ½ lb.....	8	@ —
Hard Shell, ½ lb.....	5	@ —

Wine.

It is too early to form an estimate of the coming wine crop, but the weather conditions thus far have been very favorable to the growth of the vines. California wine prices have advanced 2½c. on white wines and there is a prospect of an immediate advance all along the line. The shortage in last year's crop partly accounts for the strength of the market. The fact that immense quantities of wine are tied up in the vaults of the large wine concerns by the law restricting the fortifying of wines will cause quite a shortage in the available supply until relief can be obtained by congressional action.

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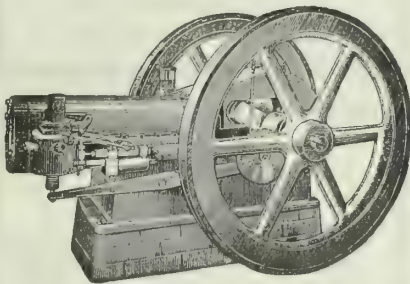
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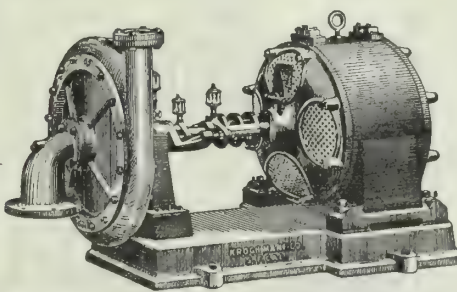
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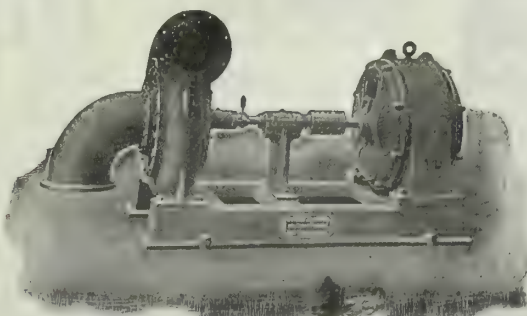
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FRUIT MARKETING.

California Fruit Exchange.

At the annual meeting of the California Fruit Exchange held in Sacramento recently the financial report was received, showing that the aggregate of business for 1905 was over \$850,000, and that the dividends to the local associations exceeded \$8,000.

The shippers' report showed the cars billed from each point to have been as follows:

	F. O. B.	Including Cars Sold F. O. B. Auctions and Rejections.	
Newcastle	43	37	3
Penryn	81	27	10
Loomis	63	43	8
Vacaville	21	35	4
Antioch	31	64	5
Fresno	25	68	6
Lodi	15	60	2
Natoma	14	12	1
Florin		67	
Monterey		4	
Wright's		15	
Loaded with other shipments.		6	
Total	246	438	39
Total F. O. B.			246
Total auctions			438
Melons from Exeter			16
Total			700

This was a gain of 129 cars over last year's total of 571.

The average gross returns from auction markets were as follows:

	Cars.	
Chicago	140	\$1,309
New York	129	1,304
Boston	76	1,223
Minneapolis	14	953
Pittsburg	13	1,203
Montreal	10	*1,084
St. Louis	14	1,116
Baltimore	1	560
St. Paul	2	1,025
Cleveland	1	678
Philadelphia	33	1,219
*Duty deducted		

In the Western markets the average net amounts paid by buyers were as follows:

	Cars.	
Omaha	29	\$626
Denver	15	802
Milwaukee	24	782
Winnipeg	15	626
Seattle	13	600
Kansas City	10	746
Portland, Or.	7	594
Sioux City	8	642
Minneapolis	32	681
Other points	94	600

After the election of directors the following appointments were made: President and manager, A. R. Sprague; vice-president and field agent, G. H. Cutter; secretary, F. J. Fitch.

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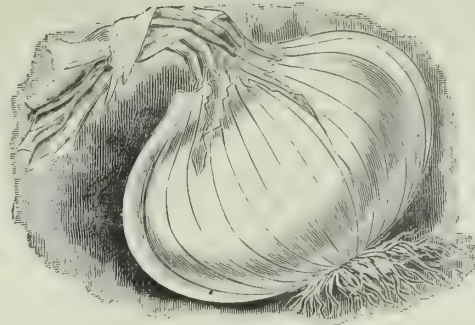
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Reforms in Taxation.

We recently alluded to the declarations of Prof. C. C. Plehn of the University of California, who is also the expert employed by the State Tax Commission. Prof. Plehn furnishes for publication an article concerning the problem that now confronts the law-making authorities of the State, and at the same time touches upon the proposed remedy. Prof. Plehn says:

A thorough revision of our revenue laws is essential to the healthful progress of California. The present system is fast becoming unbearable, if it is not already so, on account of its many inequalities in operation and other glaring faults.

California is no longer a sparsely populated State devoted to mining and agriculture. Manufactures are rapidly developing and our commercial interests are assuming large proportions.

The present tax system is antiquated. It was 200 years old when first adopted in this State, and has remained practically unchanged for the 50 years since it was adopted. Meanwhile the State has outgrown the simple conditions of economic life to which alone the system was adapted, and in capital and wealth, in industrial and commercial methods is now like those great States in the East, which have found it necessary to revise the tax system to meet the new life. The burden of the support of the Government falls most unequally upon those who should bear it. It falls with special severity on the honest. It is highly conducive to political immorality and it is a veritable school for perjury. It fails altogether to reach the new forms of property which have developed during the past 50 years, or to reach the new kinds of ability that should contribute to the public needs. Personal property notoriously escapes taxation and nearly 85% of the entire burden is borne by the owners of real estate. Our best efforts at equalization fail utterly of accomplishing what they were intended to accomplish, and that on account of difficulties inherent in the system.

Many other States have found themselves confronted with the same difficulties under which we labor, and we have the advantage of their experience and their experiments in overcoming them. The first step in the direction of improvement lies in the separation of State from local taxation as to sources of revenue. Let the State have its own income, as independent as possible, from that which goes to the counties and municipalities. At present they are so bound up together that the State taxes are practically 'sur-taxes,' to use the Spanish term, imposed upon the same sources and in the same manner as the local taxes. This is one of the principal causes of our trouble, and works no better here than it does in Spanish countries. The separation of State from local taxation is no new experiment. Pennsylvania, which is regarded as the pioneer in this direction, has had practical independence of this sort for half a century; Massachusetts and Connecticut have solved the problem in nearly the same manner and New York has for the past 25 years been gradually working in the same direction and has practically achieved the desired result within the past three years. There are many other States which have done the same.

What this accomplishes is that it solves at once the vexed question of equalization. It establishes home rule in matters of local taxation, so that each company can administer its own fiscal affairs, without having to watch eternally lest it be compelled to pay more than its fair share of State taxes. It places the taxation of each class of interests in the hands best qualified to deal with it. It makes possible the proper classification of the different subjects of taxation and a rational treatment of each. To try to tax a cow and a telephone, a dozen ducks and a railroad, a beehive and a factory (even though it be a beehive of industry), a mortgage and a hay press, a dump cart and a street car, an old oaken bucket and a modern city water works, all on one and the same plan, and that by an old 'rule o' my thumb' method invented for the taxation of a community of simple farmers 200 years before the first railroad was built, is only one of the absurdities of our present system.

Although the last Legislature was extremely favorable to the proposed plan of tax reform, it could accomplish but little in this direction. In its attempts to improve our tax system, the Legislature is shackled by the Constitution, which imposes a perfectly rigid form of the general

property tax and prohibits in express terms the separation of State from local taxation.

To overcome this constitutional prohibition a constitutional amendment is needed. Such an amendment was introduced, but it failed to pass.

Although the amendment did not come to a final vote and will have to go over to the next session, the Legislature did take some steps, such as the present provisions of the Constitution permit, in the right direction. The most important of these steps was the expansion of the inheritance tax to cover direct as well as collateral inheritances. This will probably increase the revenue obtained from this source from approximately one-third of a million to a round million. One of the minor measures was the imposition of a \$10 fee on all corporations for the filing of an annual report. This will enable us to ascertain the number of live corporations in the State, and will also give us some information that is much needed for the intelligent formulation of a new system.

The Legislature, also, finding that its time for the forming of revenue laws during the hurry and worry of the session was too restricted, created a tax commission, composed of the Governor, two Senators and two Assemblymen; together with an expert to be appointed by the Governor, which is to investigate and report to the next Legislature. This commission has ample powers and should be able to bring in a report that will be valuable and to make suggestions as to measures that will be practicable.

From the temper of the people of the State generally, and especially in the agricultural regions, which are generally overtaxed, it is easy to see that tax reform must come and come soon. It is a good thing that it can be carefully considered and plans matured during the next year.

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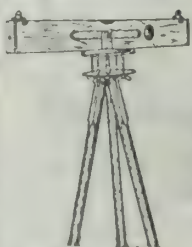
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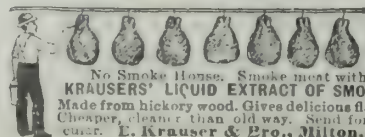
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TO THE EDITOR: The following portion of the report of Worthy Past Master Jones of the National Grange shows the good work that the Grange is trying to accomplish:

1. Free delivery of mails in the rural districts, and that the service be placed on the same permanent footing as the delivery of mails in the cities and the appropriations to be commensurate with the demands and the benefits of the service.

2. Provide for postal savings banks.

3. Submit an amendment to the Constitution providing for the election of United States Senators by direct vote of the people.

4. Submit an amendment to the Constitution granting the power to Congress to regulate and control all corporations and combinations, preventing monopoly and the use of their corporate power to restrain trade or arbitrarily establish prices.

5. Enlarge the powers and duties of the Interstate Commerce Commission, giving it authority to determine what changes shall be made or what practices are discriminative or unreasonable, and their findings to be immediately operative, and so to continue until overruled by the courts.

6. Regulate the use of shoddy.

7. Enact pure food laws.

8. Provide for the extension of the markets of farm products equally with manufactured articles.

9. The enactment of the anti-trust law, clearly defining what acts on the part of any corporation would be detrimental to the public welfare.

10. The speedy construction of a ship canal connecting the Mississippi river with the Great Lakes and the Great Lakes with the Atlantic Ocean.

11. Revising the fees and salaries of all Federal officers and placing them on a basis of similar service in private business.

12. Provide for parcels post, telephone and telegraph in the mail service.

13. Provide for National and State aid to improve public highways.

I again recommend to the several State Granges that they continue to urge upon their respective State Legislatures the enactment of appropriate legislation on the following important matters:

1. Anti-trust law and provision for State inspection of all corporations.

2. Secure law on taxation that will compel all property to bear its just proportion of taxation.

3. Pure food law.

4. Provide State Railway Commission with full power of fixing minimum rate of freight and passenger service on all railways subject to their jurisdiction.

5. Such revision of the fees and salaries as will place them on an equitable basis.

The Grange stands as a unit for the principles involved in the above proposed legislation, all of which is important and should be speedily enacted into the laws of our country. It would seem wise, however, that the most important and greatest present necessity should be pressed with the full force and energies of our organization.

THE USE OF THE PRESS.—The last meeting of the California State Grange approved the following:

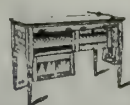
Resolved, By the Executive Committee of the California State Grange, that we recognize the importance and influence of the public press as an educator and a moulder of public sentiment, and therefore concur with the Worthy Lecturer of State Grange in the recommendation that all Lecturers of subordinate Granges should join with him in utilizing this acknowledged power.

EMILY L. BURNHAM,
Healdsburg. State Secretary.

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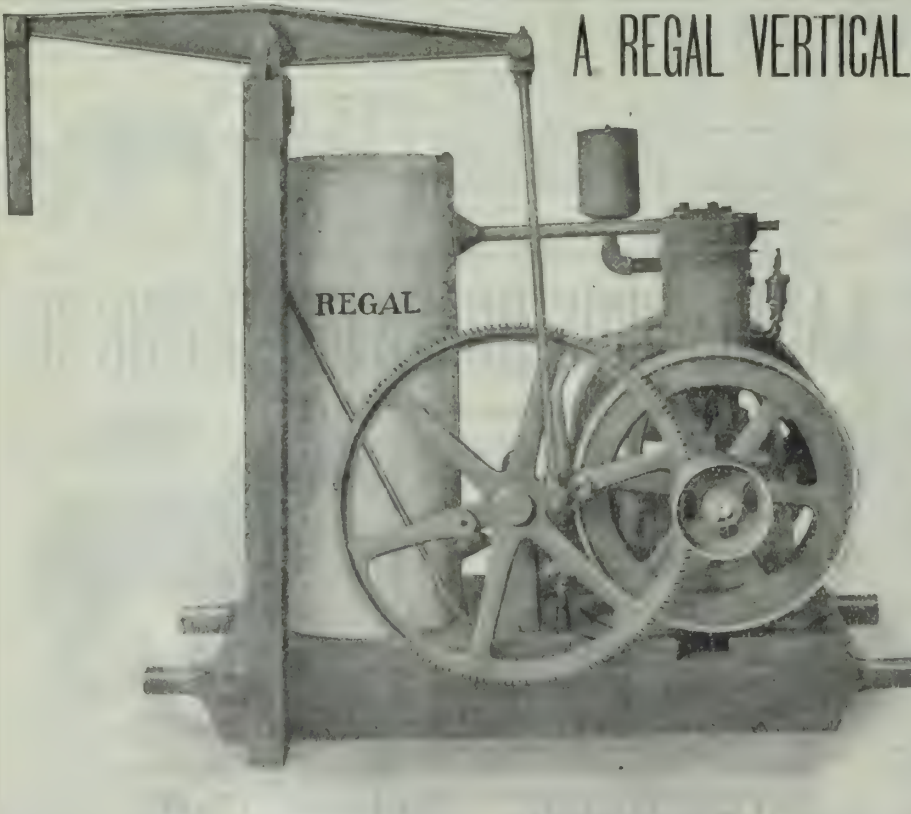
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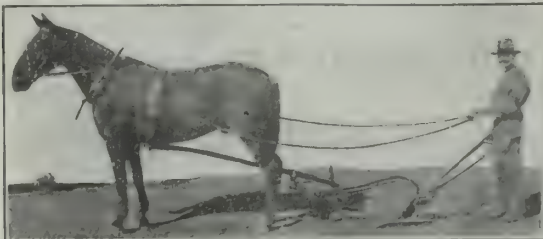
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THE PACIFIC RURAL PRESS

CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 5

SAN FRANCISCO, SATURDAY, FEBRUARY 3, 1906.

THIRTY-FIFTH YEAR.
OFFICE: 330 MARKET ST.

Two More Steps in Canning.

We have in earlier issues followed the process of canning fruit from the orchard through the picking, into the cannery, where the earlier steps of cutting and otherwise preparing the fruit for packing in the cans, the manufacture of the syrup and drawing it from the tank into the cans have all been pictured and described. The

On this page are two views leading the reader two steps onward toward the finished product. Up to this point the fruit has been packed in the wide open can—the opening nearly the full size of the cylinder so that large fruit can be placed therein. When the fruit is in place and the syrup run in to fill all the interstices, the cover or cap is put in place and soldered tight all around, except a tiny puncture in the cover, which allows the air to escape as it expands by the heat, which is subsequently applied in processing. The man in the center of the picture is soldering down the covers with a specially contrived soldering iron, which quickly runs around the edge of the circular cap, spreading the solder uniformly and economically.

The second picture shows the cans assembled in a frame for the cooking or the 'processing' as it is usually called. This is the application of heat of sufficient degree and duration to kill all the germs of fermentation or to 'sterilize' the contents of the can as the modern term is. To use this heat to accomplish this end and no farther



Covering or Capping the Cans at the Flickinger Cannery at San Jose.

is not only the secret of success in the keeping of the product, but is also the secret of turning out fruit which shall be as near to fresh fruit as possible.

Processing is a better term than cooking, because it indicates a more exact operation. Cooking fruit results in stewed fruit if done to excess, which is

very different from processed fruit. This processing is, perhaps, the most exacting operation of the cannery, because it must always be done with judgment and not by prescription or recipe.

Not only do different fruits require different degrees of heat to reach the desired condition in the can, but different varieties of the same fruit and different degrees of ripeness of the same variety call for intelligent adjustment of the processing. An experienced and successful processor is, therefore, at the foundation of good canning, and judgment, resulting from both theoretical understanding of the work and experience in it, has always to be exercised. In the picture the frame is about to be lowered into the bath where the water is heated by steam and the processing accomplished. After this is done the cans are raised from the bath and while still hot the vent holes are filled with a drop of solder and the contents are thus hermetically sealed. As the contents cool, the cover sinks a little by pressure of the outside air and if it remains thus after sufficient time has elapsed, it is evident that the processing is successful, for no germs have remained in the can to start fermentation. If after a time the top rises, it is evident that germs have escaped and have started fermentation, the gas generated lifting the cover of the can into the hateful object known as a 'swell-head,' and then something else has to be done.



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E. J. WICKSON..... Horticultural Editor

SAN FRANCISCO, FEBRUARY 3, 1906.

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The Week.

The year turns into February with plenty of snow on the mountains, plenty of water in the soils of the valleys and plenty of sunshine over all. Increasing heat is bringing a quick growth of feed and a delightful verdure is covering the land. Farmers and planters of all kinds of fruits are too busy to chat over the fence or, in fact, to do anything but get things into the ground. A wonderful amount of work is being pushed through, and a fair distribution of water for the next few weeks will ensure a maximum of produce. Early blossoms are appearing here and there, but most trees are fortunately waiting for a later start, which is desirable.

Fruit shipping affairs seem to be moving somewhat and all in the trade manifest a degree of satisfaction over the announcement that reduction in the rates on deciduous fruits from California points to the Eastern markets has been agreed upon. The reduction will take effect at the beginning of the coming season of the deciduous fruit shipping.

From Sacramento and Antioch to Chicago a reduction of \$10 per car is made, and from the same California points to New York a cut of \$17.50 is made. From San Joaquin valley points, such as Stockton, Fresno, Hanford and Bakersfield, the rate to Chicago is reduced to \$70 and to New York from the same points to \$82.50, thus practically effecting an equalization of rates from points in the Sacramento and San Joaquin valleys to Eastern points. The most important feature of this new compact is a clause providing that no rebates or other special concessions shall be granted to any fruit shipper in California, and that the reduced rates shall be strictly maintained.

Such is the official announcement on the part of the Santa Fe Railway, and we presume it will be met by all lines. The reduced rate will be easy to see, but the other declaration, that there shall be no rebates, will be less evident. All shippers should be treated alike, and all fresh fruit should go on definite, fast schedule. Less freight cost is good, but the other things are not less so. Still, the optimist finds plenty of hope in the fact that things are so much better than they were when the pioneers worked so hard and lost so much money.

Readers should not overlook the very interesting statements of the two leading items of dairy production in California which appeared in the last and in the present issue. These statements are forecasts of the statistical gatherings of the State Dairy Bureau as conducted by Mr. Saylor, the active secretary of the Bureau. Next week we shall have the

conclusion of the matter, and it will then appear how great is the total dairy product of the State, and how important it is in the line of State development. Dairy progress is one of the most interesting features of our recent growth, and its constant return of ready money is relieving temporary stringency which has always prevailed when the production of crops which yielded only annual cash has been the main reliance. The cow and the hen are great rural comforters, although they do make unending requirement of hard work and constant skill and watchfulness. The cow and the hen are teaching Californians how to be always busy and are paying people for learning.

It seems possible that after all the natural way of taking nitrogen from the air for fertilizing purposes by the growth of leguminous plants, with nitrogen-gathering bacteria upon their roots, may be in fact superseded by the seizing of the nitrogen by electrochemical process. The Berlin correspondent of the New York *Evening Post* has an account of it of which this extract may serve our present purpose:

In Norway, according to a writer in the *Cologne Gazette*, plans are on foot to utilize vast water-power in producing nitrogen. One establishment of 1,000 h.p. near Christiania has already been in operation for some time, and Norwegian farmers have begun to fertilize their fields with the nitrates there produced. Still nearer to that city a much larger concern is building. It will begin with 10,000 h.p., but will later be increased to double that amount. Nearly 100 miles west of Christiania, on the Manely, it drops 800 ft. perpendicularly into a chasm. It is proposed here to develop 220,000 h.p. The method for separating nitrogen from the atmosphere, used in Norway, is that of Prof. Birkeland, a chemist of Christiania. He uses electricity, but only indirectly, for creating the intensely high temperatures needed to force the atmosphere to give up its nitrogen. Through Prof. Birkeland's method, a ton of nitrate of lime can be made yearly with 1 h.p. The establishment at the Rjukanfos will therefore be able to make 220,000 tons annually. Power will be created at very low cost—not more than \$6 to \$7.50 per horse-power yearly—cheapness of power being necessary to the success of Birkeland's method.

If this succeeds, it will displace the costly nitrate of soda as produced in nature; but there is, of course, a gain by the leguminous-plant route in the production of humus, which cannot be had from the chemico-electrical product.

The pear blight effort is now being pushed in the Sacramento valley with double energy, as the end of the season is near. To put out of sight every manifestation of the disease before the bees wake up and visit the new blossoms is the point striven for. The bees must go to the blossoms for pollination, but that they shall go with clean feet and tongues because there is no old blighted twigs and limbs from which they can take pollination is the philosophy of the business. The University of California with the appropriation by the last Legislature has six or eight men in the orchards constantly cutting out blight and showing others how to do it, and the United States Department of Agriculture has four or five more at the same work. Professor Smith, of the University, is at the work most of the time and Professor Waite will be here again from Washington in a few days. There is thus being waged in California the greatest contest ever made against the pear blight and we shall have an idea next summer how much can actually be done on a large scale with the extirpation method which is the only one known to the experts at the present time. Some individuals are, of course, working most zealously and systematically in their own behalf like Mr. Brinck of Winters, who is perhaps doing the most thorough work in the State above ground and below. We heard the other day while passing through Winters that Mr. Brinck has such confidence in his work that he has refused \$500 per acre for his pear orchard, blight and all. That is the way to meet a difficulty—fight hard and, if need be, die fighting. We have all honor for fruit growers who act in that way, and the best of it is that they are the ones who do not have to die horticulturally.

We note mention of a new introduction of the Chayota in the Sacramento valley. It is well to try it and it may catch on to local popularity somewhere, perhaps, but the fact that it has been in southern California for the last fifteen years without making much impression is a little against its chances.

QUERIES AND REPLIES.

Walnut Growing.

TO THE EDITOR: Wishing to plant an English walnut orchard, I write to you for information, as I wish to start right and make no mistakes. The land is on the Sacramento river and is good fruit land. Is it best to plant the native black walnut and graft, or to set the English walnut seedling? I have a few trees grafted on the black walnut and they are doing finely. Does the black walnut root influence the flavor or shell of the nut in any way? I wish to learn the names of the best varieties to use, both in productiveness and commercial value. I will send a few nuts for you to name. They are on black walnut root. What variety of apples are the best adapted to the Sacramento river?—PLANTER, Colusa county.

There seems to be no doubt whatever but that the California black walnut seedling is the best stock for the English walnut, at least in the northern and central parts of the State. It apparently does not influence the character of the fruit borne upon the English walnut scion which is grafted upon it. We are not able to name the nut which you sent, but it seems to be a very desirable variety, full meated, light-colored skin, etc. The size is, however, rather small, although some specimens are very good. But some specimens have dark skin upon the kernel, which is undesirable, and the two halves of the shell part almost too readily, which would result in a good many broken nuts after shipment. The Franquette, a French variety, seems to be on the whole the most satisfactory of the French varieties in most situations. The best sources of information on walnut growing are the essays by growers which the *PACIFIC RURAL PRESS* is continually publishing.

The apples which are most profitable on the Sacramento river are the early varieties, like the White and Red Astrachan and some others. Winter apples usually ripen too soon and do not have good keeping qualities.

Tomato Blight.

TO THE EDITOR: Is there anything that will prevent blight in tomatoes? • It is getting so it is well nigh useless to plant tomatoes in this vicinity. I try to raise about two acres every year, and the past two years we have lost most of our vines. The early planting seems to suffer the most.—GROWER, Riverside.

It is not possible yet to give perfectly satisfactory information concerning the prevention of the tomato blight. The best we can do at the moment is to suggest that you make your plantation this year upon land which has not been used for tomatoes before. In this way it is sometimes possible to escape from the blight germs, which are believed to accumulate in soil continuously used for tomatoes. There are some blights of the tomato which are controlled by the early use of the Bordeaux mixture, but the bacterial blight which manifests itself by swift collapse of the plant is not reached by exterior applications. Tomato blights are now being studied by our plant disease experts.

Alfalfa Without Irrigation.

TO THE EDITOR: I desire to try raising alfalfa on ground I can't irrigate at present time but I think suitable for the crop, and desire a little information, if at your hands. Would you recommend common alfalfa, or "Turkestan," or "South of Russia"? How much seed per acre? When to sow; sow by itself or not. Where can I procure good seed?—FARMER, San Luis Obispo county.

There are many places where you can grow alfalfa without irrigation, but it is not usually long lived, both on account of the gophers and because of irregularity in the moisture supply. Whether Turkestan alfalfa is better than the common is not fully determined and further experience is necessary to settle that point. If you can get the seed, it would be well to try a little of the Turkestan while making your chief planting of the common variety. Twenty-five pounds to the acre sown by itself and not with a grain crop is the best practice, and February is a good month for sowing, if you are not in a frosty place. The seed can be obtained from any dealer in seeds, as it is one of the most widely distributed and easily purchased of our foreign seeds.

No Apricots on Almonds.

TO THE EDITOR: I have some Moorpark apricots, which bear so poorly that they are unprofitable.

Would it be all right to bud them to almonds? If you do not think almonds would do well on the apricots, will you kindly suggest a fruit that you think would do well on the apricots.—ENQUIRER, Sacramento county.

The almond and apricot will not unite satisfactorily; although there may be growth for a season, they will part company even after considerable growth has been attained. The peach will do fairly well upon the apricot, but it is quite apt to overgrow; still it may be satisfactory for a time. The best use for unprofitable apricot trees is to graft them over to some other variety of apricot, which is a good bearer in the locality.

Stocks for the Cherry.

TO THE EDITOR: I am ready to put out 100 or more cherry trees. I hear some objection to black Mazzard root, because trees on that root die back, while it is claimed that on Mahaleb that is not the case. But has Mahaleb no offsetting disadvantage? You are, doubtless, acquainted with the general nature of this soil. My ranch is well drained and soil two to three feet deep where cherries grow. Which root would you advise and why?—READER, Penryn.

The Mahaleb root is harder than the Mazzard. It will endure both extremes of drying out and saturation of the soil. It is possible that on that root the trees will be troubled less with die-back than upon the Mazzard. The disadvantage of the Mahaleb is that it is not so free a grower as the Mazzard and is, therefore, less likely to give a large, productive tree. Wherever you have deep soils, drained, and yet retentive enough to hold the leaves late in the summer, the cherry tree on the Mazzard is a proved success. With soil two to three feet deep, well drained, the Mazzard root will succeed well, providing there is irrigation enough given to keep the tree active during the latter part of the summer and not enough to injure the roots. One of the nicest points in cherry growing is to adjust the moisture condition of the soil at just the right point between the extremes of drouth and saturation. If you think you can do this successfully the Mazzard is the superior root.

Legumes for Manure.

TO THE EDITOR: Would sand vetch or field peas, if sowed within the next 30 days, make sufficient growth by the first of May to be of value to the soil, if plowed under about that date? The locality I have in mind is quite frosty, and the soil quite sandy, but there would be no lack of moisture. Would the vetch or the peas be the more valuable as green manure, and how much of the seed of either would be required per acre?—RANCHER, Santa Cruz.

The better of the legumes would be the one which makes the most growth during the period you mention. We cannot tell which this one will be under your local conditions, but we are inclined to believe that burr clover will be better than either, because it has appeared to us to grow better during frost. Whether you can get enough green stuff to pay before May 1 by sowing as late as this is another thing you must determine for yourself. It is also a question whether you can afford to wait as late as May 1, unless the land is to be summer-fallowed. The correct way is to start your legume in the fall and plow in in March, giving a light disking to get in a crop which has to be planted after May 1. But here, again, the local question enters. Perhaps your land washes badly with March plowing. You must watch and think for yourself and pray a little, perhaps, and not expect to farm by any rule in California.

Canning Seeded Raisins.

TO THE EDITOR: In a late edition of your paper, January 13, I read an article by Mr. Bowers in regard to canning dried prunes. I was very much impressed with the idea and will ask if it would not be practicable to can seeded raisins? I am a raisin grower, and one of the greatest things we have to contend with is the poor keeping qualities of the seeded raisin. I believe if raisins could be canned as Mr. Bowers cans his prunes, that they could be made a staple food that would be consumed all the year, and would greatly help the sale, as the crop then need not all be put on the market in the short space of a few weeks or months.—GROWER, Selma.

Probably they can be canned as easily as prunes or other dried fruit. To demonstrate it, however, you must try it, just as Mr. Bowers did with the prunes. His essay gives information enough to begin with in experimenting.

Moving Old Cherry Trees.

TO THE EDITOR: Have two 15-year-old Royal Ann cherry trees that I wish to remove. They are in the wrong place. Can it be done without injuring them very much? If so, at what time of the year should they be transplanted and how should it be done? Several years ago they were badly scorched by fire, yet they live, thrive and bear fruit, although the bark and some of the limbs on the side next the fire were burned almost off, which makes them bad lookers.—READER, Santa Cruz.

We would move them to the woodpile and not farther. We will not say that they cannot be successfully transplanted, for possibly they might be, but it is harder to succeed with the work here than it is at the East, where a big tree can be taken up in a block of frozen ground and put in a new place with good chance of success. If you wish to try, do it right away, and cut away at least half of the top. We would, however, much prefer to plant young trees in the new place.

The California Mole-Cricket.

TO THE EDITOR: I send you a huge wingless insect with formidable jaws and large abdomen with stripes crosswise of dark and light brown, which I find in the ground. What is it and is it dangerous?—T. O. H., Redwood City.

It is the California mole-cricket (*stenopalmata talpa*), sometimes called the California potato bug, from its practice of boring tunnels straight through the tubers if he so desires. It is one of our largest insects and perhaps the fiercest of all in appearance, but it is not dangerous, though he might give you a good bite if you teased him. These crickets are so conspicuous that they never become very abundant, for many things like to eat them. If you want some fun give one to an old hen with a brood of chickens and listen to her as she warns the chicks to keep back until she has killed the monster. When this is done all can turn in and get what they can.

Gum Trees Wanted.

TO THE EDITOR: I wish several thousand blue or red-gums to plant, but I cannot afford to plant if I cannot get them cheap. Cannot you refer me to some one who could furnish me some few thousand on reasonable terms? I would rather have trees grown in the open than in boxes, if I know which is best.—READER, San Joaquin Valley.

The way to ascertain where you can buy to the best advantage is to write to tree growers advertising in our columns and get prices on such a lot as you wish. Gum trees do best when transplanted from boxes. You cannot handle them as you may deciduous trees. Use small trees and protect them. Small trees are cheap—usually cheaper than you can grow them for yourself, unless you have had some successful experience in doing it.

Carrots and Other Stock Feeds.

TO THE EDITOR: I wish to enquire how much carrot seed should be sown per acre; also, which is best for stock feed, the white or yellow variety? How does Australian rye grass compare with alfalfa as a stock food? Will it stand cold weather better than alfalfa? I can irrigate until July, then the water dries up.—READER, Monterey county.

About three pounds of seed to the acre. The large white carrots are superseding the yellow for stock feeding, as the best of them are heavier producers and their habit of growth makes harvesting and handling easier. Rye grass is less nutritious than alfalfa. Its chief value lies in winter growth, when alfalfa is dormant, and in its success upon both dry and wet land, where alfalfa does not do well. It will grow at lower temperature than alfalfa, and it makes very large growth with irrigation. If irrigated until July it will come very near to being evergreen.

Sorghum and Birds.

TO THE EDITOR: I am told by a party that the white Egyptian corn cannot be raised in this part of the country, owing to large numbers of sparrows that take the crop before harvest time. Do you know this to be a fact? Is there any other similar corn that can be grown without irrigation that would be good feed to fatten turkeys?—A SUBSCRIBER, Oakdale.

Birds do like white Egyptian or Kaffir corn better than red, but it is rather overdoing it to say that the birds will take it all. In places where large acreages are grown the amount the birds take is not

large enough to prevent growing it, for the product is very large. If you only have a small patch and many birds, of course they will take it. Plant more corn, or, if that is not feasible, get some seed of the red kind, which is just as good for turkeys. We know of no other grain which will do so well under hot, dry conditions as these sorghums.

Will the Sugar Prune Take the Apricot?

TO THE EDITOR: Can I bud over Sugar prunes into apricot successfully?—SUBSCRIBER, San Jose.

Who has sufficient experience to answer?

WEATHER AND CROPS.

Report of the U. S. Weather Service for Week Ending January 30, 1906.

ALEXANDER MCADIE, Forecast Official and Section Director.

Sacramento Valley.

The weather was warm and favorable for growing crops and all farming operations. Light rains fell early in the week. Plowing and seeding have been resumed except in a few places, where the soil is too wet. Early grain is in good condition and making fair growth. The grain acreage will probably be about average and prospects are good for excellent crops. Green feed is still scarce and making rather slow growth, owing to the long period of cold weather, but warm weather during the last few days has given it a good start. Stock are in fair condition and improving. Orchards and vineyards are looking well and pruning is in progress. Early strawberries will probably be scarce owing to the light fall rains.

Coast and Bay Sections.

Warm and generally fair weather prevailed during the week, with heavy fogs at the close. Light showers occurred in some sections. Conditions were favorable for growing crops and farm work. Grass and early grain are making excellent growth. The acreage in grain will be greater than last season's in some sections and prospects are good for large crops. Plowing and seeding have been resumed. The heavy rains and high water during the preceding week caused some damage to grain fields in Humboldt county. Green feed has made a good start and is becoming quite plentiful in many places. Stock are rapidly improving. Orchards and vineyards are in good condition, and cultivation and pruning are progressing. Oranges are ripening in the Santa Clara valley. Frosts have caused very little damage to orchards.

San Joaquin Valley.

Partly cloudy and seasonable weather prevailed during the past week, with dense fog on several mornings. The ground is in excellent condition for farm work and plowing and seeding are progressing rapidly. Early sown grain is coming up and shows a good stand. Planting sugar beets has commenced. Work in orchards and vineyards is progressing and in some localities is well advanced. A large acreage of new vines is being planted. Almond buds have commenced to swell and willow and elderberry leaves are coming out in some sections. Packing houses are running to their full capacity with the raisin crop. Pasture is much improved and grass is making rapid growth. Stock are healthy, but thin.

Southern California.

Clear and warm weather prevailed during the week, with abnormally high temperature toward the close. Conditions were very favorable for all crops and farm work. Early grain is making rapid growth and gives promise of an excellent crop. Plowing and seeding are still in progress, but nearly completed in some sections. The grain acreage will be larger than usual. Grass made rapid growth during the week and green feed is plentiful. Stock are doing well. Citrus fruits are in excellent condition and all orchards and vineyards are looking well. Orange shipments continue.

EUREKA SUMMARY.—Weather conditions have been very severe on cattle and many have died from lack of feed, but the past week was more favorable. Grass and grain are making slow growth and stock are improving.

LOS ANGELES SUMMARY.—Warm, growing weather following the rain materially improved crops and vegetation of all descriptions. Grain and grass are doing well, with indications of a prosperous season. Almonds are blooming. Oranges are moving freely in some sections and shipments have just been resumed in others.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, January 31, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.	Total Seasonal Rainfall to Date.	Total Seasonal Rainfall Last Year to Same Date.	Average Seasonal Rainfall to Date.	Maximum Temperature for the week.	Minimum Temperature for the week.
Eureka.....	T 17.72	22.18	24.90	64	42	42
Red Bluff.....	.00	10.43	22.07	15.37	72	42
Sacramento.....	T 8.42	12.13	10.85	64	42	42
San Francisco.....	T 6.87	14.28	13.04	66	40	40
San Jose.....	.00	6.13	9.80	70	36	36
Fresno.....	.00	3.60	7.12	4.76	68	40
Independence.....	.00	3.54	.99	2.23	60	30
San Luis Obispo.....	.00	8.35	8.80	11.37	78	42
Los Angeles.....	.00	7.06	6.16	7.94	78	40
San Diego.....	.00	5.64	4.79	4.86	72	42
Yuma.....	.00	3.47	1.87	2.07	78	40

AGRICULTURAL ENGINEER.

Building a Concrete Watering Trough.

TO THE EDITOR: The papers you have published in the PACIFIC RURAL PRESS on concrete troughs are first rate for the man who 'knows how,' but might not perhaps be quite clear to an amateur. I would like to impress your readers that there is absolutely no difficulty in building a drinking trough of concrete that shall be everlasting, and cost very little more than a trough of lumber that is soon a leaky nuisance. A handy farm laborer builds mine, and needed no more instruction than is contained in the enclosed paper.—JOHN W. FERRIS, San Francisco.

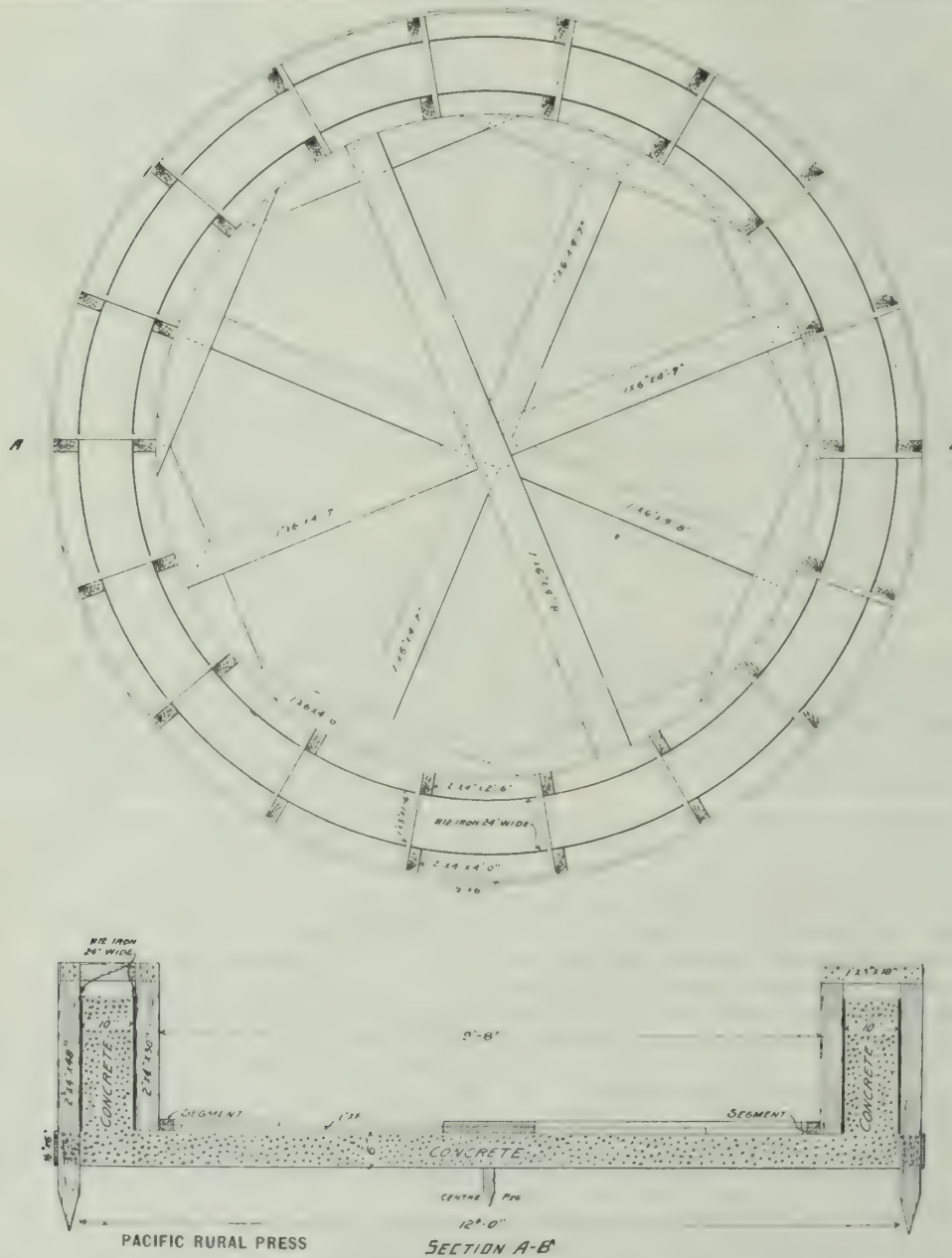
MR. FERRIS' INSTRUCTIONS.

Level down the ground where the trough is to stand, and if it is not firm ram it thoroughly. Drive a short stake as a center stake. Take a piece of batten 6 ft. 6 in. long, and 3 in. from each end enter

one of the pieces of 2 by 4 opposite each 2 by 4 stake, and nail the batten across at top to hold the 2 by 4's 10 in. apart; the segments serve to hold the upright at the bottom.

Take half-inch boards and tack to the 2 by 4's to form the forms for the wall of the trough. A much better looking job can be made by using sheet-iron instead of the boards one length, 2 ft. wide and 36 ft. long for the inside and 2 ft. wide and 38 ft. long for the outside.

Nail some boards together to make a box without any bottom, measuring, inside, 3 ft. square and 18 in. deep; this will hold half a cubic yard. Fill this with gravel; lift off the box and spread the gravel out in a layer 6 in. thick; over it spread three-quarters of a barrel or three sacks of portland cement. Turn this not less than twice before adding any water. Sprinkle over it 15 gal. of water and turn twice more. Then between the sheet-irons fill in the concrete in 6-in. layers, tamping each layer thoroughly, till water shows on top of the concrete.



Method of Constructing a Concrete Water Trough.

a spike; drive one of these into the stake that was driven into the ground and let the other project an inch or so; then, with the spike that is driven into the stake as a center, mark out a circle which will be 12 ft. in diameter. Take 18 stakes of 2 by 4-in. pine, 4 ft. long, pointed at one end; drive these about 2 ft. apart with one of their 2-in. faces to the circle marked on the ground, taking care to have them all plumb. Round the bottom and outside of this circle of stakes nail a strip of board 1 in. by 6 in.; this circular enclosure, 12 ft. 8 in. in diameter, is to be filled with concrete thoroughly tamped, for the bottom of the trough.

Take eight lengths of 1 by 6-in. fence board, 4 ft. 6 in. long, and the batten that was used to strike the 12-ft. circle, set the spikes 4 ft. 10 in. apart, and mark off the lengths of fence board into segments of circles.

Lay these segments down in a circle 14 in. inside the inner edge of the stakes that were set in the ground; let the segments overlay their ends 6 or 8 in. and nail them together, then take lengths of fence board and set across the circle, nailing their ends at the middle of the segments, to hold them securely in place.

Take 18 pieces of 2 by 4-in. pine, 2 ft. 6 in. long, and 18 pieces of 1 by 3-in. batten, 18 in. long; set up

There will be needed altogether 5 cu. yd. of concrete; for this any clean creek gravel will serve, at the rate of 1 cu. yd. of gravel to each barrel and a half of cement, or if the cement is in sacks 1 cu. yd. of gravel to six sacks of cement.

The trough will hold level full a liberal 1,200 gal. I have troughs made this way that are five or six years old and have never leaked. The round trough is better looking than a square trough, and is not so likely to be broken by the end of the wagon tongue when a team is to be driven up to be watered. The cost of the material will be:

For hauling gravel, say \$ 5 00
For 7½ barrels cement 15 00
For lumber for forms 5 00

Total \$25 00

Or if the sheet-iron lining for forms be used add \$20 extra.

Nature selection may seem, at first sight, as remote as the poles asunder from the ideas of the alchemist, yet dissociation and transmutation depend on the instability and regained stability of the atom, and the survival of the stable atom depends on the principle of natural selection.

ENTOMOLOGICAL.

The Preparation of Emulsions of Crude Petroleum.

By T. M. PRICE, Ph. D., Bureau of Animal Industry of the United States Department of Agriculture.

Kerosene has long been recognized as a most efficient insecticide, but its irritating action, as well as the very considerable cost involved, has prevented the use of the pure oil as a local application in the various parasitic skin diseases of animals.

In order to overcome these objections various expedients have been resorted to, all of which had for their object the dilution or emulsification of the kerosene. Probably the best known and most generally employed method for accomplishing that result is that which is based upon the use of soap as an emulsifying agent. The formula which is used almost universally for making the kerosene soap emulsion is as follows:

Kerosene, gal. 2.0
Water, gal. 1.0
Hard soap, lb. 0.5

The soap is dissolved in the water with the aid of heat, and while this solution is still hot the kerosene is added and the whole agitated vigorously. The smooth white mixture which is obtained in this way is diluted, before use, with sufficient water to make a total volume of 20 gal., and is usually applied to the skin of animals or to trees or other plants by means of a spray pump. The method of application is used because the diluted emulsion separates quite rapidly, and some mechanical device, such as a self-mixing spray pump, is required to keep the oil in suspension.

It will be readily understood that the emulsion would not be well adapted either for use as a dip or for application by hand, for in the one case the oil, which rapidly rises to the surface, would adhere to the animals when they emerged from the dipping tank and the irritating effect would be scarcely less than that produced by the plain oil, and in the second case the same separation of the kerosene would take place and necessarily result in an uneven distribution of the oil on the bodies of the animals which were being treated.

CRUDE BEAUMONT OIL AND ITS EMULSION.—Within recent years it has been found by the Bureau of Animal Industry that a certain crude petroleum from the Beaumont (Texas) oil fields is quite effective for destroying the Texas fever cattle ticks. This crude petroleum contains from 40 to 50% of oils boiling below 300° C. and from 1 to 1.5% of sulphur. Now, while this crude oil is an effective dip when properly applied, there are certain objections to its use—the cost of the oil when it is necessary to ship long distances, and the occasional injury to cattle which follows its use.

In order to overcome these objections and thereby permit the uses of oil in case of cattle mange and sheep scab, as well as for destroying the Texas fever cattle ticks, experiments were undertaken looking to the preparation of an emulsion of the Beaumont crude oil for the uses just indicated.

As will be inferred, the reason for preparing an emulsion of Beaumont crude oil was to enable the Bureau to determine whether or not the diluted oil would prove to be as efficacious as the pure oil, for, if an emulsion was found to be satisfactory, the injurious effects which occasionally follow the use of the pure oil could probably be done away with, and, in addition, the cost attending the use of Beaumont oil would be greatly reduced.

There were two properties which seemed to be essential for any emulsion which was to be used as a dip, or which was to be applied by hand. First, the concentrated form of the emulsion should remain uniform indefinitely, this being necessary because the emulsion probably could not always be used immediately after its preparation, and under such circumstances, if the oil and water should separate upon standing, different portions removed from the stock emulsion would vary in composition; second, the oil should not separate rapidly from the water after dilution of the concentrated emulsion, as is the case with the ordinary kerosene emulsion. Without this property the diluted emulsion would possess no advantage over a layer of oil on water, for the animals would take out each time practically the same quantity of oil, the irritating effects would be practically the same, and in addition it is doubtful whether the oil would be evenly distributed over the body of the animal.

A SATISFACTORY EMULSION OF BEAUMONT OIL.—The first trials with kerosene emulsion formula given above showed that, although the Beaumont oil could be readily emulsified, the oil and water in the concentrated emulsion always separated upon standing. When this concentrated emulsion was diluted, the oil separated less rapidly than kerosene from a similarly prepared emulsion, but yet more rapidly than seemed desirable for a dip. With the object of eliminating these objectionable features, if possible, a number of modifications of the kerosene emulsion formula were tried by varying the proportion of first one ingredient and then another. After a number of trials of

different combinations of crude oil, soap and water the following formula was decided upon as the one best suited to the uses we had in view:

Crude petroleum, gal.....	2.0
Water, gal.....	0.5
Hard soap, lb.....	0.5

Dissolve the soap in the water with the aid of heat; to this solution add the crude petroleum, mix with a spray pump or shake vigorously, and dilute with the desired amount of water. Soft water should, of course, be used. Various forms of hard and soft soaps were tried, but soap with an amount of free alkali, equivalent to 0.9% of sodium hydroxide, gave the best emulsion. All of the ordinary laundry soaps that were examined were quite satisfactory, but toilet soaps in the main are not suitable.

An emulsion of crude petroleum made according to this modified formula remains fluid and can be easily poured; it will stand indefinitely without any tendency toward a separation of the oil and water and can be diluted in any proportion with cold soft water. After sufficient dilution to produce a 10% emulsion, a number of hours are required for all of the oil to rise to the surface, but if the mixture is agitated occasionally no separation takes place. After long standing the oil separates in the form of a cream-like layer which is easily mixed with the water again by stirring. It is therefore evident that for producing an emulsion which will hold the oil in suspension after dilution the modified formula meets the desired requirements.

In preparing this emulsion for use in the field, a large spray pump, capable of mixing 25 gal., has been used with perfect success.

In using the formula herewith given it should be borne in mind that it is recommended especially for the crude petroleum obtained from the Beaumont oilfields, the composition of which has already been given. As crude petroleum from different sources vary greatly in their composition, it is impracticable to give a formula that can be used with all crude oils. Nevertheless, crude petroleum from other sources than the Beaumont oil wells may be emulsified by modifying the formula given above. In order to determine what modification of this formula is necessary for the emulsification of a given oil, the following method may be used:

Dissolve one-half pound of soap in one-half gallon of hot water; to one measure of this soap solution add four measures of the crude petroleum that is to be tested and shake well in a stoppered bottle or flask for several minutes. If the proper proportions of oil, soap, and water have been used, a perfectly uniform mixture should result when one part of this emulsion is shaken with seven parts of water. If, however, after this dilution there is a separation of a layer of pure oil within half an hour, the emulsion is imperfect, and a modification of the formula will be required. To accomplish this the proportion of oil should be varied until a good result is obtained.

The object of this paper is to indicate the ease with which crude oil may be diluted by a process of emulsification, and also to show that the use of such emulsions for dipping or for hand application is entirely feasible. Their value as insecticides can only be determined by means of practical tests. Experiments are already under way with various parasitic skin diseases of animals, and it is hoped that the use of this emulsion may not only lessen the cost of applying the oil, but that the dilution with water and the presence of the soap in the mixture may remove all danger of irritation, which, as has been noted, sometimes follows the use of the pure crude petroleum.

CEREAL CROPS.

Cereal Improvement.—II.

By GEO. W. SHAW, Assistant Professor of Agricultural Technology, University of California, at the State Farmers' Institute in Berkeley.

CULTURAL PROBLEMS.—With wheat, as with most other crops, the proper treatment of the soil may be considered as half the battle. It goes without saying that local conditions of soil and climate have much to do with this factor, and from the nature of the case, must vary within certain limits each season, yet there are certain well-defined principles which it may seem proper to discuss. It is pretty generally agreed that the practice of bare summer fallow is the thing in California wheat sections, but it is painfully evident that the real reason for such a practice, viz., the accumulation of two seasons' moisture, is not appreciated by any large majority of wheat growers, or if appreciated, the means of accomplishing the ends are often very poorly applied. Side by side, on the same character of soil, under the same climatic conditions, we not infrequently find one plowing shallow and his neighbor plowing deep for the avowed purpose of accomplishing the same result; and in notable cases these methods have been followed by the same parties with but little difference in yield during seasons of favorable moisture conditions, but extreme difference in years of drought. While the writer does not propose to discuss the wisdom of the bare fallow system as such, nor to any extent at this time, the methods of conservation of moisture, he does desire to maintain that it is not at all probable that such an evidently wasteful system is demanded in every

portion of the State, and that the necessity of such a universal practice even in regions of usually reasonable rainfall is not at all apparent, either in the light of sound agricultural reasons or of changed practice. Certain it is that no extensive, carefully conducted experiments are recorded bearing upon this point with reference to the different sections of the State. Further, the tendency of certain observant farmers in those portions of the State where moisture conditions are the more certain, to break away from this time-honored system to a greater or less extent, is manifest evidence of a lack of permanent unanimous opinion among the growers themselves.

THE HUMUS FACTOR.—There is a definite need of systematically conducted experiments to demonstrate positively the wisdom of this practice. To continue it in regions where it is not absolutely essential for the accumulation of moisture is certainly a suicidal policy, and one which is losing vast sums to the State in wasted opportunity. Especially is this true since it has been almost conclusively shown in the Middle West that the practice of such bare fallow leads to the oxidation of organic matter to such an extent that sufficient nitrates are developed to supply four or five crops of wheat, and these nitrates are practically all lost in the drainage water in the following winter. The first drainage water from a well fallowed field is always heavily charged with nitrates. This actual burning up of the humus of the soil, especially in semi-arid regions, is one of the most woeful wastes of California agricultural practice. This is the more true since in the semi-arid regions *moisture is the all-important factor in crop production*, and the bare fallow system steadily and surely reduces the amount of organic matter in the soil and thus their moisture-holding power. Soils which are rich in humus can produce crops with very much less precipitation than those which are deficient. Thus any system of farming in dry sections which tends to lower the percentage of organic matter inevitably courts disaster.

Already the wheat soils of the San Joaquin valley have had their humus content so seriously impaired as to render it extremely doubtful if it is at all possible to produce two good successive crops of wheat upon the same land, largely on account of their lack of moisture-holding power, so that it reduces to finding a remedy for a condition already induced by continued bad practice. This is one of the problems being considered in the cereal investigations. Some crop must be found to grow in alternation with wheat and other cereals to rejuvenate the humus, and thus not only enable us to produce a wheat crop with less precipitation than at present, but also enable us to replenish the depleted nitrogen. Some leguminous crop must be found to grow in rotation with wheat. To this end a portion of each of our 20-acre wheat tracts are devoted to these trials. It should also be said that in addition to the plants being handled upon these tenth-acre plats, numerous others are also being tried out to ascertain their adaptability to the sections. Through the ability of these plants to appropriate and utilize atmospheric nitrogen, we hope to add to, rather than diminish, the nitrogen of the soil in the wheat-growing sections by turning under the crop thus produced, the importance of which may be better realized when it is stated that it has been shown that one such crop turned under adds to the soil nitrogen equivalent to the application of 200 lb. nitrate of soda, the most concentrated nitrogenous fertilizer known.

Secondly, the turning under of these crops will increase the organic matter in the soil and thus improve its physical condition both for tillage and the conservation of moisture.

I regard this line of work as one of the most promising for the permanent welfare of the cereal industry.

FERTILIZING.—Another line of experiments very closely allied to that just indicated deals with the use of the several elements of plant food in such combinations as to give data upon the probable needs of our wheat soils for increasing their yield, and the influence of these materials upon the composition of the product. To this experiment are devoted 12 plats, each separated from the other by an intervening plat which is not to be considered as included in the experiment, but which will be used for row plantings of miscellaneous varieties. The wheat grown on each of these fertilizer plats will be of the same variety, and each plat will be subjected to exactly the same cultural treatment, except only in the matter of the kind of plant food added. These plats are expected to answer not only the question as to whether there will be an *absolute* increase in yield, but whether this increase can be obtained at a profit with the ordinary fertilizer materials in the market. Taken in connection with the previously described experiment in rotation, we hope to secure highly interesting results.

CONSERVING MOISTURE.—Further, the methods of preparation of the land for the best conservation of moisture, which in certain regions, especially those in which the bare fallow system has at present its only reason for existence, is a fruitful field for demonstration, in order that the truth may be widely disseminated by evidence so strong as to admit of no difference of opinion.

Experiments to settle these important points

under California conditions are under way in the San Joaquin valley where 11 large sized plats are under treatment, each being subjected to different methods of preparation and subsequent treatment, for the specific object of ascertaining which is the most conducive to moisture retention as measured by the percentage of moisture actually held in the soil and by the grain crops produced.

GOOD AND BAD SEED.—There would seem to be little necessity of discussing the importance of good seed. Many of the conditions on which success in wheat growing depends are beyond the control of the farmer, but others, especially the variety, purity and quality of the seed sown, are so entirely within his control that he alone must be responsible for the results dependent upon these factors. Manifestly one of the main points in the production of a strong seedling is a strong-sown seed. With cereal crops this is an ever-recurring question and unfortunately is one frequently neglected by the parties most interested. That comparatively little attention is given in this matter of seed selection is certainly indicated by the samples of seed wheat which have been collected by the University. There is little doubt that much of the present condition of low yield is due to the lack of attention to rational selection of first-class seed—the best of seed is always the cheapest. If we are to grade up our wheat we must follow the same practice in cereal culture as is followed by the stock breeder in breeding up his stock, using only the best types for purposes of reproduction.

It is certain that one of the greatest factors which has tended to reduce the yield of wheat in California is the egregious blunder of constantly selecting the smallest and shrunken grains for seed. If there is one thing which has been conclusively demonstrated by the most carefully conducted experiments, it has been the superiority of product, both in quantity and quality, obtained from the selection of large and vigorous grains for seed. Numerous experiments, conducted both in this country and in Australia—not only with wheat but also with corn and other grains—have so conclusively demonstrated this point as to render it beyond question.

No well-informed breeder today would deliberately follow this practice of selecting as his parent stock the poorest animals to be found. The merest tyro knows something of the value of quality in both dam and sire in the production of racing stock. Yet, notwithstanding our plants are subject to essentially the same laws of reproduction and development, we find growers continually selecting the poorest of parental seed, thus gaining a constantly degenerating product both as to quantity and quality. The sole idea seems to be to get the largest possible number of plants upon an acre of ground, irrespective of the fact that quality of grain as well as quantity makes for profit.

This matter of the selection of high quality of seed is so important that I am constrained to believe it has had more than any other one thing to do with the decreasing wheat production, excepting only the encroachment of other crops. The wonderful increase in the yields of corn in Illinois and Iowa has been largely due to the campaign on the part of the station with reference to the selection of high-grade seed, and I am inclined to believe that a similar campaign with reference to the selection of seed wheat in California would yield similar results with reference to this crop, and would do more than any other one thing toward improving the yield per annum.

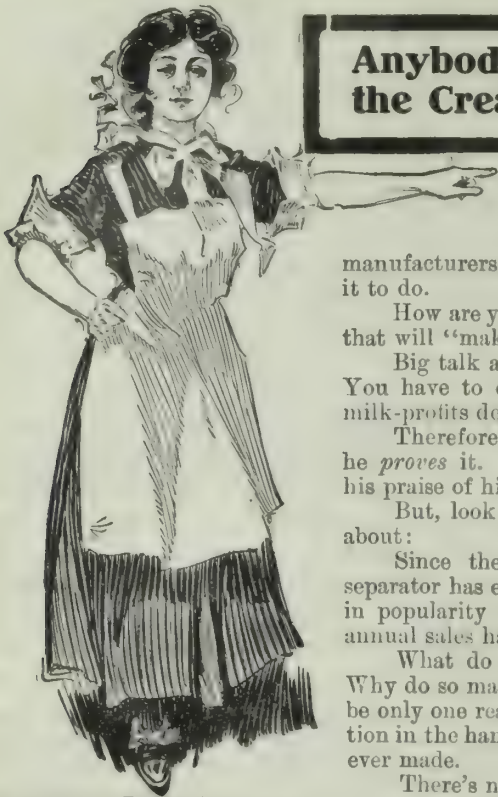
To demonstrate the importance of good seed, a line of experiments is being conducted with the large, medium and small size grains of the common kinds of wheat and also with pinched seed as compared with plump. In these experiments different plats of known size are seeded with the several sizes of seed indicated, but otherwise all the conditions of the experiment are made the same. Accurate records of these, as well as of all other lines of work, are being kept by field men constantly on the plats, and all the important facts connected with the work, in order that the results may be properly set forth in a detailed report.

The advantages of seed selection from the field are also receiving attention at these stations, not only for the purpose of improving the yield of grain, but also for improving its quality.

BEST WHEATS FOR CALIFORNIA.—The question is often asked, what is the best wheat for California, but of this it must be said that there is no such thing as a best wheat for California, and never can be, on account of the vast difference of conditions which obtain in the various sections in the wheat-growing area. It is for the purpose of attempting to find, or develop, wheats adapted to the several sections of the State that the University of California is conducting investigations at several points and toward which several private individuals are also bending their energies.

In general, it may be said that there is a special need in California for a type of wheat adapted to our soils and climate which carries a much higher gluten content than any now produced, in order that we may supply from our home product all the demand for milling wheat, and thus not be under the stress of importing large quantities for blending purposes.

There are but three possible methods by which we



Anybody Can Make Claims—but YOU Want the Cream Separator That "Makes Good."

That may be a little "slangy," but you know what I mean—you want the separator that will do what its manufacturers *promise* it will do, and *what you expect* it to do.

How are you going to decide which separator it is that will "make good" for you?

Big talk and big claims are made for all of them. You have to decide the question for yourself and your milk-profits depend upon your decision.

Therefore, I say don't take anybody's claim until he *proves* it. He may be a little over-enthusiastic in his praise of his own machine.

But, look here! Here's something worth thinking about:

Since the first cream separator was invented no separator has ever made such rapid strides in sales and in popularity as has the **Empire**. In five years its annual sales have increased *1,500 per cent.*

What do you suppose is the explanation of that? Why do so many people buy the **Empire**? There can be only one reason; The **Empire** gives better satisfaction in the hands of its users than any other separator ever made.

There's no doubt about it.

And this is *how* and *why* it does it:



It is Simpler in Construction.

All unnecessary parts are eliminated. It simply has a bowl with a few light cones inside it and the simplest gearing necessary for driving it.

It Turns More Easily.

The bowl being smaller and lighter, as a matter of course, it does not take so much "elbow-grease" to turn it. Besides, the bowl runs practically without friction, because of its patented bearings.

It is More Easily Washed.

The bowl containing only a few light cones—being entirely free from discs and other complicated parts—it is as easily washed as ordinary dinner plates.

It Requires Fewer Repairs.

Having no complicated parts it simply can't get out of order, unless it is greatly abused.

It skims perfectly.

All milk in it is given five distinct separations. It is impossible for more than a trace of butter fat to escape.

But goodness me! It would take the whole paper to tell you all the points wherein the **Empire** excels. I can't do it here, but if you'll send your name the Company will be glad to send you their separator books, full of dairy facts you ought to know. Just send a postal card telling how many cows you keep and what you do with the milk. Address

EMPIRE CREAM SEPARATOR CO., BLOOMFIELD, NEW JERSEY

PACIFIC COAST OFFICE, PORTLAND, OREGON.

A Dollar Game Free

For postage. Send eight two-cent stamps and tell how many cows you keep and what you do with your milk and we will send you the "Game of **EMPIRE** Success"—the most amusing, attractive and fascinating game ever invented. Old and young can play. Bushels of fun for all the family. Handsomely lithographed in colors; mounted on heavy binders' board 12x16 inches.

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Ask for the one you want—

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3. The Switching of Hiram, (story.)
4. "Figger it out for Yourself."
5. A Gold Mine for Butter Makers.
6. Dairy Results—Dollars.
7. Money and the Way to Make It.

THE DEERE IMPLEMENT CO., Agents, San Francisco, Cal.

may secure this: (a) The importation of a type of wheat now grown elsewhere which will maintain its desirable characteristics under California conditions; (b) the breeding by selection of a special type under our own conditions; (c) the breeding of a desirable type by crossing of varieties now growing here or elsewhere; all of which lines of investigation are included in the scheme of work adopted.

(TO BE CONTINUED.)

HEN LAYS TWO EGGS ON SAME DAY. —San Bernardino Sun, Jan. 26: San Bernardino has a hen that lays two eggs a day, at least that was the hen's record yesterday, and its owner, Horticultural Commissioner S. A. Pease, of Base Line, believes that she is capable of repeating the feat. This hen is a white Plymouth Rock. Mr. Pease has his henry fitted out with 'trap nests.' These are nests which close when occupied, and the nesting hen is kept enclosed until liberated by human agency. Besides having 'trap

nests,' Mr. Pease has each of his hens numbered, and with the numbers and the 'trap nests' he finds it an easy matter to keep an accurate record of each of his feathered charges. Yesterday morning this particular hen took to a nest, and when liberated had an egg of a verage weight and shape to her credit. Mrs. Pease jotted down

the fact, and later in the day was astonished to liberate the same hen from the same nest, and lo, a second egg, every whit as fine as the first, graced the inclosure. The system of 'trap nests' and a metal tag number on the leg of the hen is usual in all scientifically managed henneries, it being the custom to keep accurate account of the eggs laid by each hen.

THE DAIRY.

Cheesemaking in California.

We recently gave a review of butter-making in California prepared by Mr. W. H. Saylor, Secretary of the California Dairy Bureau, and we have below a review of the State cheese industry from the same authority:

The butter output of California for the year ending on the 30th of last September was nearly 42,000,000 lb. This week we are able to present figures from the Bureau showing the production of cheese for the same period:

	Pounds.
Calaveras	4,800
Contra Costa	15,450
Fresno	52,154
Kern	7,270
Kings	24,900
Lake	57,681
Los Angeles	730,000
Marin	329,619
Mendocino	36,484
Modoc	6,600
Monterey	1,131,641
Napa	38,404
Plumas	9,780
Riverside	22,500
Sacramento	549,219
San Benito	404,494
San Joaquin	72,677
San Luis Obispo	61,569
San Mateo	744,486
Santa Clara	557,504
Santa Cruz	350,825
Sonoma	116,284
Stanislaus	182,562
Sutter	229,975
Tehama	83,182
Tulare	64,750
Yuba	45,683
Total	6,020,672

These figures show that there has been a decrease in the production of cheese, and, compared with the output of cheese in former years as reported by the Dairy Bureau, the total above shows as follows:

Year.	Pounds.
1897	6,399,625
1898	5,148,372
1899	5,294,938
1900	4,989,960
1901	5,681,886
1902	6,503,441
1903	7,218,639
1904	6,133,898
1905	6,020,672

It is plain that the tendency in California dairying is the production of butter, for while it is growing at the average rate of about 10% a year, the cheese output is less than it was 10 years ago. In other words, 10 years ago the amount of cheese produced was about one-third that of butter. At the present time it is only one-seventh as much.

It is somewhat difficult to find an explanation for this lack of development in cheese production. It is certainly not due to prices that have been realized by our cheesemakers during the past few years, which averaged far better returns on milk than in case of butter. During the year 1905 cheese producers, who make an average quality of cheese, have realized prices ranging from 10c. to 14c., equivalent to 25@30c. per lb. of butter, calculated on the greater yield of cheese that can be made from milk than in case of butter.

The best explanation for this state of affairs with regard to cheese production lies in the fact that the increase in butter production has been confined almost altogether to districts where alfalfa is the sole reliance in the way of feed. Experience seems to prove that a fine quality of cheese cannot be, or, at least, seldom has been, made from milk from alfalfa-fed cows. Numerous instances could be mentioned where cheesemaking has been started in the San Joaquin valley; but today the same milk is going into butter, the price received for the cheese not being sufficient above that of butter to make its production attractive. The skim milk that the dairyman secures from buttermaking, which he can use profitably for feeding calves and pigs, is another factor that works against cheese production.

That the objection to alfalfa cheese, however, does not fully explain a growth of cheese production corresponding with that of butter is shown by the fact that in some sections the cheese business has been well established where alfalfa is grown exclusively. One of the big cheese-producing counties is Los Angeles, where alfalfa-fed cows produce all the milk. All of the cheese reported in the table

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we are placed in an advanced position to furnish the latest and best goods for every branch of the Dairy and Creamery business. The newest, the latest and the best always in stock. Our complete Catalogue mailed free.

DE LAVAL DAIRY SUPPLY CO.

9 and 11 Drumm St., San Francisco 107 First St., Portland 112 2nd Ave. South, Seattle

for that county is made in one factory, and its product is the exclusive standard in the way of cheese on the Los Angeles market, where it outsells the best New York cheddar. Sacramento and Sutter counties are examples that show that cheese production can be made successful on alfalfa feeding, as both of these counties have been producing cheese for many years.

Whatever the cause for the lack of interest in cheese production in California may be, there has been no development in recent years. The counties and districts that are producing cheese today produced just about the same amount or a little more ten years ago.

Almond Hulls for Cows.

TO THE EDITOR: Please tell the value (if any) of almond hulls for feed. Are they better dry or damp for milk cows? My cows are very fond of them, and as long as the cows have plenty of green, washy feed to run to the hulls seem to be a benefit. Is there any danger of feeding too many of them to any kind of stock? How will the hulls affect stock fed with dry feed, such as grain hay or alfalfa hay?—ALMOND GROWER, Sutter county, Cal.

TO THE EDITOR: In answer to Almond Grower's questions, I may say that we have lately examined a sample of almond hull meal, with the following results:

	Per Cent.
Water.....	10.55
Protein.....	7.46
Fat.....	0.79
Starch, sugar, etc.....	60.94
Crude fiber.....	14.18
Ash.....	6.08
Total.....	100.00

It thus appears, from these figures, that the protein content of this meal is greater than that of wheat hay, about equal to that found in first quality of oat hay, but less than one-half that reported for alfalfa hay, bran or middlings, etc. The percentage of starch, etc., approaches very closely that of the cereals and other mill products. The amount of fiber, however, is much larger than that recorded for the feeds just mentioned. Practical experience has demonstrated the value of almond meal as a food for stock, and chemical analysis shows why this should be so. The best results, however, will be obtained, and no trouble need be anticipated, when this material is cautiously fed as a substitute for part of the grain or mill by-products in the ration, with hay and oilcake meal.

M. E. JAFFA.
University of California, Berkeley.

Agricultural Review.

Kings.

SUGAR BEETS.—Hanford *Sentinel*, Jan. 25: L. S. Chittenden & Co. informs us that arrangements have been made to plant 300 acres of sugar beets this season at Corcoran. It is probable that even a



GOMBAULT'S CAUSTIC BALSAM

A safe, speedy and positive cure for

Curb, Splint, Sweeney, Capped Hock, Strained Tendons, Founder, Wind Puffs, and all lameness from Spavin, Ringbone and other bony tumors. Cures all skin diseases or Parasites, Thrush, Diphtheria. Removes all Bunches from Horses or Cattle.

As a HUMAN REMEDY for Rheumatism, Sprains, Sore Throat, etc., it is invaluable. Every bottle of Caustic Balsam sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars, testimonials, etc. Address THE LAWRENCE-WILLIAMS COMPANY, Cleveland, Ohio.

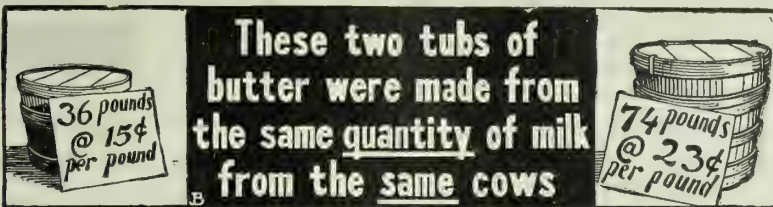
Sharples TUBULAR CREAM SEPARATORS

bowls without complicated inside parts—hold the world's record for clean skimming, durability, capacity, easy turning and easy washing—save half the work—greatly increase the amount and quality of butter—are wholly unlike all other separators. Write for catalog R-131

Toronto, Can. THE SHARPLES SEPARATOR CO., West Chester, Pa. Chicago, Ill.

We want you to know Tubular Cream Separators as they are

Investigate the low can and enclosed gears. Tubulars have neither oil cups, tubes, nor holes—they oil themselves. They have



How was it done?

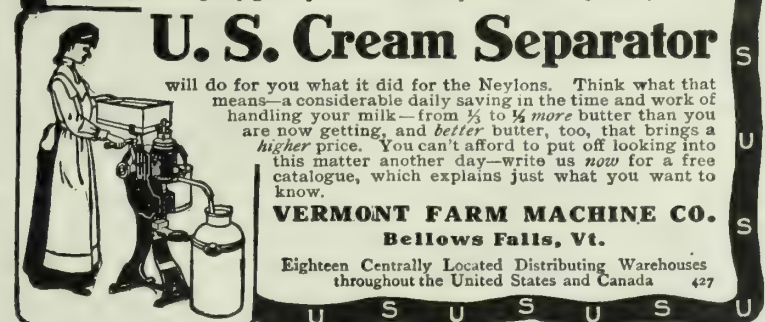
Here's the story in the words of a plain honest, hard-working farmer and his wife.

RAYMOND, NEBR., JUNE 6, 1905.

We had a water separator, and from twelve cows we made 36 lbs. of butter. The next week we used a No. 6 U. S. Separator and made 74 lbs. from the same cows in the same pasture without any extra feed. We made \$10.45 the first week after using the machine. We are very much pleased with it, and could not do without it now.

JOHN NEYLON,
MRS. NEYLON.

Are you using any gravity method to skim your milk? If you are, a



U. S. Cream Separator

will do for you what it did for the Neylons. Think what that means—a considerable daily saving in the time and work of handling your milk—from $\frac{1}{2}$ to $\frac{3}{4}$ more butter than you are now getting, and better butter, too, that brings a higher price. You can't afford to put off looking into this matter another day—write us now for a free catalogue, which explains just what you want to know.

VERMONT FARM MACHINE CO.

Bellows Falls, Vt.

Eighteen Centrally Located Distributing Warehouses throughout the United States and Canada 427

Prompt Delivery Assured

to California customers from San Francisco warehouse. No delays. Address all letters to Bellows Falls, Vt.

greater acreage will be put in as the season advances.

Riverside.

POULTRY RAISING PROFITABLE.—Perris *Progress*, Jan. 25: Mrs. E. E. Waters of Ethanac is one of the most successful chicken raisers in the country, not only because she takes a pleasure and interest in the work, studying the business and watching all the details, but keeping an accurate account of eggs, receipts and expenses, each day and month of the year, so that at the end of the year she knows absolutely what has been done. There is no guess work about it with her—she knows that it pays and pays well, as a careful reading of her book accounts will show. A net profit of \$218.27 in 12 months from 191 hens, and a limited expenditure of time and money is an income that many another woman might envy for spending money, while if poultry raising were followed as a business on a large scale a handsome income might be made from a very few acres of land. The following figures taken from Mrs. Waters' books prove the story:

	Number of Eggs.	Receipts.
January.....	940	\$ 20 25
February.....	1,814	33 39
March.....	2,927	38 48
April.....	2,939	41 92
May.....	2,752	43 25
June.....	1,995	31 25
July.....	1,474	26 06
August.....	945	18 69
September.....	548	12 05
October.....	333	8 80
November.....	155	4 10
December.....	221	5 63
Total.....	17,043	\$284 07
Total doz.....	1,420	
Hens on hand Jan. 1, 1905.....		191
From sale of eggs.....		\$284 07
From sale of turkeys.....		18 10
From sale of chickens.....		37 55
Value of fowls used at home.....		13 50
Increase in stock.....		8 95
98 doz. eggs used at average price of 21 $\frac{1}{2}$ ¢.....		21 07
Cost of feed.....	\$164 97	
To balance.....	218 27	
	\$383 24	\$383 24
By balance.....		\$218 27

This record is not as good as Mrs. Waters has had for several years past, owing principally to the high price of feed. Last year the profit per hen was, in round figures, about \$1.50, while this year the average is \$1.14 per hen. Out of the 17,043 eggs produced, more than 13,000 were produced in the first six months, when the hens seemed to have then gone on a strike. This caused a falling off in the number of eggs, which brought the average per hen below what is usually considered a fair average, but, nevertheless, a good profit was made, and the possibilities of the business are shown.

Sacramento.

EXTERMINATION OF PEAR BLIGHT.—Sacramento *Union*, Jan. 28: The extermination of pear blight in the orchards of California has commenced, with Sacramento as the center of operations. Co-operating with county horticultural commissioners, with the State authorities and with officials and workers from the University Experiment Station, a corps of experts from the Department of Agriculture at Washington will go from one locality to another, stamping out the pest that has wrought immense damage to fruit crops during the past few seasons. Prof. W. M. Scott, who arrived from Washington several weeks ago, is making his headquarters in Sacramento. He is assisted by C. L. Shear, W. W. Gilbert, Dean Swingle and Pearley Spaulding, who arrived on Friday, and by George Cutter, Sacramento County Horticultural Commissioner. Some miles south of Sacramento seven workers from the experimental station are working in an orchard and smaller forces are working in other parts of the State. Prof. W. B. Waite and an assistant from Washington are expected to return in a few days and resume operations. Prof. Scott and his four assistants visited the Menke orchard, five miles east of Sacramento. While the preliminary campaign is one of education, Prof. Scott and his co-workers are liberal in their use of the pruning-knife and hatchet when illustrating the manner of treatment. Where orchards are visited, the owner, the superintendent, the farm hands and everyone else who has to do with the care and cultivation of the trees are shown the process and are instructed to practice the curative methods until proficient. If necessary, a second visit is made for purposes of illustration. As explained by Prof. Scott, the pear blight is eradicated in each tree by lopping off and cutting away the affected or diseased twigs, limbs and branches. The operator must use the same care that is exercised by a surgeon in performing an operation. The instruments are cleaned and disinfected in an antiseptic solution after being used, in order that the bacteria may not be communicated to a healthy tree by contact. Visible signs of the disease are often hard to discern, and it requires an expert eye to detect the first faint symptoms. It is in this connection, and in the care to guard against contagion, that the orchardists themselves are most carefully instructed. Although the blight is one of the lowest forms of plant bacteria, being closely related to a fungus, it is nevertheless most rapid in attack and spread and most tenacious in its hold. "It should be understood," says Prof. Scott, "that this matter has passed the

experimental stage and that the force now in the field is applying an established remedy for the disease. The pear blight is being actually cleared away as we proceed. The experiments have been made during the past 10 years by Prof. Waite, whose methods have been successfully applied in Maryland, Georgia, Texas and Colorado before being brought to California. The conditions existent here will be exhibited to the experts who arrived from Washington, and they will scatter to the different localities where pears are grown, there to take up the work of instruction among the orchardists. Attention will first be given to the pear-growing districts of Shasta, Tehama, Butte, Yuba, Sutter, Sacramento, Yolo, Solano and Placer counties. Prof. Scott and Commissioner Cutter will remain in this county. The work will be prosecuted vigorously until the pear trees begin to blossom, when it will be interrupted for the season. Prof. Scott says that there is now pending in Congress an emergency bill appropriating \$10,000 for the present investigation and work by the Federal Government.

Santa Barbara.

BEETS LOOKING WELL.—Santa Barbara *Press*, Jan. 25: The beet fields of the Guadalupe and Betteravia country are looking fine since the recent rains, according to reports brought down by residents of that district. The first beets were planted early in November, and they made very slow growth during the unusually cold weather of December. They were standing from half an inch to an inch high when the rain started, and before the storm was over they had grown fully an inch. Of a total acreage of between 8,000 and 10,000 acres, the Union Sugar Co. already has something over 2,000 acres planted.

Sonoma.

COYOTES ROB HEN ROOSTS.—Press-Democrat: Coyotes are more numerous in the Stony Point section than they ever were, and the animals have changed their diet also. For a number of years they have had a fancy for lamb. This season their appetite for chickens has away. Harrison Mechem says coyote hunters with hounds will be allowed all the hunting they desire, and would undoubtedly have a successful hunt down his way. Mr. Mechem says that the coyotes seem to be in the section in greater numbers than he has ever known them, and that their principal onslaughts are on the chicken roosts. The coyotes have a peculiar liking for the heads of their victims. It is said that they will sit and wait for the chickens to spring down from their roosts, if they cannot reach them otherwise, and will then bite their heads off, leaving the rest on the ground. This largely depends, however, on the hunger of the marauders. It is stated that on a former occasion when the appetites of coyotes were turned towards poultry that an autopsy was held on a coyote killed in the neighborhood and in its stomach was found the heads of forty-two chickens.

HENS IN SONOMA COUNTY.—Santa Rosa dispatch to *Call*, Jan. 28: The growing importance of this section as an egg-producing center is shown by the fact that Walter Butler, who resides near Santa Rosa, is hatching 40,000 chicks this season. He is running a dozen incubators of 600 capacity each, and will have the largest private yard in this part of the county. The reports of the Santa Rosa Poultry Association and the Sonoma County Poultry Association, both organizations of this city, show that during the last year they each handled no less than \$35,000 worth of eggs. The local merchants handled large amounts also, and it is no boast to say that last year there was produced for the market fully \$100,000 worth of eggs from the country centering in this city.

NEVADA.

ESCAPING GAS KILLED TREES.—Reno special to Sacramento *Bee*, Jan. 25: P. Beveridge Kennedy, Professor of Botany in the Nevada State University, says that escaping artificial gas is killing hundreds of valuable shade trees throughout Reno. For several months, he says, he has been investigating the death of apparently healthy trees, and his conclusion is that the gas leaking from the mains has been taken up by the tree through the roots and foliage, causing death. Recently a number of valuable trees in front of the Nevada hotel died suddenly. Professor Kennedy heard of the incident and upon making an investigation found no insects present that would produce death. He did, however, find a strong leak in the gas main and investigation showed that the trees had been asphyxiated. The lotus, Lombardy poplar, Carolina poplar and cork elm trees have suffered most from this unusual cause. Hundreds of them have withered away.

The Home Circle.

Mother.

My mother, Heaven bless her
As she has blessed me.
May she yet through long years
My comforter be!
In fame or obscurity,
Gladness or woe,
No friend can be dearer
Than mother, I know!

She weeps for my losses,
She laughs for my gain;
Her hands take the sharpness
From all earthly pain.
When clouds turn the sunlight
To shadows of gray,
Her brown eyes are lovelights
To brighten the way.

And when in the twilight
With tender good-night,
She goes down the valley
In garments of white,—
The fairest bright angels
In Heaven, I know,
Will crown her who used to
Be 'mother' below.

Violets.

Spring's tiny heralds, shy and sweet,
With half-shut eyes of dusky blue,
I, loitering here with idle feet,
Must needs stoop low and gather you;
For where wet mosses cling and creep,
And sunbeams never come to stay,
Awaking from a winter's sleep,
You give your perfume to the day.

Rough winds, that fret the silver rills,
Caress you gently as they pass
To shake the nodding daffodils
And laugh amid the growing grass.
They find the daisy on the lea,
The primrose in the sunny glade;
You only grow where few can see
Your grace and beauty—in the shade.

And while my heart your fragrance
hives—

Such subtle essence, rich and rare—
I can but learn that lowly lives
May sometimes be supremely fair.
Spring's tiny heralds, shy and sweet,
With half-shut eyes of dusky blue,
I, loitering here with idle feet,
Am glad to stoop and gather you.

—E. Matheson, in *Chamber's Journal*.

Without the Green.

Yes, that was the time. I was sixteen years old and Reginald twenty-three. Until that time I had been in Reginald's opinion only an awkward, timid, boarding-school girl; even a little simpleton, as he had told one of his friends without suspecting that my sharp ears would hear that qualification.

But after the Saint-Cyrien ball where my little figure in a cloud of rose-colored tulle had a very decided success, I became without any transition the pearl of cousins, and Reginald was very proud when I deigned to accept his arm the days I went for a promenade or a walk to town.

One afternoon as I was picking a bouquet of flowers for a jardiniere in the salon he said suddenly, after a long silence:

"Mireille, will you accept a 'discretion' with me?"

I looked at him in surprise.

"A discretion?"

"Yes. Don't you understand? It is charming, I assure you."

"And you, who do not like trite expressions!"

He interrupted his compliment at my mocking air and replied:

"It is an old custom, or a game, if you prefer, of Italian origin. A gentleman and a lady—"

"We are not 'a gentleman and a lady.'"

"A man and a woman, then," he corrected, impatiently. "They divide a little branch of box or some other bush that retains its green color through time and space. That little twig must always be carried with them. And each one hunts morning, evening, day and night—"

"Oh! All night?"

"That's a mere form of speech," he said, still more impatiently. "To continue: Each one hunts his partner, trying to catch him without his little

branch, 'without the green,' as they say."

"And what if one finds the other without the green?" I asked, really interested now.

"If he is found without the green the loser must give, you understand, Mireille, whatever the winner asks."

"B-r-r!"

Without noticing my interruption, Reginald continued:

"I have seen players make incredible efforts to surprise their partners without the green—any trick at all is permissible. You can fall like a bomb on the other person a hundred miles from the place where the challenge was accepted, for these compacts do not recognize unity of time nor unity of place. There have been some that lasted years, and were hunted to the four corners of the globe."

"My dear Reginald, I must confess that to grant whatever might be demanded seems to me too great a mystery to be acceptable."

"Among people who do not know each other, perhaps, but surely not between us! Mireille, please do me the honor to know that I will be very discreet, and will only ask you to give me what will cause you no trouble at all. It is a simple game. And I hope you will not be like a woman who, having won her 'discretion,' asked a gentleman—guess."

"A mustache?"

"Alas, no; for he could easily have found a false one. An elephant! What do you think of that?"

"Gracious! Did the gentleman give her a box on the ear?"

"No, for you see I told you one must give whatever he is asked. The gentleman left for India."

"Ah! And brought back the elephant?"

"I think so, though I cannot swear to it. The magazine where I read that was torn just at the place where the man was stepping onto the packet boat. Think it over and tell me if you will do it. I spoke to your mother first about it and she said: 'If Mireille wants to do it I see nothing wrong about it. You will not ask anything unreasonable?'"

I hesitated a moment longer while he watched me anxiously, then I said resolutely:

"Very well, I accept it. It will be very amusing. See, here is a little piece of box; let us divide this branch. Sir, hostilities are now begun!"

Reginald raised his hand to his forehead with a salute that the general would have admired, and said:

"At your orders, mademoiselle!"

For four years we pursued each other tirelessly without either of us being successful in finding the other without the green. How many charming things I thought of meanwhile to ask my cousin! The first year it was Madam Craven's books, which were forbidden fruit, that haunted my brain incessantly. The second year it was a tennis set. The third year I dreamed of a little white, curly dog which I named 'Flia' in advance. The fourth year my ambition grew, and I decided on a gold brooch with pearl pendants.

But still nothing at all happened. Whenever I met Reginald he always pulled out of his pocket—the one nearest his heart—the slightly yellowed branch exchanged in the garden one beautiful September evening.

About a month ago mother said to me after a long preamble:

"I have a serious matter to talk over with you, Mireille. Mr. Lauric has asked for your hand in marriage."

Mr. Lauric is one of Reginald's comrades, in the same regiment, the same excellent accounts, the same position of fortune and the same highly-respected families. The only thing that restrained me was that I was indifferent, very indifferent; so much so that mother noticed it.

"He does not seem to please you. However—"

"No, no, he does not please me!"

"I myself would prefer Reginald, I confess, my dear."

"Oh, Reginald loves me simply as a cousin," I interrupted quickly, with a hot blush. "I am a pastime for him; his smiles and attentions are all for Colonel Helos' daughter."



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"I should almost think you were jealous."

"I! Understand, mother, it is no question of Reginald, but I don't even want to hear Mr. Lauric spoken of."

"All right," said my mother; "now we will change the subject. I have just received a letter from De Vire inviting us to spend a week at the Rookery. Get ready and we will leave tomorrow."

I am very fond of Mrs. de Vire and her two adorable daughters, so I was delighted to go with my mother to the Rookery, where there were already numerous other guests. For two days there were excursions of all kinds—horseback and donkey riding, boating, walking, etc. The third day I was in my room writing to my friend Germanie when Elsie and Girbe came in with a very mysterious air.

"My dear Mireille, an uncle of little father, a great collector of antiquities, is coming to the house tomorrow. Our little father thinks he will make him a present of the sedan chair that belonged to our great-great-grandfather. This morning Jerome brought the old machine from its corner to clean it. As everyone has gone to the ruins of Grandral, this is the time to see and amuse ourselves."

A sedan chair! I leaped up, as much a child as Elsie and Girbe, without doubt; and when I came to the big trees under which the servant had placed it after a first summary cleaning, I uttered a cry of admiration. There were exquisite paintings on the panels; chubby little cupids with laughing faces throwing roses at each other; a shepherdess in a white dress standing with assumed dignity among beribboned lambs; a shepherd holding in his hands a wonderful violin, and I do not know what else. It was padded on the inside with blue silk, with lively little bouquets, and had pockets here and there, doubtless for fans, handkerchiefs, lorgnettes, etc. A gentle odor of amber and patchouli emanated from it, a sweet odor of a long-past time.

"Oh, if you only would, Mireille, if you only would!" Elsie begged. "Up in the armory there are some old dresses and old lace. Mireille, would you do it?"

Would I do it! A quarter of an hour later I was back again, and in such a beautiful costume. A dress with panniers, pointed corsage trimmed with Mechlin lace, silk mitts covering my bare arms, velvet about my neck, powdered hair crowned with a rose-colored plume dancing on the breeze. "Mireille, you are lovely!" exclaimed Elsie and Girbe, who were surely at that time little cousins of the devil himself.

Thus adorned I climbed up into the sedan chair, putting on great airs. While Elsie was putting her camera in position, suddenly through the portiere at the right a voice said gayly:

"Good day, marquise!"

It was—it was Reginald! Reginald, whom I thought two hundred miles away! Reginald in kingly blue robes, lace jabot, powdered wig—Reginald, bowing low before me, holding in one hand a three-cornered hat with a wav-

ing white plume; in the other (oh, despair!) the little branch of box!

And mine was away upstairs in my room, left there when I changed my costume.

I hid my distressed face in my hands. "Reginald," I stammered, "be considerate! I have scarcely anything in my purse!"

He smiled. Heavens, what a smile! "I will be very considerate, and will not touch your purse. Marquise, I ask your hand."

My hand! I began to weep uncontrollably. Is it not strange that happiness and grief both manifest themselves by tears? Reginald himself, much saddened now, murmured:

"I did not believe, Mireille, that you would receive my request that way. I had been hoping—"

Then I looked at him with tears in my eyes and a smile on my lips.

"Ascend, marquise!"

And as my mother appeared at the opening of the path I cried gayly to her: "Mother, the Marquis and the Marquise Reginald are beginning their wedding visits!"—*From the French.*

Hints to Housekeepers.

An easy way to keep the silver bright is to immerse in sour milk for a time. Wash and polish.

There is nothing more soothing in a case of nervous restlessness than a hot salt bath just before retiring.

A dish cloth and mop may be kept sweet by washing them in soap suds and rinsing thoroughly in cold water.

To make clothes wash easy, mix one tablespoonful of paraffin oil with one pint of soft soap, and soap all the white clothes; put them to soak over night, and you will have very little rubbing to do.

After ironing linen place it near the fire or in the sun until perfectly dry, as the garments will be much stiffer than if left to dry slowly. This hint is especially useful with collars, cuffs and petticoats.

Badly tarnished brass may be cleaned with ease if it is first rubbed with salt and vinegar or oxalic acid. Follow with a good washing of soap and water, then polish with any good cleaning preparation.

Milk restores the taste which has become vitiated by constant tasting of different foods. After much tasting the cook would do well to take a drink of milk, and thus restore the accuracy of her palate.

Before sending a foulard or light silk gown to be dry cleaned, it is a good plan to let out the hems. Silk is not supposed to shrink, but the fact is that it sometimes does shrink in a remarkable manner. A blue and white foulard came home from the cleaner's a good two inches shorter than when it went. The hem was let down, but the result was not as satisfactory as it would have been if the precaution had been taken beforehand.

Domestic Hints.

SALMON SCRAMBLE.—Melt one-half cupful of butter and add to it two-thirds of a cup of chipped smoked salmon; cook for six minutes. Beat five eggs into one-third of a cupful of thick cream and add to it; then serve on a triangular piece of toast, garnished with sprigs of parsley.

TOMATO NUT SAUCE.—Cook one small chopped or ground onion in two tablespoonfuls of butter or olive oil, add one tablespoonful flour, and stir until brown. Stir in gradually one cupful water and one-half cupful tomato juice. Cook until it thickens, then flavor with two teaspoonfuls peanut butter—or other nut butter—creamed with water.

SCALLOPED CAULIFLOWER.—Select a good, fresh cauliflower and remove any wilted leaves; soak for a couple of hours in salted water; then cook in boiling water until it is quite tender, but not until it falls apart. In the meantime have prepared a rich, white sauce, by stirring together a teaspoonful each of butter and flour in a saucepan, mix smooth with a little warm milk, add pepper, salt and a half cupful of cream. When the cauliflower is done stand it in a scallop dish, cover with sauce, and over that sprinkle a cupful each of grated cheese and bread-crumbs. Bake a rich brown and serve very hot.

Hero Worship and Maps.

Hero-worship, too, has had a hand in the making of maps. We have postoffices bearing the names of every President down to and including Mr. Roosevelt. Only two of his predecessors are lacking in the list of counties. Naturally, the favorite in the naming of towns and counties is Washington, and he is the only President for whom a State has been named. But others than Presidents enjoy these honors. Successful soldiers, sailors, statesmen, editors, authors, inventors, the heroes of ancient history and mythology, and even popular actors and athletes, share, a like distinction. Our list of postoffices is a long one, and contains names from almost every language, living and dead, and chosen on almost every conceivable principle or impulse. Two counties in Kansas present a curious association of ideas: Greeley county has for its capital a town called Tribune, and Ulysses is the county seat of Grant. New stations were to be named along a Western railway some years ago, and they were named after the members of a professional baseball team that happened just then to win the championship.—*St. Nicholas.*

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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, Jan. 31, 1906

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday.....	86 1/2 @ 85 1/2	84 1/2 @ 83 1/2
Thursday.....	85 1/2 @ 84 1/2	81 1/2 @ 80 1/2
Friday.....	85 1/2 @ 84 1/2	81 1/2 @ 80 1/2
Saturday.....	85 1/2 @ 84 1/2	81 1/2 @ 80 1/2
Sunday.....	84 1/2 @ 83 1/2	81 1/2 @ 80 1/2
Monday.....	84 1/2 @ 83 1/2	81 1/2 @ 80 1/2
Tuesday.....	85 1/2 @ 84 1/2	84 @ 83 1/2

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday.....	45 1/2 @ 44 1/2	45 1/2 @ 44 1/2
Thursday.....	45 @ 44 1/2	45 1/2 @ 44 1/2
Friday.....	44 1/2 @ 43 1/2	44 1/2 @ 43 1/2
Saturday.....	44 1/2 @ 43 1/2	44 1/2 @ 43 1/2
Sunday.....	44 1/2 @ 43 1/2	44 1/2 @ 43 1/2
Monday.....	44 1/2 @ 43 1/2	44 1/2 @ 43 1/2
Tuesday.....	44 1/2 @ 43 1/2	44 1/2 @ 43 1/2

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	Dec., 1905.	May, 1906.
Wednesday.....	\$1 31 @	\$1 37 1/2 @ 1 37
Thursday.....	1 29 1/2 @ 1 30 1/2	1 30 1/2 @ 1 30 1/2
Friday.....	1 29 1/2 @ 1 29 1/2	1 30 @ 1 34 1/2
Saturday.....	1 28 1/2 @ 1 28 1/2	1 34 1/2 @ 1 33 1/2
Sunday.....	1 28 1/2 @ 1 28 1/2	1 31 @
Monday.....	1 30 @ 1 29 1/2	1 35 1/2 @
Tuesday.....	1 30 @ 1 29 1/2	1 35 1/2 @

Wheat.

The spot market is dull and prices have sagged considerably during the week, although they have firmed up a little during the last day or two. Prices are, however, still far above an export basis. Heavy arrivals of Oregon wheat have supplied the local demand and still further supplies from the North would cause a further decline. So far as known, however, no other large shipments of wheat from that section of California are contemplated for the immediate future. The market there is a little stronger, and quotations are up a few cents. The majority of traders on the coast do not know what to think of the European market, and are waiting news from buyers in England, as to whether they want wheat or not. Chartering for Europe continues of a dragging character and shippers claim to have too much wheat. Holders are very firm in their ideas as to values. Millers' demands are small, owing to the closing down of nearly all of the large mills, and the majority have plenty of wheat on hand when they resume work. Crop prospects are very flattering. It is early, of course, to predict anything about the crop for this year, but farmers seem to be jubilant. Throughout California, Oregon and Washington reports are that the prospects were seldom brighter for the time of year. Practically no California wheat is now appearing here, though one lot from Paso Robles was offered at \$1.42 1/2.

California Milling.....	\$1 37 1/2 @ 1 42 1/2
Cal. No. 1 shipping.....	1 35 @ 1 37 1/2
Northern Club.....	1 35 @ 1 37 1/2
Northern Bluestem.....	1 37 1/2 @ 1 42 1/2
Northern Red.....	1 32 1/2 @ 1 35

PRICES OF FUTURES.

Wednesday, at the forenoon session of Exchange May, 1906, wheat ranged from \$1.34 1/2 @ 1.34 1/2.

Flour.

There is no change to note in the market. Millers are enjoying a holiday that they do not relish at this time of the year, and are daily awaiting developments. A few offers have come to hand during the week, but the profits on these were deemed too small. The large stocks held in Japan are not being reduced as rapidly as the trade would like to see, and so long as these stocks are visible no one can anticipate a revival of orders from that country. Some few orders are going to China, but not in any large lots. The demand for flour from other sources where millers receive orders shows but little change so far this season. From European points and Africa no orders or offers have been received; Central and South American ports are not ordering freely, and only buy when supplies are running low. California importations from the North are limited, and only Northern mills with an established trade are shipping flour to San Francisco and northern California points. On the whole the market is very dull. Quotations remain without change.

Patents, California.....	\$— @ 4 85
Second Patents, California.....	— @ 4 60
Straights.....	— @ 4 25
Superfine No. 1.....	3 50 @ 3 75
Superfine No. 2.....	3 00 @ 3 40
Oregon Bakers'.....	3 90 @ 4 25
Washington Bakers'.....	4 00 @ 4 40
Eastern Patents.....	5 50 @

Barley

Notwithstanding the heavy rains and the importations of feed corn, the barley market is very firm. It weakened a little during the rains, but it now shows great strength and a good tendency to hold its values for spot and a big, strong tendency to rise in May options. This May option seems to be concentrated and held in a

few hands. It has been steadily bought, and continues to be bought even at advanced prices, until it looks as though the short sellers will be forced into camp at very much higher prices. Spot barley is in good demand and runs along very steadily; good, nice feed brings \$1.23 1/2 here.

Brewing.....	\$1 25 @ 1 30
Feed, No. 1.....	1 23 @ 1 22 1/2
Feed, fair to good.....	1 17 1/2 @ 1 20
Chevalier, No. 1 to choice.....	1 25 @ 1 30
Chevalier, common to fair.....	1 20 @ 1 25
December.....	94 1/2 @—

Oats.

The market is without change, very little oats being offered by interior holders, who prefer to wait until spring, anticipating higher prices. In the meanwhile, oats are coming from the Middle West at lower prices, and these command ready sale. Cereal millers are in the market for No. 1 whites, and are willing to pay prices asked if the quality is up to their ideas.

White oats.....	\$1 50 @ 1 55
Black oats.....	1 35 @ 1 70
Red oats.....	1 45 @ 1 60

Corn

Corn is steadily coming in from the East, receipts having averaged in the neighborhood of four or five cars a day. This is being shipped to the interior to take the place of feed barley. The Eastern market is weaker and conditions here have followed. The demand for corn for feed is expected to diminish from now on, owing to the growth of grass since the rains.

Large White, good to choice.....	\$1 17 1/2 @ 1 22 1/2
Large Yellow.....	1 17 1/2 @ 1 22 1/2
Small Yellow.....	1 50 @ 1 55
Egyptian White.....	1 38 1/2 @ 1 40
Egyptian Brown.....	1 22 1/2 @ 1 25
Kafir.....	1 20 @—

Rye.

The rye market is firmer this year, and prices are slightly higher. All the cheap rye in the market has been closed out and even at present prices no great supplies are to be had.

Good to choice.....	\$1 50 @—
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Buckwheat.

There has been no change in buckwheat, owing to the fact that the supply is practically exhausted. No interest is expected to develop before the new crop comes in.

Good to choice.....	1 50 @ 1 65
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Beans.

It is now a question whether or not there are sufficient stocks of lima beans in the East to supply the trade there. If the East is obliged to draw on California for further stocks before the new crop comes in, a scarcity in this market will result. Locally, trade is quiet with the stocks on hand very firmly held. The impression seems to prevail that prices will be higher for limas later on. Other beans are in light supply with everything in favor of the sellers. Small whites have advanced slightly on the better grades and large whites are up from 10c. to 15c. on all grades. Red kidneys are also a little higher. Blackeyes, on the other hand, are a little weaker.

Small White, good to choice.....	\$2 90 @ 3 25
Large White.....	2 25 @ 2 60
Pinks.....	1 75 @ 2 00
Pinks, damaged.....	1 00 @ 1 25
Bayos, good to choice.....	3 80 @ 3 60
Red Kidneys.....	3 65 @ 3 50
Reds.....	3 00 @ 3 10
Limas, good to choice.....	4 75 @ 5 00
Black-eye Beans.....	4 40 @ 4 50

Dried Peas.

The demand for dried peas has been a little better this week and prices have stiffened to a certain extent. California green peas are held considerably higher, and the indications are that the market will continue to favor sellers until the new crop comes in. Stocks are very light.

Green Peas, California.....	\$2 15 @ 2 50
Niles.....	1 75 @ 2 00

Hops.

Hop dealers here report a very quiet market, there having been some reaction in the feeling since last week. Dealers claim that brewers are in heavy stock and selling is very limited. Considerable amounts are known to be still in the hands of growers, and the only question seems to be as to whether or not this carryover is sufficient to pull down the market. Inquiry here fails to reveal any transactions this week running over 10c., though probably some extra quality could bring that figure, the price generally talked by buyers from 6 to 10c.

Medium to fair.....	6 @—
Good brewing.....	8 @ 8 1/2
Prime.....	9 @—
Prime to choice.....	10 @—

Wool.

The wool market continues dull, as is to be expected at this season of the year. Practically no transactions have occurred locally during the week. Receipts are nominal and the only interest now mani-

festes attaches to the East, where the volume of business in California wools has not been heavy. Late reports from Boston state that the chief transactions are in worsted goods and that California wools are neglected. Prices, however, remain stationary and holders are inclined to be firm in their ideas.

FALL.

Humboldt and Mendocino.....	15 @ 16 1/2
Northern, free.....	14 1/2 @ 16
Northern, defective.....	11 @ 13
Middle County, free.....	10 @ 14
Middle County, defective.....	11 @ 13
San Joaquin and Southern, free.....	9 @ 12
San Joaquin and Southern, defective.....	8 @ 10

SPRING.

Oregon, valley.....	23 @ 25
Eastern Oregon.....	15 @ 17
Nevada.....	15 @ 19

Hay and Straw.

Cars are becoming more plentiful and this has helped increase arrivals during the past week. The total arrivals show 3,250 tons, as compared with 2,800 tons for the week preceding. The large hay centers are unloading their stocks at many points throughout the country, and from all indications, in spite of the fact that stocks in the country the first of last November were much heavier than for the year preceding, there will probably be but little hay carried over. The market still shows a scarcity of choice hay, both for wheat and tame oat. Stock hay is scarce and slightly higher, the bulk of arrivals being the medium grades of wheat, wheat and oat and tame oat. Alfalfa is a trifle weaker, owing to heavy shipments.

Wheat, choice.....	\$14 00 @ 16 00
Wheat, other grades.....	8 00 @ 13 50
Wheat and Oat.....	9 00 @ 12 50
Tame Oat, fair to choice.....	8 00 @ 12 00
Wild Oat.....	8 00 @ 9 50
Barley.....	7 00 @ 9 50
Clover.....	6 00 @ 9 00
Alfalfa.....	9 00 @ 11 50
Stock hay.....	7 50 @ 8 50
Compressed.....	10 00 @ 13 00
Straw, 1/2 bale.....	30 @ 50

Millstuffs.

The rains have had their natural effect on millstuffs and the general situation is easier. At present receipts are fully equal to the demand, and the latter is expected to decrease as green feed increases. Owing to the heavy receipts of Eastern corn, rolled barley and cornmeal as well as cracked corn have gone down about \$1 per ton.

Alfalfa Meal, 1/2 ton.....	\$21 00 @ 22 00
Bran, 1/2 ton.....	20 50 @ 21 00
Middlings.....	27 50 @ 29 00
Shorts, Oregon.....	21 00 @ 22 00
Barley, Rolled, choice.....	26 00 @ 26 50
Cornmeal.....	28 50 @ 29 50
Cracked Corn.....	29 00 @ 30 00
Oatmeal.....	39 00 @ 40 00
Cocoanut cake or meal.....	24 50 @ 25 50

Seeds.

Trading has picked up slightly in seeds this week, with the result that prices have gone up to a certain extent. No alfalfa seed is now to be had less than \$12.50. Yellow mustard seed has gone up sharply, some having been sold as high as \$4.25. Flaxseed is again quoted at \$3.25 @ 3.50.

Alfalfa.....	\$12 50 @ 14 00
Flax.....	3 25 @ 3 50
Mustard, Yellow.....	3 75 @ 4 25
Mustard, Trieste.....	4 50 @ 4 75
Canary.....	Per lb. 8 1/2 @ 7
Rape.....	2 1/2 @ 3
Hemp.....	— @ 5
Timothy.....	5 1/2 @ 6

Honey.

The honey market is weaker this week, owing probably to additional arrivals of Hawaii. Quite heavy stocks of comb honey are now on hand here and these are being swelled daily by arrivals. Prices are down about one-half cent on extracted honey, and from 1 to 2 cents on comb.

Extracted, Water White.....	4 1/2 @ 5
Extracted, White.....	4 @ 4 1/2
Extracted, Light Amber.....	3 1/2 @ 4
Extracted, Amber.....	3 @ 3 1/2
Extracted, Dark Amber.....	2 1/2 @ 3
Extracted, Hawaiian.....	2 1/2 @—
White Comb, 1-frames.....	10 @ 12 1/2
Amber Comb.....	9 @ 10

Beeswax

Beeswax continues about as last week, though very little business has been done. Local buyers have little interest in the market, though they admit that the situation is firmer than it was a week or two ago.

Good to choice, light 1/2 lb.....	\$7 @ 28
Dark.....	25 @ 26

Live Stock and Meats.

The meat market continues very firm, with indications pointing to higher prices. Hogs have advanced still further, with few to be had even at the advanced prices. Still higher prices are looked for. No hogs are being packed at present, owing to the scarcity and high prices. First and second quality beef shows an advance of one-half cent, with third quality at the old price. Spring lamb is in demand and has been marked up one cent.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle

command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net 1/2 lb.....	5 1/2 @ 6
Beef, 2nd quality.....	5 @ 5 1/2
Beef, 3rd quality.....	4 @—
Mutton—ewes, 8@9c; wethers.....	9 1/2 @ 10
Hogs, hard grain, 150 to 250 lbs.....	6 @ 6 1/2
Hogs, large, hard, over 250 pounds.....	5 1/2 @ 6
Hogs, small, fat, under 150 lbs.....	6 @ 6 1/2
Veal, large, 1/2 lb.....	6 @ 7 1/2
Veal, small, 1/2 lb.....	8 @ 9
Lamb, spring, 1/2 lb.....	11 @ 12

Hides, Skins and Tallow.

The hide market is still in a waiting position and no great activity is expected for several weeks to come. Prices seem a little uncertain and San Francisco dealers are not anxious to buy at present quotations. Tanners are not in the market for hides to any great extent.

Nothing but select hides, clean and trimmed, will bring full figures. Culls of all kinds either from grubs, cuts, hair slips side brands or murrain, are not always readily placed at the lower figures.

	Sound.	Culls.
Heavy Steers, over 56 lbs.....	13 @—	12 @—
Medium Steers, 48 to 56 lbs.....	12 @—	11 @—
Light Steers, under 48 lbs.....	11 1/2 @—	10 1/2 @—
Heavy Cow Hides, over 50 lbs.....	10 1/2 @—	10 1/2 @—
Light Cow Hides, under 50 lbs.....	10 1/2 @—	10 1/2 @—
Stags.....	7 @ 8	7 @—
Wet Salted Kip.....	10 1/2 @—	10 @—
Wet Salted Veal.....	12 @—	11 @—
Wet Salted Calf.....	13 @—	12 @—
Dry Hides.....	19 @—	19 @—
Dry Kip and Veal, 11 to 16 lbs.....	17 @—	15 @—
Dry Calf, under 4 lbs.....	20 @ 21	19 @—
Pelts, long wool, 1/2 skin.....	1 50 @ 2 00	
Pelts, medium, 1/2 skin.....	90 @ 25	
Pelts, short wool, 1/2 skin.....	60 @ 90	
Pelts, shearling, 1/2 skin.....	30 @ 50	
Horse Hides, salted, large prime, each.....	3 00 @—	
Horse Hides, salted, medium.....	2 75 @—	
Horse Hides, salted, small.....	2 25 @—	
Horse Hides, dry, large.....	1 75 @—	
Horse Hides, dry, medium.....	1 50 @—	
Horse Hides, dry, small.....	1 00 @—	
Tallow, good quality.....	4 @ 4 1/2	
Tallow, poorer grades.....	3 1/2 @ 3 1/2	

Bags and Bagging.

The spot market is now barren and interest centers wholly in futures. Some business is being done in Calcutta grain bags for June and July delivery, on a 6c. basis. Calcutta spot bags are still quoted as heretofore, with no transactions reported. No new grain bags will reach this market until some time in May. Taking the bag situation as a whole, there seems to be a tendency to push prices up. Advances from Calcutta state that the market there continues to show an increase in firmness.

Bean Bags.....	7 @—
Fruit Sacks, cotton, No. 1, 8@8 1/2; No. 2.....	7 1/2 @ 8
Fruit Sacks, jute, as to quality.....	9 1/2 @ 9 1/2
Grain Bags, Calcutta, 22x36, spot.....	7 1/2 @ 7 1/2
Wool Sacks, 4-b.....	36 @ 37
Wool Sacks, 3 1/2 b.....	32 @ 34

Poultry.

Four cars of live Eastern chickens arrived this week, but the market continues fairly steady. In some cases prices are off slightly from last week, owing to the fact that Chinese New Year is over, but at the new quotations the market is holding firm. Some coops of large fancy fat hens have brought as high as \$9, but this was exceptional. Turkeys are practically out of the market, and quotations for these are largely nominal. The outlook for the coming week is considered good from the sellers' point of view.

Turkeys, choice Young, 1/2 lb.....	1 @—
Turkeys, live gobblers, 1/2 lb.....	16 @ 18
Turkeys, live hens 1/2 lb.....	17 @ 19
Hens, small, 1/2 dozen.....	4 @ 5 20
Hens, large.....	6 00 @ 7 00
Roosters, old.....	4 20 @ 5 20
Roosters, young (full-grown).....	5 00 @ 7 00
Fryers.....	5 00 @ 6 00
Broilers, large.....	4 00 @ 5 00
Broilers, small to medium.....	2 20 @ 3 20
Ducks, old, 1/2 dozen.....	5 00 @ 6 00
Ducks, young, 1/2 dozen.....	6 00 @ 7 00
Geese, 1/2 pair.....	2 00 @ 3 20
Goats, 1/2 pair.....	2 00 @ 3 20
Pigeons, old, 1/2 dozen.....	1 00 @ 1 10
Pigeons, young.....	2 00 @ 2 20

Butter.

The abnormal situation in the butter market is now passing away, under the influence of warmer weather. Owing to the prolonged dry weather, cold storage stocks were drawn on largely during the closing weeks of 1905, but this state of affairs has changed, and very little cold storage stock is now being drawn out. With the continuation of warm weather the market is expected to weaken, though at present the prices of last week are being maintained with a fair degree of firmness.

Creamery, extras, 1/2 lb.....	30 @ 31 1/2
Creamery, firsts.....	29 @ 29 1/2
Creamery, seconds.....	24 @ 25
Dairy, select.....	20 @ 25
Dairy, firsts.....	22 @ 25
Dairy, seconds.....	20 @ 22
California storage.....	24 @ 26
Mixed Store.....	19 @ 20

Cheese.

The cheese market has weakened this week, although prices have not dropped materially. A good deal of Oregon and Nevada cheese is now coming in, and all of the California creameries are increasing their output. Eastern cheese is not being drawn to the same extent as heretofore, and cold storage stocks have not been drawn on this week.

California, fancy flat, new.....	14 1/2 @ 15
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California, good to choice.....	13	@14
California, fair to good.....	12	@13
California, "Young Americas".....	14	@15
Eastern, new.....	16	@17

Eggs.

The egg market has been active but uncertain this week, prices going up stiffly, and then coming down again. At the present time, the tendency is downward, although the level of prices is higher than it was a week ago. The warmer weather, if it continues, will bring in large supplies and a substantial drop from present prices may be expected next week. For this reason stocks are being cleaned up quickly.

California, select, large, white and fresh.....	32 1/2	@33
California, select, irregular color & size.....	31	@32
California, good to choice store.....	27	@28
Eastern firsts.....	21	@22 1/2
Eastern seconds.....	17 1/2	@19

Potatoes.

The potato market is in better shape this week, with stocks of even the poorer grades being somewhat reduced. A shipment of 1,000 crates was made to Manila this week and in general the demand shows a distinctive improvement. Holders are firm in their ideas as to prices, although considerable quantities of cheap potatoes are selling at very low figures.

River Burbanks, # cental.....	50	@ 75
Salinas Burbanks.....	1 25	@ 1 65
Oregon Burbanks.....	1 00	@ 1 30
Tomatoes.....	90	@ 1 00
Sweet Potatoes, fancy.....	1 25	@ 1 50
Sweet Potatoes, good to choice.....	75	@ 1 00

Vegetables.

The vegetable market is very dull and uninteresting with practically nothing in the market, except supplies coming from cold storage. Green peas have been marked down owing to an increase in the supply. A little new crop rhubarb came in early in the week, and was readily disposed of at 8 and 10c. There are now good supplies of onions coming in and some little trading has been done in these at appearing quotations.

Cauliflower, # dozen.....	60	@ 75
Beans, String, # lb.....	—	@ 17
Cabbage, choice garden, # 100 lbs.....	1 00	@ 1 25
Egg Plant, # lb.....	10	@ 15
Garlic, # lb.....	4 1/2	@ 5
Onions, Oregon, # ctl.....	1 20	@ 1 45
Onions, New Yellow Danvers, # ctl.....	1 25	@ 1 50
Onions, Australian Brown, # ctl.....	1 25	@ 1 50
Peas, Green, # lb.....	10	@ —
Tomatoes, # box or crate.....	1 50	@ 1 75
Artichokes, # doz.....	50	@ 1 25
Carrots, # sack.....	65	@ 75
Hubbard Squash, # ton.....	—	@20 00

NOTE.—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top, with hand holes in the ends, and weigh when filled from 50@60 lbs gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 35 lbs. gross.

Fresh Fruits.

Transactions in fresh fruits have been very light and the market is generally featureless. Quotations on apples and pears are unchanged. About the only thing of note in the situation was the arrival of a car of Ben Davis apples from the Hood river section of Oregon. These sold readily, the fanciest going at \$2.25. A shipment of 5,000 bunches of bananas also came in Tuesday.

Apples, choice to select, # 50-lb box.....	1 50	@ 2 25
Apples, good to choice, # 50-lb box.....	75	@ 1 00
Apples, common.....	50	@ 75
Pears, Winter Nells.....	2 25	@ 2 75

Dried Fruits.

Dried fruits are very firm, and the clean-up anticipated some time ago seems in a fair way to be realized. Nearly all varieties are getting scarce, and slight advances may be expected shortly. Apples have already advanced in good to choice grades. Not much interest is being taken in dried fruits, owing to light stocks on hand. The interest in prunes has eased off, although the general idea is that the present supply will readily pass into consumption at about present quotations before the new stock comes in.

EVAPORATED OR BLEACHED.

Apples, 50-lb boxes, rings, pressed, good to choice.....	8 1/2	@ 8 1/2
Apples, extra choice to fancy, 50-lb boxes.....	8 1/2	@ 9
Apricots, Royal, good to choice, # lb.....	8	@ 8 1/2
Apricots, Royal, fancy.....	9	@ 9 1/2
Figs, 10-lb box, 1-lb cartons.....	55	@62 1/2
Nectarines, White and Stanwick, # lb.....	8	@ 8 1/2
Nectarines, red, # lb.....	—	@ 8
Peaches, unpeeled, good to choice.....	8 1/2	@ 8 1/2
Peaches, unpeeled, fancy to extra fancy.....	9	@ 9 1/2
Pears, standard, # lb.....	10	@ 8 1/2
Pears, choice to fancy.....	10	@ 12
Plums, Black, pitted.....	5 1/2	@ 6 1/2
Plums, Red, pitted.....	7	@ 8
Plums, Yellow, pitted.....	6	@ 8
Prunes, Silver, good to fancy.....	5 1/2	@ 8 1/2
Prunes, in bags, 4 sizes, —@—c; 40-50s, 5 1/2@5 1/2c; 50-60s, 4 1/2@4 1/2c; 60-70s, 4 1/4@4 1/4c; 70-80s, 3 1/2@3 1/2c; 80-90s, 3@3 1/2c; 90-100s, 2 1/2@3c; small, 2 1/2@2 1/2c.	—	—

COMMON SUN-DRIED.

Apples, sliced.....	5	@ 5 1/2
Apples, quartered.....	4 1/2	@ 5 1/2
Figs, White, in bulk.....	2 1/2	@ 3
Figs, Black.....	2 1/2	@ 3

Raisins.

The Mercantile Company, which controls the bulk of the raisin supply, has

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now secured several other considerable stocks, heretofore held by outside parties. As a result of a better control of the situation, prices have been advanced. New prices were made early in the week, showing an advance of about one-half cent on all grades. The insiders claim that there are not over 50 cars of outside raisins now in first hands in California. Some outsiders, however, claim that there are in the neighborhood of 250 cars of raisins still held by outsiders, and that the Mercantile Company may find difficulty in selling its goods at the new prices.

(Fresno delivery except otherwise specified.)

London Layers, 2-crown, 20-lb box.....	1 50	@ —
London Layers, 3-crown, 20-lb box.....	1 60	@ —
Fancy Clusters, 4-crown, 20-lb box.....	1 75	@ —
Dehesas, 20-lb box.....	3 00	@ —
Imperial, 20-lb box.....	2 50	@ —
2-Crown Standard loose Muscatel.....	5	@ —c
3-Crown Standard.....	5 1/2	@ —c
4-Crown Standard.....	5 1/2	@ —c
Seedless Thompsons, 50-lb boxes.....	4 1/2	@ —c
Seedless Sultanas.....	4	@ —c
Seedless Muscatels.....	3 1/2	@ —c
Fancy, 16-oz. Seeded.....	6 1/2	@ —c
Choice, 16-oz. Seeded.....	6 1/2	@ —c
Fancy, 12-oz. Seeded.....	5 1/2	@ —c
Choice, 12-oz. Seeded.....	5	@ —c
Fancy Seeded, bulk.....	6 1/2	@ —c
Choice Seeded, bulk.....	6	@ —c

Citrus Fruits.

The local market continues firm for fancy, large-sized navel oranges. Standard oranges have been selling lower in some cases, and a price of 65c. has been reported for some poor grades. Lemons, in the good to choice varieties, are reported a little stronger. During the greater part of the week the market has been bare of limes, though a shipment of Mexicans arrived on Jan. 31st. These are being held at previous prices. Grape fruit is in better supply, and prices are lower.

Oranges, fancy.....	2 00	@3 00
Oranges, choice.....	1 25	@1 80
Oranges, standard.....	65	@1 00
Oranges, Seedlings.....	65	@1 10
Lemons, California, fancy, # box.....	2 00	@2 25
Lemons, California, good to choice.....	1 00	@1 50
Lemons, California, standards.....	60	@ 75
Grape Fruit, # box, new.....	1 00	@1 50
Grape Fruit, seedless.....	2 50	@3 00
Limes, # box.....	3 00	@4 00

Nuts.

Supplies of almonds are getting lower and at present only odds and ends are available. These are firmly held at the present quotations, with the possibility of a sharp rise before long. The walnut market continues a little easy, though dealers notice that the severe shading of quotations, which occurred some time ago, is now a thing of the past. The supplies are diminishing and it is believed that the market will firm up again very shortly. The shipment of walnuts East continues very light, and it now looks as though the East may be eliminated from calculations as far as the present crop is concerned. Peanuts remain as heretofore, with little prospect of any change.

Peanuts, fair to prime.....	4 1/2	@ 5 1/2
Cal. Walnuts, No. 1 soft shell.....	—	@13
Cal. Walnuts, No. 2 soft shell.....	—	@ 9
Cal. Walnuts, No. 1 hard shell.....	—	@12 1/2
Cal. Walnuts, No. 2 hard shell.....	—	@ 8 1/2
Almonds, IXL, # lb.....	11 1/2	@12 1/2
Almonds, Ne Plus Ultra, # lb.....	11	@12
Almonds, Nonpareil, # lb.....	11	@12 1/2
Almonds, Languedoc, # lb.....	8 1/2	@ —
Almonds, Golden State, # lb.....	8	@ —
Hard Shell, # lb.....	5	@ —

'The Menace of Privilege.'

This is the title of Henry George Jr.'s book on the dangers to the republic from the existence of a favored class just published by McMillan Company of New York. Mr. George strives to show briefly 'how privileges granted or sanctioned by government underlie the social and political, mental and moral manifestations that appear so ominous in the republic. The monopoly of natural opportunities, heavy taxes upon production, private ownership of public highways, and other lesser privileges cause the great inequalities in the distribution of wealth which are evident all about. For these are not powers to produce wealth, but powers to appropriate it.'

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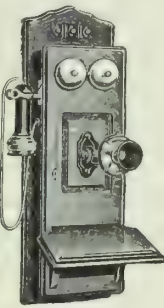
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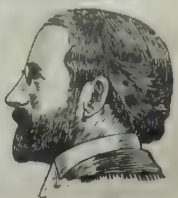
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THE VETERINARIAN.

Lump Jaw and Its Treatment.

TO THE EDITOR: I am troubled this year more than ever before with lump jaw among my cattle and so are my neighbors. I have tried several remedies and experiments, such as lancing it and putting on turpentine. Then I tried bluestone. Then I tried cutting it clear out, which proved generally to be fatal. Last I have tried searing with a hot iron. I don't know the result of that yet. Will you give information on the subject? Also, I have had quite a number of cattle lie down and die for no cause that I could see or explain, without it was want of vaccination. Can you tell me how vaccinating is done or is it safe for a novice to finger with? Can you also name some good up-to-date book on cattle, their diseases, kinds, colors, etc.?—AN OLD SUBSCRIBER, Simmler, San Luis Obispo county, Cal.

None of the remedies or treatments you tried had any chance of reaching the disease and they are therefore not only useless but exceedingly cruel. We shall give below an account of the disease and its treatment. Concerning the mysterious disease you have noticed, you ought to consult a skilled veterinarian who would tell you the nature of it after suitable examination. As for vaccination, write to the parties advertising vaccines in our columns and they will tell you what it is for and how to do it. For a work on diseases of cattle, write to your Congressman and ask him to send you a Government publication entitled, 'Diseases of Cattle and Cattle Feeding.'

LUMPY JAW.—The Oklahoma experiment station had some experience with lumpy jaw, as some of the cattle purchased for experimental feeding showed well-marked cases of the disease some time after they were purchased. The disease is easily recognized and most stockmen are thoroughly familiar with it. Since the disease has the common name of lumpy jaw, from the fact that it most frequently attacks the bones of the head and especially the jaw, many think it does not attack any other portion of the body; but tumors are frequently found in the tongue, in the tissues under the skin and in the internal organs.

By opening tumors that appear in the region of the head and neck, one can be reasonably sure whether this disease is lumpy jaw or not by the character of the pus. In an ordinary abscess or boil the pus is generally thin and watery, while that from the lumpy jaw is thick, yellowish and ropy, and, if the bone is diseased, there will be small, hard particles of bone mixed with the pus.

The cause of the disease is a vegetable parasite or fungus, which is generally supposed to be taken into the body with the food, and in those cases where the bones of the jaw are diseased the fungus probably enters the tissues through some small wound in the mouth, such chances for infection being especially abundant during the period when cattle are shedding or cutting their teeth.

In some cases the tumor may be dissected out where it is located in the muscles or loose tissues under the skin. The treatment employed by the station was the use of potassium iodide. Two things were learned in connection with the treatment, one being that the drug may be given with safety in larger doses than are usually prescribed, and the other that in many cases where the disease is not cured the trouble is that the treatment has not been continued long enough. This is especially true in severe cases where the disease is of long standing. From the experience gained in treating the few cases referred to above the following is advised: Where the animals weigh over 700 lb., give the potassium iodide in doses of two drachms each twice daily until the dandruff shows abundantly in the hair and the eyes become watery. This will usually take from five to seven days. After this condition, which is called iodism, is established, the treatment must be stopped for from five to seven days and then repeated as before with the interval of rest until the drug has been given for five periods in the severe cases and four periods in the milder ones. During the last two periods the amount of potassium iodide may be reduced to two drachms daily. In one case treated the animal appeared entirely well at the end of the third period when the treatment was stopped; but the disease reappeared after an interval of a few weeks and the entire treatment had to be repeated, when it was continued for five periods. The ulcers and the tumors will begin to dry up and the discharge grows less as the treatment progresses, and by the end of the third or fourth treatment it has

usually stopped; but the drug should be given for at least another period. When the above treatment is fully carried out, there will be a very small per cent of the cases that are not completely cured.

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TREES

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FRUIT TREES.

Are grown on a deep, alluvial river bottom, virgin soil, consequently the root system is as perfect as good soil can make them. Our assortment of apples, pears, peaches, prunes, apricots, is more complete than ever.

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Our stock is grown in Exeter, the famous thermal belt of Tulare county. The soil is a rich, deep, black loam, just the kind which develops the highest grade of fruit, as well as the most perfect type of tree. Our assortment consists of all standard varieties of Oranges, Lemons, Pomeles, Citrons, Limes, etc. Carrying out the lines already established in the other branches, we do not confine ourselves to one or two standards and no more, for although it costs money to keep up a stock of many varieties, we want to be on top in this as well as in everything we specialize in the nursery business.

GRAPE VINES.

If you do not know it, you ought to know that we are the largest growers of vines on the Pacific coast. We are not only growers of raisin, wine and table grapes, but we are also making a specialty of vines grafted on phylloxera resistant roots. Our great and enterprising neighbor, Mexico, is having its vineyards devastated by this pest, and we have already sold two orders to prominent vineyardists there, who know what our stock is, consisting of eighty thousand grafted vines. How did we get such orders? Because we had pleased our customers before, so they had no hesitation in patronizing us again.

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Our stock of Texas Umbrella trees branched in all sizes, guaranteed absolutely true to name, is better than ever. We are extensive growers of Poplars, Mulberries, Maples, and all deciduous ornamental trees suited to our conditions.

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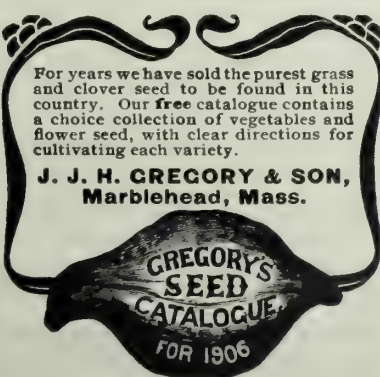
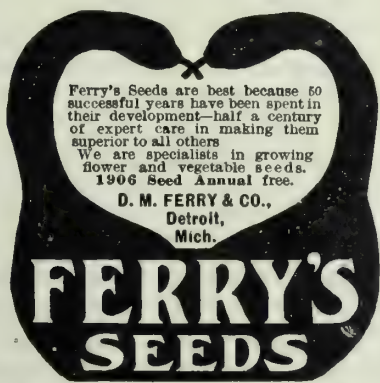
50 General Custer
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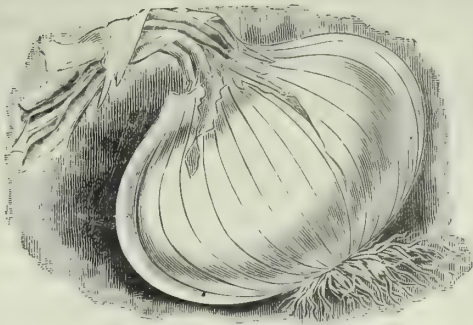
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AMERICAN RIVER, 172.—M. A. D. McDonell; L., Mrs. Laura Hansen; Sec., Miss Carrie Hansen. 2d & 4th Sat. from Nov. 1 to June 1, 7 P. M., June 1 to Nov. 1, 2 P. M.

ANTELOPE, 100.—M. R. A. Pryor; L., Mrs. W. A. Malloway; Sec., Miss Sadye Peterson. 2d & 4th Sat. 11 A. M., school house, Sites.

BENNETT VALLEY, 16.—M. J. M. Talbot; L., P. Hanson; Sec., John Keppel. 1st & 3d Sat. 2 P. M., Bennett Valley Grange Hall, near Santa Rosa.

BOWMAN, 327.—M. W. H. Curtis; L., Mrs. Jennie Burtcher; Sec., Mrs. C. T. Musso. 2d & 4th Sat. 8 P. M., Bowman.

CAPITAL, 305.—M. W. W. Greer; L., Miss Jessie Shaw; Sec., Miss Nellie Burns. 1st & 3d Fri. eve. 8 P. M., Daly's Hall, Oak Park.

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GLEN ELLEN, 229.—M. Robt. P. Hill; L., Chas. A. Kennedy; Sec., Thos. Johnson. 1st & 3d Sat. 2 P. M., N. S. G. W. Hall, Glen Ellen.

GOLD HILL, 326.—M. R. A. Lafayette; L., L. C. Gage; Sec., Chas. L. Miller. 1st & 3d Sat. eve. 8 P. M., Grange Hall, Gold Hill.

GRASS VALLEY, 256.—M. O. L. Twitchell; L., W. H. Bryan; Sec., Mrs. R. S. Twitchell. 1st & 3d Sat. 7:30 P. M., Fraternal Hall, Grass Valley.

LINCOLN, 218.—M. Geo. E. Hyde; L., Miss A. Corstien; Sec., Mrs. R. L. Stevens. 2d & 4th Fri. 8 P. M., Grange Hall, Cupertino.

MAGNOLIA, 261.—M. Mrs. Wm. Gaultier; L., Wm. Higgins; Sec., Miss Gertrude Higgins. 2d Sat. 1 P. M., Grange Hall, Magnolia.

MOUNTAIN VIEW, 332.—M. M. Farrell; L., Mrs. E. J. Farrell; Sec., C. P. Berry. 1st & 3d Sat. eve., Forester's Hall, Mountain View.

NAPA, 307.—M. Mrs. O. E. Borrette; L., D. J. Brown; Sec., Miss Nellie A. Borrette. 1st & 3d Sat. 1:30 P. M., Masonic Temple, Napa.

OAKLAND, 35.—M. D. W. Gilbert; L., Mrs. C. F. Emery; Sec., Mrs. N. G. Babcock. 1st Sat. 7:30 P. M., 3d Sat. 2 P. M., I. O. O. F. Hall, Oakland.

ORCHARD CITY, 333.—M. Dr. E. C. Abbott; L., Mrs. E. W. Waite; Sec., Mrs. O. A. Putnam. 2d & 4th Tues. eve., Campbell.

PENNGROVE, 337.—M. C. E. Parkinson; Sec., F. S. Farquas.

PETALUMA, 23.—M. A. S. Hall; L., Margaret A. Ellis; Sec., Mrs. Ella McPhail. 2d & 4th Sat. 1:30 P. M., K. of P. Hall, Petaluma.

POTTER VALLEY, 115.—M. William Eddie; L., Miss Rose Sides; Sec., W. V. Kilbourne. 1st & 3d Sat. 2 P. M., Potter Valley.

PROGRESSIVE, 308.—M. J. D. Silvia; Sec., Emma Brigham. 1st & 3d Sat. 2 P. M., Redmen's Hall, Healdsburg.

ROSEVILLE, 161.—M. E. A. Junior; L., S. S. Gladney; Sec., Mrs. Jennie Gould. 1st & 3d Sat. 2 P. M., Roseville.

ROWENA, 330.—M. Robt. E. Phelps; L., W. C. Newton; Sec., Mrs. Susie A. Stiles. Every other Sat. eve. 7 P. M., Mt. Hope school house, Zachary.

SACRAMENTO, 12.—M. C. E. Reese; L., Mrs. L. Dudley; Sec., Mrs. Silas Orr. 2d & 4th Sat. 1:30 P. M., Forester's Hall, Sacramento.

SAN JOSE, 10.—M. C. R. Williams; L., Mrs. E. Marcen; Sec., Mrs. Ella I. Saunders. Every Sat. 10:30 A. M., I. O. O. F. Hall, San Jose.

SANTA ROSA, 17.—M. T. J. Pilkington; L., Mrs. M. M. Gregory; Sec., Miss F. L. Gamble. 2d & 4th Sat. 1:30 P. M. from Oct. 1 to April 1, 2 P. M. from April 1 to Oct. 1, Fraternity Hall, Santa Rosa.

SEBASTOPOL, 306.—M. Horace Weeks; L., Mrs. Bonham; Sec., J. McKenzie. 1st & 3d Sat. 2 P. M., Janison's Hall, Sebastopol.

SELMA, 291.—M. Donald Patton; L., Mrs. F. M. Rhodes; Sec., Mrs. O. L. Abbott. 2d & 4th Sat. 2 P. M., Vincent Hall, Selma.

STOCKTON, 70.—M. Wm. L. Overhiser; L., Mrs. J. E. Leadbetter; Sec., N. H. Root. Every Sat. 1:30 P. M., Fraternal Hall, Stockton.

SUNNYVALE, 331.—M. J. F. Spaulding; L., Nettie M. Fuller; Sec., W. C. Beach. 2d & 4th Tues. eve., Sunnyvale.

TULARE, 198.—M. E. Barber; L., J. Tuohy; Sec., Mrs. B. I. Morris. 1st & 3d Sat. 11 A. M., Goldmen's Hall, Tulare.

TWO ROCK, 152.—M. G. W. Gaston; L., J. L. Schweboda; Sec., Mrs. T. G. King. 1st & 3d Thurs. 2 P. M., Two Rock Grange Hall.

WEST PARK, 335.—M. Rev. J. W. Webb; L., Mrs. Minnie E. Sherman; Sec., John S. Dore.

SACRAMENTO COUNTY POMONA, 2.—M. H. C. Muddux; L., J. Holmes; Sec., Mrs. Jennie Stillson. 5th Sat. of months having same, Forester's Hall, Sacramento.

SANTA CLARA COUNTY POMONA, 4.—M. F. H. Babb; L., Mrs. H. F. Tuck; Sec., Mrs. M. J. Worthen.

SONOMA COUNTY POMONA, 1.—M. P. Hansen; L., G. N. Sanborn; Sec., Mrs. A. E. Johnson. 3d Wed. in January, April, July and October.

Tulare Grange Meeting.

TO THE EDITOR: Tulare Grange held its regular meeting on Saturday, the 20th. After the reading and approval of the minutes, a communication was read from the Worthy Master of the State Grange. The Worthy Master has lately returned from attending the National Grange in New Jersey and the State Grange of Illinois. His report of the condition of our Order in those States is very encouraging, as is his recommendation to the members of the Order in California to make further effort to promote membership and subordinate Granges. The Grange needs every farmer in the State and every farmer needs the Grange. No more patriotic, beneficent and unselfish order exists than is the Order of Patrons of Husbandry. Its aim, besides the moral aims of every other good order in the land, is to promote the education and prosperity of the farming classes, and in this way promote the State's prosperity. This surely is patriotic, and for pure, disinterested patriotism the farming classes have no superior.

The subject of the day was taken up—'What are the advantages of an agricultural education to the young man who follows farming?' The subject was very generally discussed, from the Worthy Master, Sister Swanson, to the Gate Keeper. All declared that a scientific educational preparation in agriculture would have been a great advantage to them in the pursuit of their business, and that, although the continued practice and study, in a practical way, of their life work has brought to them a skill that scientific education might fail to give, the lack of the education has always been and is now a great want. It was argued this education should begin in the primary school and be continued through every department of our public schools. It was argued that there is no profession in life but requires an educational preparation, and the profession of farmer is no exception; that the best results in reformatory institutions are obtained by inculcating industry and education, and it should be the study and aim of our teachers and State and county officers to promote those industrial habits before reformation was called for and not afterward.

A resolution was introduced and passed asking the State Horticultural Commissioner to have a State ordinance passed prohibiting the introduction of grapevines or cuttings into Tulare county. Bro. P. D. Fowler, Horticultural Commissioner for this part of Tulare county, spoke on this subject. Tulare county is now free from phylloxera or Anaheim disease. In many counties of the State one or both diseases are known to exist. State and county commissioners hold office to suppress or prevent the spread of all such diseases and prevention, where it can be enforced, is the proper action to take. For anyone in any measure to spread such diseases, or for any county to neglect to prevent or suppress such evils, would be a crime. It is hoped the ordinance will be passed. Further action was referred to a committee of three. The Worthy Master appointed Bros. Fowler, Tuohy and Thos. Jacob the committee.

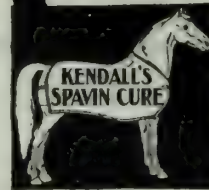
The following question was drawn from the question-box: 'How can Tulare Grange assist in the formation of a local farmers' fire insurance company?' On motion the Worthy Master appointed a committee of three to arrange for such a company. It was argued that every person having property which fire can destroy should insure against it, so that such a calamity will be borne by the community, who will not feel it, and the whole loss will not fall on one sufferer whom it will too often impoverish—but, on the other hand, in the absence of a mutual fire insurance company, or, better still, a State fire insurance, the charges of the incorporated insurance companies, who have organized themselves into a species of trust association, have put

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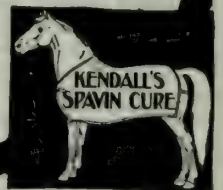
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up the rates of insurance so exorbitantly and put in their policies of insurance so many unjust, one-sided conditions, the average farmer cannot afford to insure with them. There are now in California some 10 or 12 farmers' mutual fire associations. The rate of insurance in those companies is not one-third of the charge of the State Insurance Association, and yet every loss is promptly paid. In other States, where the risk of loss is greater than it is in this State, the loss to farmers' mutual fire insurance associations is much less than it is in California. It was agreed by all present that insurance against loss by fire is a proper business precaution, and that when a mutual fire insurance association is started they will be members of it. The benefit of the present mutual fire insurance companies cannot be gainsaid. Every one of them in the State is a proof of success in mutual fire insurance.

The question to be considered at next meeting, February 3, will be the National Grange subject for February, with an essay by Bro. F. H. Styles—'If all farmers were Grangers, what would be the result?' Also such questions as may be found in the question-box.

More interest is now being taken in Grange work and as a result Grange membership is increasing. J. T.

Napa Grange.

TO THE EDITOR: Napa Grange, P. of H., was highly honored at the first meeting of the year to have the coveted presence of the Worthy Master of the State Grange as installing officer. The interesting ceremony was performed in an exceptionally pleasant manner and the entire proceedings were declared by all members present to be exceedingly noteworthy.

Napa Grange is in a very flourishing

(Continued on next page.)

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Napa Grange.

(Continued from preceding page.)

condition, new members adding their names to the rapidly growing roster at almost every meeting. In the forenoon session, on the date above mentioned, candidates were initiated and, at the noon hour, a very bountiful harvest feast was partaken of by a large number of the members and invited guests.

Then, in the main Grange hall, was presented a carefully prepared programme, very entertaining, participated in by members and others. The State Worthy Master's remarks at this time were greatly enjoyed. There followed a very interesting discussion on creameries. There is an open field and golden opportunity in the immediate vicinity of Napa for the establishment of an industry of this nature. In fact, the dairying business of Napa county can be vastly improved upon and Napa Grange will lend its earnest endeavor to develop the worthy industry.

Much to the surprise of the retiring Worthy Master—Sister O. E. Borrette—the members, striving in some suitable manner to show their appreciation of her long-continued, unselfish efforts to further the interests of the Grange, presented her, with appropriate remarks, a beautiful rocking chair. It was a timely recognition of the loyalty to the Grange work—local and in the broader field—of the worthy retiring officer.

Since its organization several years ago, Napa Grange from small beginnings has steadily grown to a substantial and influential body which is making its impress for good upon the community. The benefit Granges of our State confer upon the several localities in which they are located is inestimable and a flourishing organization of this kind should be found in every farming community within our borders.

GRANGER.

Napa, January 25, 1906.

The 1905 Vintage of France.

The production of wine in France in 1905, as recently estimated by the French Ministry of Agriculture, amounted to the enormous quantity of, roundly, 1,500,000,000 gal., and showed a decrease from the yield of the previous year of over 300,000,000 gal. The original estimate in hectoliters has been reduced to gallons, and is given by regions below, in comparison with the corresponding data for 1904:

THE WINE PRODUCTION OF FRANCE.

Regions.	1905.	1904.
	Gallons.	Gallons.
Northwest	5,018,975	10,140,607
North	6,448,508	10,438,248
Northeast	26,905,950	81,194,467
West	181,622,423	240,215,572
Center	110,887,126	130,886,022
East	199,491,682	171,997,027
Southwest	235,739,044	259,869,514
South	548,447,994	688,711,355
Southeast	178,409,528	219,908,495
Corsica	2,594,154	6,336,262
Total	1,495,565,384	1,819,697,569

The Texas End of It.

Recently we noted the achievements of agricultural college students at the International Livestock Exposition held in Chicago, December 16 to 23, 1905, where unusual interest was centered in competition for the trophies awarded to the agricultural college whose students proved themselves to be the best judges of stock. We had previously the Ohio view of the results. This is the Texas version:

TO THE EDITOR: Thirty-five individuals took part in the contest, five each from the States of Iowa, Ohio, Michigan, Kansas, Missouri, Texas, and five from Ontario, Canada.

When the results were published it was found that the students from Texas had drawn first honors in swine judging, out of 1,500 points obtaining a score of 1,229, while the Canadians were in second place with 12 points less. Ontario was first in sheep judging, Ohio in cattle and also in horses, with Ontario second and Texas third.

The highest total score by any one individual from the seven colleges repre-

sented was made by Mr. John Ashton, of Texas, who obtained 881 out of a possible 1,100 points, Bracken, an Ontario student, being second, with 12 points less than Ashton. Two of the 1904 stock judging teams are now in lucrative positions. Of the 1905 team three members, who will graduate in June, will be in demand by some of the other Southern colleges which are giving particular attention to livestock matters. F. R. MARSHALL, College Station, Texas.

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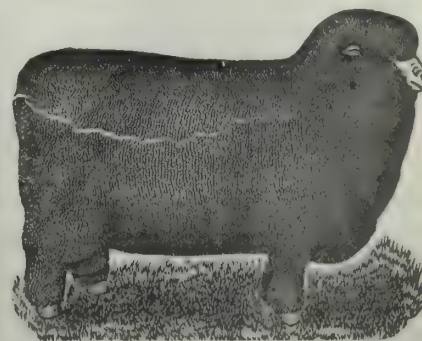


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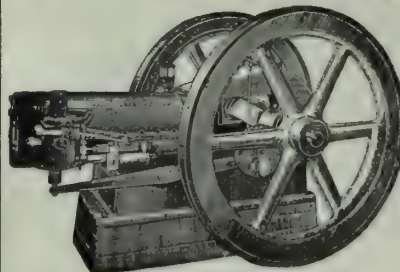
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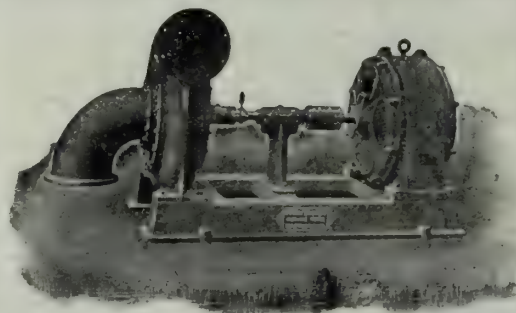
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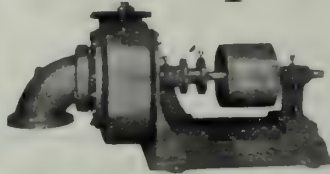
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THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 6.

SAN FRANCISCO, SATURDAY, FEBRUARY 10, 1906.

THIRTY-FIFTH YEAR.
OFFICE: 330 MARKET ST.

Our Fruit Industries as Employers.

Four weeks ago we used interior views in a California fruit cannery to illustrate the fact that fruit-preserving processes had created a great demand for skilled labor, and that the supply was coming largely from the women and older children of the towns, who found the work very pleasant and profitable. No doubt many women are better clad and many children have much more to make their young lives delightful because our fruit industries are devel-

freezing temperatures to the fruit. The very facts that the lemon is largely a winter-maturing fruit, and that great activity prevails in lemon handling during months when zero temperatures are likely to be encountered at the East, should teach that such an open warehouse to give shade and protection from rains would be all that California requires. There is, however, something more tangible than such an inference in the sight of the building itself, which is practically free from side walls and, therefore, open to all outdoor influences. The sight of the men in

delightful labor in the open air has strengthened and prolonged and in the joy which has entered so many homes—the joy of prosperity and of health and the banishment of shadows by this concrete form of California sunshine. Look upon the throng of men which this one lemon enterprise of 304 acres keeps busy and prosperous and able to provide for the wants of those dependent upon them. Although this is, of course, rather a large establishment for a single lemon enterprise, because it is itself a large one, the capacity of the packing house and the num-



A Suggestion of the Opportunities for Skilled Labor Which Our Fruit Industries Afford.

oped to their present estate. It occurred to us at the time that we were telling but half the story, and we now find opportunity to emphasize the service which the fruit industry is rendering the development of the State by providing opportunities for skilled labor by men in connection with the heavier work of fruit growing and marketing. The large lemon-packing house in the picture is the one of which we have already given a number of interior views, that of the Limoneira Company at Santa Paula, Ventura county. The building is 300x100 feet. Some of the lemon curing tents which we have previously described are to be seen toward the back of the building on the left, and the picture generally gives a good idea of safe and economical construction in a country where no snow falls to crush roofs and no cold blasts bring

light clothing and furnished in part with their picking sacks is, perhaps, more convincing even than the sight of the building that lemon growing is an affair of warm winter labor, and the amount of such labor which is required is large.

This last is in fact the point which we would take particular note of at this time. The service which our winter-ripening fruits render the advancement of the State is the complement of the summer service of the deciduous fruits. It would not be difficult to calculate the great number of days' labor which the picking and packing of 30,000 carloads of oranges and lemons afford. It would go far into the hundreds of thousands, but, after we had it, it would be only a partial value of the service. The ultimate estimate of value would be found in the lives which

ber of employes it either directly or indirectly provides for is but an index of what can be seen all through our great citrus-fruit regions during the winter months. Really a very respectable fraction of our town populations in the citrus regions are directly supported by the chance to labor, which the citrus grower provides by his output. And not only this direct support is to be considered, but the indirect support of merchants, mechanics, transportation employes, the upbuilding of trade, the stimulation of building, the organization of banks, the support of all professions, must be included in the estimate of the value of the fruit growers to the State. This is a matter which is not thought about as often as it should be, and this is our reason for suggesting it at this time.

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The Week.

Balmy weather has continued and blossoms are advancing, while verdure now covers the valleys and foothills. The season is so far along that only the danger of occasional local frosts is to be apprehended. The growing time has evidently come to stay for months to come. We recently indulged in the regular California gratulation over the proper expectation of such a course of affairs in contrast with the disaster which had to be feared as a sequence of midwinter mildness at the East, and the disaster came almost before the fear could be expressed. Since then the Eastern winter has continued, with a fearful February, as the following Washington records show:

The cold wave from the extreme Northwest moved over the Mississippi and Ohio valleys, the lake region and over the Atlantic States generally. The mercury has fallen considerably as far south as Savannah. In northern New York reports show as low as 20° below zero at various points—30° below at Rockliff, Ont.; 30° below at Sault Ste. Marie, Mich.; 10° below at Duluth, Des Moines and Keokuk, and 16° below at Moorhead, Minnesota.

The effect of this upon plants partially awakened to activity needs no description. The effect upon people is, perhaps, even more clear. Our advices from all parts of the State are of inquiry for lands in considerable tracts. It is reported that at least 75,000 people who came to California last year stayed here, and it is believed that a great many more people will come during the present year to make their homes in the State. One expert in transportation estimates that at least 50,000 people will come in the early spring and at least 100,000 people will come to settle during the present year.

The Sacramento Valley is apparently to share largely in this accession of population, although one cannot go far into the San Joaquin without seeing the activity of new-comers there. In fact, the people are spreading everywhere throughout the State. One bunch of people a thousand strong from Iowa and Nebraska is negotiating for lands in the Sacramento Valley, and the start is expected to be made when the colonist rate is put into effect. The people who are coming are farmers who have accumulated something and are able to sell out to advantage. They know their business, and they will prove valuable to California because they are an independent and masterful class.

This is only one of the indications of new life for the

Sacramento valley. It is to be regretted that it did not begin twenty years ago, but something was evidently needed to get the country ready for it. The new development movements are not only attracting people from abroad, but are preparing the large land owners to welcome them. And this should go farther. There have been several very significant meetings in the valley during the last few weeks, and there is arising a great pressure toward subdivision and settlement, so that there is no danger but that good land will be available for all who want it. The old attitude of the valley is disappearing. In an irrigation meeting in Sacramento last week, in which the State officials and the experts of the National Government participated, the following facts were set forth:

The National Reclamation Service has acquired a vast fund of knowledge regarding the Sacramento valley and watershed and is steadily acquiring more data. Engineers of the service are making plans for irrigation works, including storage dams, diverting dams and laterals. The commencement of construction on this great system or some portion of it must await the initiative of Sacramento valley people and, of course, must depend upon the funds available for work in addition to that already undertaken.

The fund of the reclamation service is steadily growing, and the land owners of the Sacramento valley are awakening to the advantages to them of having the Government spend its money to put the water on their land. These two conditions indicate that some day irrigation construction by the United States Reclamation Service will begin in the Sacramento valley. When this time will be depends, perhaps, more upon the people of the valley than any other factor in the case.

These statements are not new; they have appeared before in these columns and elsewhere, but to attract attention a certain amount of reiteration is essential and we propose to do our share of it, for the population of the valley and the extension of the joys of California rural life to hundreds of thousands, is a consummation to be desired.

Everyone will read, of course, the article upon another page, which Mr. Luther Burbank prepared for the recent fruit growers convention at Santa Rosa. He gives very frankly and clearly his idea of the best way to secure a walnut orchard and naturally much attention will be paid to his suggestions. It may, of course, ultimately appear that his way is the right way, but we cannot refrain from the statement that a very insignificant fraction of the immense acreage of California walnut trees has been grown that way. Our commercial product is almost entirely made upon trees grown in the nursery and transplanted to their permanent places. We believe that is a good way and that the gain in time and in uniform development of the trees is sufficient to warrant a continuance of the method. Those who enter upon sprouting nuts in place and subsequently grafting are apt to overlook the difficulties of carrying such trees amid other crops or the cost of giving them the ground and maintaining cultivation for their benefit alone. What a skillful grower might undertake with such area as he could personally handle during the growing and grafting period is no criterion of the results which will follow such an undertaking when the personal element is taken away. We believe the nursery is the place to grow and to graft all kinds of trees which are to be planted on a large scale. We do not say that Mr. Burbank's way is not a good way. It is good if the work is done as he would do it, but we do not think it is the best way for the general planter.

The Yuba City ladies dance for some purpose, and as we fully believe in dancing as a social pastime we do not look upon the proceeds as tainted, but would welcome them for the promotion of other praiseworthy ends. At a recent meeting of the Woman's Improvement Club of Yuba City there was read the report of the committee which was in charge of the big dance recently given, which showed that over \$66 had been cleared. The president appointed a committee to arrange for the planting of some white elm trees in front of the court house, and the ladies decided to give another grand ball in the interest of tree planting. It is a good enterprise. Proceed with it, ladies; the trees will grow while you are dancing!

QUERIES AND REPLIES.

For Preservation of Oaks.

TO THE EDITOR: About a year ago you published a very interesting account by Prof. Jepson of work done on the Berkeley oaks. I remember that it advised the use of coal tar for covering wounds caused by amputation. I have been told that a better application is made of one-third linseed oil, one-third beeswax and one-third resin, melted together and put on warm. Is this as good or better than coal tar?—SUBURBAN, Oakland.

The compound which you describe is one of the common grafting waxes and is thoroughly satisfactory for that work where the protection is required but a limited time. These waxes, however, will scale off in a few months and are, therefore, unsuited for use on oak trees. The preparation is, also, exceedingly expensive as compared with the coal tar application and its cost would preclude the use of it on a large scale. The coal tar is to be preferred, both on account of its cheapness and availability, but also because it has a certain penetrative power, which the grafting wax has not, and will exert its influence upon the exposed surface for many years. We have on the University grounds some applications of it nearly ten years old which are still effective in preventing the checking and decay of the exposed surface.

Cemetery Plants.

TO THE EDITOR: Please inform me if the 'Lippia,' which you spoke of a few weeks ago as growing freely in hot, dry places, would be suitable for planting in a cemetery lot where it is very hot in the summer and could only be watered once or twice in a week? Can you suggest flowering or ornamental shrubs suitable for the same location?—F. C. S., Yuba county.

Lippia would be good, but it is not as handsome as grass. If you can water well once a week you ought to be able to make a good lawn if you are willing to do the mowing also. Lippia will make a fair green with much less trouble. Your nurseryman can advise you about shrubs, etc. The list is too long for us to supply.

Fruits on Shallow Soil.

TO THE EDITOR: I have a piece of land gradually sloping south which has rich red soil from 18 in. to 3 ft. deep, beneath which is a very sticky clay (when wet), under which is hardpan or bedrock. What I want to know is: is it possible to raise grapes on a small scale by irrigating from wells on such land? My intention is to plant olives 35 ft. apart and grapes between, 7 ft. apart, and after bearing, if necessary, remove the one that does not give satisfaction. Also, what kind of grape do you think would do the best—would like a variety? Also, what kind of olive would you recommend on this land, the best kind for pickling and best kind for oil?—BEGINNER, Wheatland.

We would not select just such land as you describe for fruit growing, but you can grow what you want for your own use quite satisfactorily if you irrigate just right and do not either drown your plants or allow them to perish from drying out of the shallow soil late in the summer. Well water is all right. Grapes will probably do better than tree fruits, though you can do something with nearly all fruits if you give just what water they need—frequently, in small amounts, so as not to swamp the soil. Grow whatever kinds of grapes you like best. Probably the best olive for you is the old Mission variety.

Tree Tonic for Specific Purpose.

TO THE EDITOR: My Valencia trees—due to scant rainfall to produce a bloom, I think—bore a very light crop last season. This year they are carrying an overabundant load. I am exceedingly anxious to produce a reasonable crop next year and have been debating the advisability of trying the frequent application of small doses of nitrate of soda, thinking I might thereby stimulate them into setting a crop this spring and keeping them from overbearing the following year. They have been reasonably well fertilized with barnyard manure.—GROWER, Los Angeles county.

We regret to say that we cannot give you any suggestion that is of any value concerning the particular problem which you desire to solve. Small doses of nitrate of soda, providing moisture enough is present, certainly will have a stimulating effect and possibly produce just the particular kind of vigor which you desire. One would think that well-fertilized trees, especially where barnyard manure is used, would have nitrogen enough for their growth pro-

viding there was surely enough water. You do not speak of irrigation, but of rainfall. Is it possible you are endeavoring to grow orange trees without irrigation? That experiment was carefully tried 25 years ago at Pasadena and elsewhere, and the conclusion was that, although a young orange tree might be brought up to bearing age by good cultivation to conserve rainfall, no satisfactory fruiting could be gained upon bearing trees, unless the rainfall was supplemented by adequate irrigation. Possibly you know of this already. We only allude to it because we cannot see any other reason why your trees, well cultivated and well fertilized, should not bear well on good soil unless there was a shortage of moisture.

Almond on Prune.

TO THE EDITOR: Please give me information how and when to bud or graft over prune to almond trees, and, when so changed, do they make desirable and profitable almond trees?—GROWER, Lower Lake.

You can graft the almond upon the prune by the ordinary method of top-grafting, but there will be quite a question as to whether the combination will be ultimately profitable. You should be sure that the almond is worth growing in your locality, which would not be true for Lake county generally, as the occurrence of spring frosts with such an early bloomer as the almond would destroy the crop. The almond on the prune would also make less growth than it would upon its own seedling stock. Of course it would be interesting to graft a few trees to see if you could get a home supply of almonds, but for commercial production in your district the chances are decidedly against almonds, as stated.

Policy With Peaches.

TO THE EDITOR: I have an opportunity of getting several thousand 2-year-old seedling Muirs, and am very anxious to get them planted this year. I wish you would suggest some way in regard to grafting or budding them, and at the same time get them set out this year. Do you consider it safe to set and graft them this season? These are about all I can get, as it is almost impossible to get good Muirs.—FRUIT GROWER, Stanislaus county.

Peach grafting is very difficult and uncertain of results and disappointing as a rule. For this reason very little of it is done and the propagation of the peach is wholly by budding. You could plant out two-year-old seedling Muirs and cut them back well, so as to force plenty of new growth, put in buds next July or August in those shoots which seem to be best calculated to make a good form of tree, and then by careful training produce quite uniform and satisfactory growth. But, on the whole, two-year-old peach seedlings, unless they were re-set in the nursery at the end of the first year, are not very good to transplant and usually better results could be attained by getting some one to grow you a fine lot of June buds this year and plant out next winter in orchard. We believe that, as a rule, these young trees will give more satisfaction and cost a great deal less and at the same time be better at three or four years old, than anything that you can do with two-year-old seedlings transplanted now.

Eucalyptus in Humboldt County.

TO THE EDITOR: Can you tell me the variety of eucalyptus trees that is best to plant for a small forest, those that are quick growing and suitable for firewood, posts, etc.? What other tree or trees are good to plant with it for the same purpose? Can you tell me the best place to get seed?—READER, Ferndale.

Have you seen eucalyptus trees growing in your vicinity, so that you know that they are hardy enough to stand the low temperatures which you may sometimes have? If not, it would not be wise to plant eucalyptus except on a small scale for trial; but if, however, the eucalyptus are known to do well, the varieties which are best to plant for forest purposes are *Eucalyptus viminalis* and *Eucalyptus rostrata*. They are among the most hardy of their kind. They make good fuel, but no eucalyptus tree makes a good post, because, unless successfully treated with some preservative, it will not endure long in the ground. In planting out forests, you ought to place the young trees near together, say eight feet each way, and then cut out part of the trees, as they get large, and it is not a good idea to plant any other trees with the

eucalyptus for such purposes. You can get seed from any seedsman with whom you may deal, but it is usually better to buy small trees, unless you have had experience in growing trees from seed; or buy some trees for quick results and plant some seed for experience.

When to Spray for the Peach Worm.

TO THE EDITOR: My peach orchard is affected by the peach worm. A bulletin from the State University says spray as near March 2nd as possible. The investigations upon which it is based were conducted in Placer county. Would the same time be right for the foothills of Tulare county? Is there anything later on the subject than the bulletin referred to (No. 144)? Any further information would be appreciated.—E. B. H., Visalia.

We cannot find such an exhortation as to date as you mention. A specific date would not do for different years in the same localities, nor for different varieties in the same locality, and certainly it would only be by chance that it would do for any other locality. The bulletin states the way to get at it everywhere as follows: "The time to make the application varies with the variety. It should be done when the buds have begun to swell perceptibly, and it may be delayed, without serious injury to the tree, until after the blossoms have begun to appear." There may be some blossoms killed, but the tree can usually spare a good many; but, of course, the spray should not be delayed until too many are showing color, and certainly not after opening. You must watch the trees, not the calendar.

Ornamental Trees and Alkali.

TO THE EDITOR: We are planning to set out a number of shade trees in Oxnard this spring, and would be pleased to have you advise as to whether or not the Cork Bark elm will make satisfactory growth in land that is slightly alkali. Would also be pleased to have your recommendation in regard to other varieties which will make successful growth in land of the nature referred to.—PLANTER, San Francisco.

We have no record of the tolerance of the Cork Bark elm for alkali. Our impression is that it is quite resistant. It is a pretty tough tree against all sort of difficulties. The trees which in the University experiments have resisted most alkali are the California fan palm, the date palm, the Oriental sycamore or Plane tree, and the Eucalyptus amygdalina. The tree which seems to endure more alkali than any other is the Koolreuteria or Chinese Varnish tree. It is, however, rather a small tree and may not serve the purpose you have in mind. The Oriental sycamore, or Plane tree, is splendid for shade or ornamental planting and should be much more widely known in California. There are probably many other trees which readers can commend for alkali resistance. We shall be glad to hear of them.

Peaches and Figs.

TO THE EDITOR: We are intending to plant 20 acres of figs and peaches. Have been thinking of planting the peaches alternately with the figs, putting the figs 50 ft. apart and the peaches between, cutting out the peaches when the figs need the room. What do you think of the plan? We know practically nothing about fruit raising from experience. Our soil is some sandy, though it is called first-class. It is in the Salida district, northwest of Modesto, on the Salida road. Can you tell us where the Calmyrna fig tree can be bought most reasonably?—BEGINNER, Modesto.

Your plan of interplanting figs and peaches is a good one, as your soil and climate suit both. Both fruits are now quite profitable in your district, and as the fig will undoubtedly prove the longer lived you can remove the peaches after a few years, bearing, if you find the behavior of the figs to warrant it. As for the fig trees you will have to correspond with the nurserymen on that subject.

A Rainstorm of Restricted Area.

TO THE EDITOR: On Sunday P. M., a Lower California or Sonora rain passed over Yuma into the valley of the Colorado and traveled northwestward. Yesterday noon (Monday) it was noticed by dark clouds over our easterly Coast mountain range; at 3 P. M. it struck the town, with some thunder, giving a full 1-in. rain; at night another installment followed, with little over a 1-in. rain. At Santa Barbara and San Luis Obispo the storm had tapered off very much. This is the third winter in succession that these

southerly storms are moving so far northward—something unusual in persistency. Whenever this condition prevails, later storms from the northwest will prevail that will readily trend down the coast, because a low barometer hangs over the lower coast—a necessary condition for these storms—but which otherwise will attract northerly storms also whenever they prevail. L. E. BLOCHMAN.

Santa Maria.

WEATHER AND CROPS.

Report of the U. S. Weather Service for Week Ending February 6, 1906.

ALEXANDER MCADIE, Forecast Official and Section Director.

Sacramento Valley.

Warm and clear weather continued during the week, and conditions were favorable for farm work and crops. Wheat and oats made rapid growth and are looking well. It is reported that early sown grain was not materially injured by the drought, but the grain acreage in some places will be less than last season's, owing to lateness of heavy rains. Some of the low lands are still too wet for cultivation, but in other places plowing and seeding are progressing rapidly. Green feed is making an excellent growth and becoming quite plentiful in some sections. Stock are in better condition and steadily improving. Deciduous fruit buds are advancing rapidly and orchards and vineyards are in first-class condition. Pruning is completed in some sections. Strawberries are not very promising except in places where liberally irrigated.

Coast and Bay Sections.

The weather continued warm and clear most of the week, with considerable cloudiness at the close and light rain in some of the southern districts. Early grain is looking well and making excellent growth, with prospects for a good crop. Plowing and seeding are completed in some sections and progressing rapidly in others. In many places grain acreage will be larger than last season's. Green feed is plentiful and of good quality in nearly all sections, and stock are doing well. Work is progressing in orchards and vineyards. Oranges are maturing rapidly in the Santa Clara and Sonoma valleys; at Cloverdale the crop is lighter than last season's, but the fruit is of excellent quality. Peach, almond and loquat trees are in blossom in the vicinity of San Luis Obispo.

San Joaquin Valley.

The weather was warm and favorable for the growth of all vegetation during the past week. Grain and grass have made rapid growth and are in excellent condition. Plowing and seeding have progressed rapidly and are now drawing to a close. Almond trees are blossoming in some localities. Pruning and cleaning up orchards and vineyards are well advanced, and a large acreage is being prepared for planting new vines. Green feed has become plentiful and stock are in fair condition and healthy. Sugar beet planting is progressing. Packing houses continue busy with the raisin crop, but not so active as last week.

Southern California.

Warm and clear weather prevailed most of the week, with cloudiness and light rain in some sections at the close. Dry easterly winds in some portions of Orange and San Bernardino counties were slightly injurious to grain and grass, but in other respects conditions were very favorable for all growing crops. Early grain is making rapid growth and looks strong and thrifty. With normal rainfall and favorable weather through the season, the grain crop will be larger than last season's. Plowing and seeding are still in progress in some sections. Potato planting has commenced. Green feed is plentiful and stock is in good condition. Oranges in most sections were not seriously injured by recent frosts. Deciduous and citrus fruit orchards are in excellent condition. Peach trees are in bloom.

EUREKA SUMMARY.—Conditions were favorable for crops. Farmers are busy plowing and sowing oats. Grain is healthy and making rapid growth. Grass is doing well and pasturage is much improved.

LOS ANGELES SUMMARY.—Warm weather caused crops to grow very well, but rain would be beneficial, as there is considerable complaint of drying winds robbing the soil of moisture, though plowing and seeding continue, in hope of a prosperous season. Some peach trees are blooming.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, February 7, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.	Total Seasonal Rainfall to Date.	Total Seasonal Rainfall Last Year to Same Date.	Average Seasonal Rainfall to Date.	Maximum Temperature for the week.	Minimum Temperature for the week.
Eureka.	.00	17.72	22.64	26.71	64	40
Red Bluff.	.00	10.43	24.24	16.17	76	43
Sacramento.	.00	8.42	13.73	10.61	68	44
San Francisco.	T	6.87	16.02	13.89	71	51
San Jose.	.01	6.14	11.57		74	38
Fresno.	.00	3.60	7.91	5.09	70	40
Independence.	.02	3.56	1.65	2.39	66	36
San Luis Obispo.	.38	8.74	14.27	12.29	82	44
Los Angeles.	.39	7.45	10.89	8.59	82	50
San Diego.	.29	6.93	8.01	5.39	76	52
Yuma.	.37	3.84	2.33	2.19	78	52

CEREAL CROPS.

Cereal Improvement.—III.

By GEO. W. SHAW, Assistant Professor of Agricultural Technology, University of California, at the State Farmers' Institute in Berkeley.

For several years past the experiment station has been testing, in a limited way, introduced varieties of wheat and other grains, with the especial object of finding a wheat which would maintain its desirable milling qualities and at the same time possess the other factors desirable from the standpoint of the grower. The trials have been such as to show that the task is not an easy one. The new plan will enable a much wider and more extensive trial of varieties, and in a manner in which much more accurate and practical tests can be given.

On the several trial stations a very large number of varieties are being thoroughly tried out, not only as to their ability to maintain their gluten content, but also careful record is being made as to their yield per acre, straw characteristics, resistance to shattering, rust and drought, and their adaptation to soils; for each of these is a factor which must be considered, and some of which are even more important to the grower than the matter of gluten. Suffice it to say that it is not proposed to omit any of the points deemed important in the commercial production of wheat either from the milling or shipping standpoints.

The judicious selection and introduction of new varieties is a matter of much importance, but it is of such a nature that the farmer alone cannot and will not extensively conduct experiments to try out any large number of varieties to ascertain those which have desirable qualities. This can only be done through the agency of the experiment station. Last year on the Yuba City station 275 standard varieties of winter wheat were grown, 65 varieties of durum or macaroni wheat, 66 hybrids, besides 65 standard varieties of barley, 12 standard varieties of oats, nearly all of which were also duplicated at the Modesto station.

For the coming season nearly all of these varieties will be again tried, after which the large part will be discarded, only the more promising being used for further experiment on a larger scale.

PROMISING VARIETIES.—Of the grain grown last season some are of exceedingly good promise. Prominent among them may be named the bread wheats—Chul No. 2227 Fretes No. 1596, Allora No. 1698, Japanese 3 No. 1181, and also several varieties from India and Arabia—all of which withstood the extreme rust conditions of the season much better than the more common sorts. Mention should also be made of the well-known Kansas Turkey wheat, which gave valuable indications in this State last season, as did also Kharkoff winter wheat, which is closely allied to the former, both of these wheats being hardy, withstanding drought very well. They require, however, rather early planting to give the best results. In addition to these there were varieties of durum and macaroni wheats which gave exceedingly valuable indications, prominent among which may be named Arnautka and Kubanka. Of the other cereals special mention should be made of the 60-day oat, which is much earlier than the ordinary oats, and thus is enabled to largely escape rust and other fungous troubles when other varieties are badly affected, and the same may be also said of the Belgian winter oat.

Two Algerian barleys also gave great promise, especially for desert conditions. They are also reputed to be more tolerant of alkali than other sorts. Of this latter matter, however, we have no direct knowledge.

While the general method for the trying out of introduced varieties is sufficiently self-evident, that for the development by selection is neither so apparent nor well understood by the public. Still it involves the application of principles long since recognized in the breeding of animals.

BY SELECTION.—The basis of breeding by selection is the variability of individual plants. There are occasional plants of wheat, which, upon being multiplied into varieties, yield larger crops than the parent kind. Where variation occurs improvement may be effected, and a comprehensive systematic plan carried out for a series of years is well-nigh certain to materially increase the productiveness and quality of wheat, or any other crop.

As soon as preliminary trial has shown a variety to possess desirable characteristics a special planting is made, and by some suitable method the choicest plants which are the most suitable for mother plants selected. From these selected plants a hundred or more selected seeds are planted, from which will be selected the strongest and choicest to serve as mothers to continue the breeding. The seed from these selected plants is now used in bulk to seed a small plot. From this seeding there will generally be obtained a sufficient quantity of seed for a twentieth of an acre plot, from which on the succeeding year, if the variety proves promising, there will be sufficient seed to supply other stations. By testing the variety several times the real characteristics of the plant, as to average yield, etc., can be determined. At this stage at least a portion of the

varieties can be discarded, and only the more promising ones retained. The field tests are continued for a few years, and a new wheat disseminated when it has been fully demonstrated that it is of special value for any particular locality.

Thus it can be seen that work of this character cannot be expected to yield immediate returns. Permanent improvement can come only through the most careful and systematic work conducted through a series of years.

This is, in general outline, the plan to be followed in trying out and selecting new varieties for the improvement of wheat in California.

BY CROSSING.—The development of new varieties by crossing followed by selection has some features not included in the above outline, where selection alone is depended upon. In the latter method stocks for crossing varieties are first secured and introduced into the wheat nursery from bulk seed, and subjected to rigid selection for a short period, so as to secure from these the very best individual plants for parents of the crosses, so that time may not be lost upon weak varieties, nor on weak individuals of good varieties.

The stocks to be used for breeding purposes are now grown in the nursery, and when approaching the flowering period the superior plants are selected and marked. From some of the largest spikelets all the florets are removed except a few of the strongest ones. This work has to be done very carefully just before the florets are ready to bloom in order to prevent self-fertilization. When all the spikelets except a few in the center of the spike are removed, the small florets in the center of these are also clipped off by means of dissecting scissors, leaving only a dozen or so of the stronger florets of the several spikelets. From every one of these flowers all the anthers are removed very carefully by means of tweezers, so that no pollen may be left within the floral envelope. The anthers having been removed, the spike is now covered with tissue paper, tied loosely above and below, to prevent the entrance of foreign pollen. Pollen from the plant selected for the male parent is secured by selecting anthers which are ripe, as shown by their yellow color, and by the ease with which the pollen separates itself when the sacks are broken. It is evident that extreme care must be taken to prevent the least injury to the organs of the plant by any undue rough usage. Great care is of course taken to protect these crossed plants from any injury from this time on, lest all time be lost.

Each kernel of wheat in the manipulated spike now becomes a mother plant, and is used in the following year in the nursery under an individual number. Thus the new variety is started with but a single grain of wheat. The second year a hundred, more or less, of the seeds of the individual plants of the first generation are planted, and any stocks which do not appear reasonably strong are discarded. After selecting the very best of the type now started the course takes the same direction as first outlined for improvement by selection alone.

ACHIEVEMENT.—As to the time required for development, it may be shown from the results obtained in the development of a special type of wheat which has added much to the value of the wheat industry of Minnesota. The type known as Minnesota No. 163 was originated under this system of rigid selection in 1889. During the first two years only one seed was planted in a hill, that the best plants might be selected. For the next two years it was planted in the nursery, to secure seed for making plat test, and then followed six years in which it was planted in competition with Bluestem and Fife, commonly grown varieties in that region, and the average for that period for the new variety was 29.2 bu. per acre, against 25.2 bu. for Fife and 24.4 bu. for Bluestem—all being grown under the same conditions of soil and cultivation.

There is no difficulty for us to grow a starchy wheat in California, and with the proper attention paid to seed selection, using large, plump and clean seed, and careful attention to the rational handling of the land, we may reasonably expect larger returns from wheat growing. The most serious trouble is in securing a satisfactory gluten wheat for milling purposes—one which under California conditions will maintain its quantity and quality of gluten.

It may be said that no high gluten wheat has yet been found which persistently maintains its character under our conditions, although some of those named above offer encouragement.

There has been much discussion as to the real cause of this rapid change from a glutinous to a starchy type of wheat and many conflicting statements made. The real facts, however, have yet to be found. Many have claimed that our method of harvesting the grain had much to do with the matter, but the real truth is that there is no real evidence that this is the case. That this change does take place, however, and in many cases rapidly, there is no question. Attention is being particularly concentrated on the effect of time of cutting for the coming crop.

Numerous varieties of wheat of both the bread and durum types grown in California in 1905 have been separated into glutinous and starchy kernels and these have been planted separately. At the end of the season a portion of the crop will be cut in the

hard-dough stage and at intervals thereafter to determine any progressive change that may take place. The percentage of starchy grain in still other samples have been determined and will be determined again at the hard dough stage and finally after standing in the field, as does other California grain. From the multiplied and carefully observed data thus obtained, we hope to be able to settle this point conclusively.

It may be said there seems to be a great difference in varieties of wheat as to rapidity of change in the direction and also among different heads on the same plant.

The contract seems to be great between, for instance, the durum (Arnautka and Kubanka) grown under the same condition. The former retained its character almost perfectly, while the latter underwent great change, although the latter has some other exceedingly desirable characteristics for many sections of the State—especially the fact that it is highly non-shattering, which, taken together with its marked rust-resistant qualities, probably due to its early maturing, render it of special interest—which is also true of many of the durum or macaroni wheats.

The fact remains, however, that our millers are not generally equipped for conveniently handling so hard wheats. Yet the type is one in which lies our greatest hope of salvation, and one which we must grow and will grow in increasing amounts. About 4,000,000 bushels of this variety were sown in western Kansas in 1903 with most excellent results, and it is reported that the acreage is rapidly increasing. The millers are preparing to handle the wheat, and it is only a question of time when this type of wheat will be one of the staples of the market.

In this industry, as in many others in California, immense financial considerations are at stake, warranting some expense and effort, and the writer doubts whether any other single line of investigation in the agricultural field promises wider usefulness than that here described. Dairying and general farming should and will make inroads upon wheat raising as a single farm crop, yet the wheat crop will always be an important factor in agricultural operations. The present average yield is too low, and the enterprising grower wants more. Better seed and better preparation for the crop will produce the desired result—at least, will much improve the present conditions. The miller wants wheat of higher gluten content. The selection of the right kind of seed and the planting of it in the right localities will much improve the industry in this direction.

ENTOMOLOGICAL.

New Entomological Laboratory of the State University.

By MR. S. E. WATSON in the *Produce Weekly*.

Prof. C. W. Woodworth, associate professor of entomology, and W. T. Clarke, assistant superintendent of Farmers' Institutes, entertained the visitors to the new laboratory during the recent State Farmers' Institute in Berkeley, and explained the development of this department to its present importance. Prof. Woodworth, in an informal address, said that the new entomology is strictly an American subject, and here it has become primarily an economic science in its application to agriculture. A number of years ago the first course in economic entomology was given at Harvard, before there was much to include in the way of instruction. It has grown from that beginning until most of the larger universities give such a course. In a recent visit to the large universities of Europe he had found but one that included the subject in its curriculum.

In California, Prof. C. H. Dwinelle was the first instructor, and he was succeeded by Prof. E. J. Wickson, when an hour a week was given to instruction. Prof. Woodworth, fifteen years ago, took up work and his time is now entirely given to instruction at the College of Agriculture. During the past year the number of students enrolled has been from 200 to 250 in each of the two terms.

The construction of a special building at the State University is an evidence of the importance of economic entomology in California. It is the first building anywhere to be devoted to the teaching of entomology, though half the States have insectaries at their colleges. This building and equipment is not fully completed. Its basement will contain a spraying laboratory and in the attic an apiary for the instruction in bee keeping will be installed. The first floor contains the lecture room and general laboratory, where about eighteen students can be accommodated, facing the windows.

The second floor has a hallway, with five special research laboratories on the north, for advanced students, who must show decided ability to secure the privileges. Each of these will have exclusive use of the small rooms and be able to carry on work without interruption. On the south side is the office, library and seminary room, adjoining which is the private office of Prof. Woodworth, with his special

research laboratory and stenographer's room. A taxonomical laboratory, where insect collections are kept, occupies the remainder of this floor.

The north side of the third floor contains a large room, which will be used as an art room for the preparation of drawings, exhibit of plates, with tables for lecture purposes. The anatomical, photomicrographical and physiological laboratories occupy the south side. Connected with the latter, on the west, is an insectory, with hot, medium and cold rooms. A feature of the anatomical room is the paraffine bath and microtomes, capable of slicing specimens of insect tissue for the microscope. These microtomes are delicate enough to cut 25,000 slices to the inch, though 5,000 is the ordinary thickness.

None of these rooms are yet fully equipped. The hot room of the insectory will be kept at a tropical temperature, and in this and the cold room, at normal temperature, the study effect of temperature on development experiments will be made. In the physiological laboratory the effect of poisons, sprays and fumigation may prove to be among the most useful lines done by the department.

Mr. W. T. Clarke, whose work has been mostly at the Institutes until the present school year, spoke upon his conceptions of the entomologist's work, particularly in the field. First, there should be appreciation of and enthusiasm for his work; second, training and knowledge of the subject; third, natural ability and adaptability; fourth, patient enthusiasm that will enable him to meet the outside man on his own ground and give consideration to his point of view. Mr. Clarke elaborated on these topics and impressed the visitors with his practical ability and earnestness.

Prof. Woodworth called on Prof. J. M. Aldrich, of the Idaho University, who said that he believed that the establishment of this laboratory, the result of Prof. Woodworth's efforts, would give dignity to the science of entomology, which had heretofore been regarded as bugology only. This is the most important advance that has taken place in this branch of instruction in the entire country.

Prof. A. C. True, director of the office of experiment stations, concurred in this view, and congratulated Prof. Woodworth. While this is obviously the largest laboratory of its kind, he was specially pleased with its complete arrangement for study and work.

Mr. H. P. Stabler, of Yuba City, said that he congratulated himself as a fruit grower on the achievement of Prof. Woodworth. The fruit growers of the State are the ones to be benefited by the establishment of this fine building, and they should be congratulated, rather than the professor. He said that, representing one of the thirty-five counties having horticultural commissioners, he appreciated the value of such an institution, where their needs could be attended to and their work directed.

Prof. Woodworth then explained what had been done by his department in mosquito investigation, upon which an interesting bulletin is in preparation.

After the remarks the visitors were shown the different rooms and present equipment.

SHEEP AND WOOL.

The Merino Sheep.

By MR. ROSCOE WOOD, in *The American Sheep Breeder*.

The oldest and bluest-blooded race of domestic animals in this country, the Merino sheep, has already inscribed on history's pages a story covering more than a century and replete with interest for every sheepman. Where in all the agricultural history in this country is there any breed that can compare with them? Ever fostered by men of royal blood, introduced to America by leading statesmen of the time, the Merino has ever been subject to the caprice of fickle Fashion, now riding the crest of the wave of popularity and now buried beneath its entire treacherous power. And through it all, progress, improvement, was continuous, varying in celerity and amount according to the power of popular demand and profit.

Wool \$6 per lb., \$3 per lb., \$1 per lb., 50c. per lb. Merino breeders took a sheep that sheared 9 lb. and they developed a sheep that sheared 44 lb. They took a carcass that weighed 100 lb., and they made one that weighed 300 lb. They sold rams for \$3 per head, and they sold rams for \$3,000 per head. They sent Merinos to every part of the world where better sheep were wanted.

And some breeder wanted all wool, and he bred wrinkles and grease, and his dream of becoming a famous breeder, and his ideal of this being the sheep, was quickly dispelled when his product was proven to be only a hothouse plant which no one could use. Or perchance, another breeder conceived the idea that fine staple and a long staple were the only requisites for producing the sheep that was all profitable, and his labors were like unto the first. And yet another saw size, and in its pursuit forgot all else, and another was added to those who failed to realize the proper proportions required in producing a practical Merino sheep.

And yet, with all the improvements of fleece and

form and size that have been produced in a comparatively short space of time, considering the amount accomplished, the breeders of Merino sheep in the United States have made greater progress, and through these rapid and valuable changes, made a greater and more lasting impression upon the industry with which they were concerned than have any other set of men or breed of animals known to American husbandry.

And that they made these results far reaching and of vast import was due not only to the intrinsic value of the sheep themselves, but also to the push and energy of their breeders, and the adoption of the then known means of bringing them before the public. For who is there that does not recall those good old-fashioned sheep shearings, when pounds were what counted, unless it might have been length of time required to shear some famous ram? How short a time is it since Merino sheep drew as much attention at every fair, large or small, as did the horse race! How recently it seems and still how long ago (or is it the other way around) that some enterprising sheepman sought fame in a day by paying what now seems an exorbitant price for a famous stock ram! And now how far the pendulum of price and interest seems to have swung the other way. Perhaps it has reached the farthest point and is started on its backward path. Who knows? They say history repeats itself.

But during all the varying fortunes of the Merino sheep in America, the fundamental characteristics that have maintained him in his leading position in the sheep industry have been his natural adaptability to inherent conditions of soil and climate, and his superior ability to meet and adapt himself to the whimsical demands of fashion and the rapidly changing conditions of the industry in its entirety. For while there have been abuses and extremes in the ideal types of some of his breeders, and some of his partisans, becoming imbued with some particular idea of fleece or form or covering, have wandered from the one great flock of Merino sheep, yet the general direction of all Merinos has been toward a greater and better use for man, and greater profit for his shepherds.

And when we say Merino sheep, we do not confine ourselves to some particular family or strain of Merinos, but we include all sheep of pure Merino blood, whether they be called Spanish, American, or Vermont Merino; whether Black Top, Dickinson or Delaines; whether Rambouillet, or French Merino, or Franco-American Merino, wherever they have been bred in these vast United States. For while they are designated as distinct breeds, they are really only families of the one great breed, and there is no sharp dividing line between them. For we have seen many animals that no breeder, however expert, could declare with certainty were American, Delaine, Franco or Rambouillet, judging by the mere individual appearance.

And right here we want to maintain that this is as it should be. For it should be the aim of breeders to produce such a sheep as will best meet the demands and conditions of the general industry, and bring to his owner the most profit. Practical results by improvement of the general flocks of the sheepman who is raising sheep for wool and mutton they produce that is evolved into dollars, is what is demanded of the breeder who essays to maintain a stud flock. And while great progress has been made through close line breeding, yet the most notable changes for the practical advancement of more than one breed of domestic animals, and even in the various families of Merinos themselves, have been by means of what may be called violent outcrosses. Of this we may say more at another time.

It is an interesting story, this history of the growth and development of the Merino sheep in this country in the last century. And from it we may be able to learn some lessons that will be of value to us in determining the place, value and type that will be produced in the near future, in so far as it may be possible to judge the future by the past. For that he has a place, and a very important one, in American sheep industry can be denied by no one conversant with present conditions and tendencies. And when we once understand what he has done and how it has been accomplished, we may better realize what he is doing and is capable of doing.

The scope and magnitude of such a task can only be realized by those who are intimately acquainted with the various families of Merinos and what they have accomplished, and we would not make bold to attempt even the small part which we may consider, were it not that in recent years there seems to have arisen a tendency on the part of many agricultural colleges and leading agricultural journals to either disregard or openly misrepresent, through intention or ignorance, the Merino sheep. And while no small part of this may be due to the British influence which can find no place for a Merino sheep in American agriculture or stock farming, at the same time it hardly seems as if the Merino breeders themselves had exerted every effort to overcome this tendency, and secure for their favorites the public recognition they deserve. The agricultural college and the farm journal are recent developments which have acquired and will continue to hold no little power in molding public opinion and educating the younger generation, and the breeders of Merino sheep should have

as free and unbiased access to their use as do the breeders of other kinds of live stock, and at present no small part of this lies with the Merino breeders themselves. So that with a desire to do our share, we shall attempt to consider various phases and conditions of the Merino.

Born and raised by the side of a Merino sheep, as we have been all our lives, ever mindful of his welfare, even as he has been of ours, and with each succeeding year realizing his development to meet new conditions, we have naturally become somewhat acquainted with his characteristics, with his excellencies and with his failings; for the best of us have our weaknesses. And in time we have become partial to him; for he who has an opinion of value concerning anything in this world will have his inclinations.

And we believe we have a good reason for ours. At any rate it will be our endeavor before we have finished to present to you, good reader, some of the superiorities and accomplishments of the Merino in his connection with the sheep industry in America in the past and present, and possibly some considerations as to the proper place in the near future. And in tracing the history of his development and place in American sheep industry, both on the farm and on the range, we shall necessarily be compelled to consider to a greater or less extent the industry as a whole. For eliminate the Merino and his influence from American sheep industry and it will be like taking from a building its foundation.

Sales of California Angoras.

California breeders of Angora goats have had a busy year and have sent stock to all parts of the world.

C. P. Bailey & Sons of San Jose report as follows: This has been a better Angora year than 1904, and last year was a better one than the previous year. Basing our opinion on the past and judging from orders booked for 1906 and inquiries for goats, we think the Angora business for 1906 will be the best yet. We have sold several carloads of high-class Angora does this year, and we could have sold many more of the cheaper stock if we had had them to offer. Most of our carload sales have been west of the Missouri River or in the territory where the Angora goat is best known and understood. Our sales of thoroughbred Angora bucks have been limited only by the supply. Practically every buck we had has been delivered and the demand for high-priced bucks was so large that we were sold out in August. We had to refuse late orders. These bucks have gone to all parts of the United States, but principally to Texas, Oregon, Arizona and New Mexico. We have also sold bucks in Siberia, Canada, Mexico, Alaska and the Hawaiian Islands, and we now have an order from Cuba.

Conklin Brothers, Newville, have this: One feature of the business that is very gratifying is that wethers have sold for a good price for Angora venison, in San Francisco, and there has been, and is now, a good demand for fat stock. Over 3,000 have been sold from this immediate vicinity, to slaughter, at from \$2.25 to \$3 per head, and the demand for does is now greater than can be supplied at \$3 for low grades to \$5 and up for higher grades and pure bloods. The fall clip of mohair brought from 25 to 28¢c. and last spring's clip around 30c. These prices we consider sufficient to make the raising of Angora a profitable business, especially as we shear twice a year, and consequently the fleece is not so long in staple as a year's growth. But we think by shearing twice we secure considerably more weight of mohair. Our herd clipped last year five pounds and one ounce of mohair per average for each goat. We have sold more bucks this year than in any one year before, and distributed them all over the United States, and what is gratifying to us is that the most of them went to people who have used our bucks in the past. The indications are evidently pointing to a more progressive spirit among goat men, as there seems to be a determination to have the best sires procurable.

HORTICULTURE:

Frost Effects and Prevention.

Mr. E. L. Koethen, of Riverside, who has been diligently in study of frost effects on orange trees and was a close observer of the results of heat and smudges (which we hear little about nowadays), gives the *Fruit World* some recent observations in the Riverside district:

We were surely worse scared than hurt. As far as we can learn the chief damage done was to new, tender growth. Where this had been sufficiently severe to be noticeable, a little vigorous work with the trimming shears will soon remove all visible traces of the injury, and we would advise this practice, as it is a drain on the tree to have dead twigs in a tree, and if these are removed it will encourage a new, healthy growth from below.

A WET SURFACE.—A careful investigation since

the frost teaches over again some lessons learned in past seasons. One of these is, that orchards that had running water, or even a wet surface from recent irrigation, suffered less than other orchards adjoining, and where conditions were otherwise identical. This applies to orchards where there were cover crops growing, as well as ones which were free from vegetables on the surface.

From the above we would infer that the great necessity in all cases is to keep the surface wet during the danger period. Investigation shows that there is no appreciable difference between the exposure of an orchard with or without a cover crop. Some have thought that it induced a tender growth, which made the tree more susceptible. Others held the opposite view, that is, that the tendency would be for the cover crop to put the trees to rest because of the drain on the soil, for soil moisture and fertility. As far as we can see neither theory has held out. We find much tender growth on most orchards, and if the location was such as to cause low temperature, it has invariably resulted in injured foliage with clean culture as well as cover crop.

PLOWING.—We find once more that orchards which have been plowed deep, just previous to the frosts, have uniformly showed the effect in a heavy dropping of fruit. We believe it is risky to plow orange orchards in December. We learned this lesson fifteen years ago. The first season we were in this business, and have never had any reason to change our opinion.

SPRAYING.—Again we find that spraying with distillate close up to the frost period, especially if the slightest north wind is blowing, will more than likely show up with falling fruit and leaves. The worst case of falling fruit is noticed, however, where a combination of these causes has acted. Late plowing, and late spraying followed by a temperature that, while not low enough to injure tender growth, did result in a heavy fall of fruit, and a general lowering of the vitality of the tree.

WINDBREAKS.—Windbreaks have again shown their value in saving trees in the zone of their influence from the devitalizing effects from heavy 'northerners,' and in furnishing protection in preventing radiation of heat. But they have also acted as dams where located as to prevent air drainage. The latter can often be remedied by thinning the windbreak out, so as to break the force of the wind, and yet allow the passage of cold currents flowing down the slope, especially where the lower branches are cleared away in such a way as to allow a free flow of the cold air to lower levels.

The worst effect of the wind was seen in an orchard that has for years been protected by a neighboring eucalyptus windbreak, and is now left to the mercy of the wind by the removal of the trees. Being accustomed to the protection, they are more susceptible to injury than they would be if they had never enjoyed protection.

Mr. Burbank's Plan of Growing English Walnuts.

By LUTHER BURBANK, at the Fruit Growers' Convention at Santa Rosa.

When nut culture is mentioned in California, it is well to be specific, for nearly every nut which grows in any temperate or semi-tropic climate finds here a most congenial home, and most of them thrive even better than in their native country. Nowhere else are there so many kinds grown successfully, and our dry, sunny autumn days insure a most uniformly well-cured product, while in most climates it is, even when ready to harvest, a very difficult matter to secure the crop in prime condition.

THE ROYAL NUT.—Although all nuts can be well grown here, yet the Royal walnut (*Juglans regia*) will without doubt in some of its improved varieties always be the leader. The Royal, long known in commerce under various names, such as Persian, English, French, Welch, Italian, European, Madeira, Chili, and later as the California walnut, has been cultivated for more than 2,000 years. It is a native of the Caucasus, Persia and the northern mountains of India, and probably also of western China; the Royal walnut, the peach and the apricot were all derived originally from the same region, where they may all still be found growing wild. The nuts from the wild native varieties have rather thick shells, are much smaller, not of as good quality, and not as freely produced as with our greatly improved cultivated ones. The name walnut came by an English corruption of the word Gaul—Gaulnut (France)—from which England even to-day draws her principal supply.

IN EUROPE.—Royal walnut trees have been common throughout central and southern Europe from the sixteenth century down to the present time; but for 2,000 years the crop has been mostly raised from seedling trees. If a knowledge of the possibilities for improvement by selection and grafting had been generally applied during this long time, these nuts would have been a universal food throughout the whole earth, and productive trees of superior varieties would have been common everywhere, though cold winters have occasionally greatly injured and sometimes destroyed many of the trees, even as far south as France and Germany, where the timber is much

used for furniture and other purposes, and has been so highly prized that bearing trees have been sometimes sacrificed for lumber, and for almost 200 years France has maintained an Act to prevent the exportation of walnut lumber.

IN THE UNITED STATES.—In America the Royal walnut grows as far north as New York and New England. The trees were quite common on Manhattan Island 150 years ago, but later the march of improvement necessitated the removal of most of them; the crop of nuts was, however, always very uncertain and not encouraging from a business point of view.

In California the trees have been growing in widely separate regions from the earliest times, but, unfortunately, mostly from nuts whose heredity harked back to forms better adapted to the production of wood than nuts, and before the improved ones had been produced or introduced the trees were in productiveness mostly shining symbols of perverse uncertainty.

Our southern neighbors were the first to obtain some of the improved varieties, and have been well repaid for their enterprise and foresight, for nothing which grows on trees has generally paid better than walnuts; but much had to be learned about soils, locations, varieties, stocks, distance for planting, modes of harvesting, curing, marketing, etc.

NEW DISTRICTS.—Central and northern California are just waking up to the fact that no better walnuts have ever been produced than those grown right here, and from the one large orchard of the Franquette, and the numerous ones of the Santa Rosa, now in full bearing, the nuts have so far brought in all cases 18@20c. per pound, or even more, by the ton, when walnuts from anywhere else were selling at from 9@14c. per pound.

TWO IMPROVED VARIETIES.—Judge Lieb, of San Jose, who has made a special study of the walnut in every condition for several years, has obtained samples and definite particulars from many American and foreign growers, and with a careful personal inspection of the best orchards of this State, has, after the most severe tests, concluded that for growing in northern and central California but two varieties need be considered—the Franquette and the Santa Rosa.

Taken point by point, in comparison with all others now known, they appear to stand at the head for general culture here. The Franquette is an old, well-known French walnut, grown only by grafting. The Santa Rosa, so far, has been grown mostly as seedlings, and, even grown in this way, has proved to be all that could be desired in early ripening, early bearing, productiveness and quality; but among these seedlings are found some trees which are most remarkably early and constantly productive of astounding crops of nuts of most perfect form, color and quality. Some of the best of these will, in my opinion, supplant the Franquette, for though the Franquette blooms later than the Santa Rosa, and produces a fair crop each season almost without fail, but rarely a full one, yet in a series of years the Santa Rosa generally will outyield it two to one, besides being harvested with much less care and expense, ripening, as they do, two to four weeks earlier when the air is clear and the ground dry. The greatest fault of the Santa Rosa is their tendency to start early in the spring. The greatest fault with the Franquettes for growing in this part of the State is their late ripening, causing much care and expense in harvesting and curing. The size, appearance and quality of the nuts of either are all that can be desired, though the Santa Rosas generally have a whiter shell, and the husk does not require removal by hand, as is the case with a large part of the crop of Franquettes. To those who have had experience in this kind of work on a rainy day, nothing more need be said. The Franquette seems well adapted to some of the larger interior valleys.

GRAFTING ON NATIVE STOCK.—In all cases the best results will be obtained by grafting on our native California black walnut or some of its hybrids. No one in central and northern California who grows Royal walnuts on their own roots need expect to be able to compete with those who grow them on the native black walnut roots. For when grown on these roots the trees will uniformly be larger and longer-lived, and will hardly be affected by blight and other diseases, and do and will bear from two to four times as many nuts, which will be of larger size and of much better quality. These are facts, not theories, and walnut growers should take heed.

HOW TO START AN ORCHARD.—Although not popular among nurserymen, yet the best way to produce a paying orchard is to plant the nuts from some vigorous black walnut tree, three or four in each place where the tree is to stand. At the end of the first summer remove all but the strongest grower; cultivate the ground well; any hoed crop may be grown among them. Let the trees grow as they will for from three to six years, until they have formed their own natural, vigorous system of roots, then graft to the best variety extant which thrives in your locality, and, if on deep, well-drained land, you will at once have a grove of walnuts which will pay at present, or even very much lower, prices a most princely interest on your investments.

By grafting in the nursery, or before the native tree has had time to produce its own system of roots by its own rapid-growing, leafy top, you have gained little or nothing over planting trees on their own roots, for the foliage of any tree governs the size, extent and form of the root system. Take heed, as these are facts, not fancies, and are not to be neglected if you would have a walnut grove on a safe foundation.

A GREAT WALNUT RECORD.—I hold in my hand a record and also a photograph of one of the Santa Rosa walnut trees, grafted, as I recommend, on the black walnut, in 1891; this was handed to me by the owner, George C. Payne of San Jose. The record may be of interest to you: Dimensions (1905)—Spread of top, 66 ft.; circumference 1 ft. above ground, 8 ft. 9 in. No record of nuts was kept until 1897, which amounted to 250 pounds.

	Pounds.
1898	302
1899	229
1900	229
1901	600
1902	237
1903	478
1904	380
1905	481
	259

The walnut has generally been considered a very difficult tree to graft successfully. Mr. Payne, mentioned above, has perfected a mode of grafting the walnut, which in his hands is without doubt the most successful known; by it he is uniformly successful, often making 100% of the grafts to grow. Who can do better by any method?

There are thousands of native black walnut trees in northern and central California, in fields, pastures and roadsides, which, if grafted to the same or some of the still further improved Santa Rosa walnuts, would yield even larger crops and better nuts than this tree is yielding.

PLANT THE WALNUT.—When you plant another tree, why not plant a walnut? Then, besides sentiment, shade and leaves, you may have a perennial supply of nuts, the improved kinds of which furnish the most delicious, nutritious and healthful food which has ever been known. The old-fashioned hit-or-miss nuts, which we used to purchase at the grocery store, were generally of a rich, irregular mixture in form, size and color, with meats of varying degrees of unsoundness, bitter, musty, rancid, but, better yet, with no meat at all; from these early memories, and the usual accompanying after-effects, nuts have not been a very popular food for regular use until lately, when good ones at a moderate price can generally, but not always, be purchased at all first-class stores.

The consumption of nuts is probably increasing among all civilized nations today faster than that of any other food, and California should keep up with this increasing demand and make the increase still more rapid by producing nuts of uniform good quality, which can here be done without extra effort, and with an increase in the health and a rapid and permanent increase in the wealth of ourselves and neighbors.

I have not mentioned other nuts, as your time and mine allow of but a glance at this one nut. The almond and pecan come next in importance, followed by a score of others which will be extensively grown, as their culture is better understood.

GRAND FUTURE POSSIBILITIES.—California has made wonderful strides in the production of fruits and nuts, and of almost everything else, but its newer horticultural possibilities are even more grand, mostly unknown and undeveloped. Who could have imagined 25 years ago the important places which the fig, the orange, the vine and other fruits and nuts, as well as alfalfa, winter vegetables, stock and poultry raising now hold? And who can prophesy the future place of California as the source of the choicest food products of the world?

This paper was prepared at the fervid and persistent request of the secretary of the State Horticultural Commission solely for the benefit of prospective planters. Do not address me on walnut culture. I have no trees or nuts for sale, and have no time to reply to letters on the subject.

Grazing Rates on the Forest Reserves.

Charles H. Shinn, Forest Supervisor, says the *Stockgrower's Journal*, announces that permission has been granted to graze 27,000 cattle and horses, 20,000 sheep and 2,000 hogs on the forest reserve which lies in Fresno, Madera, Mariposa, Mono and Inyo counties. The reserve has been cut up into five districts, and in only two of them (No. 3 and 5) will sheep be permitted. No one person may take in more than 500 head of cattle and horses, and the number of hogs is limited to 50 each owner. The rates to be paid and the seasons have been determined as follows: Spring feed only (March 15th to May 31st) 20c per head; summer grazing season (May 15th to October 15th), 35c. per head, except in district No. 5, on the eastern side of the Sierras, where the charge will be 20c. per head; spring and summer combined (March 15th to October 15th) 40c. per head; year long (class A. stock only), 50c. per head.

Agricultural Review.

Butte.

KICK OF HORSE SEVERES A VEIN.—Chico dispatch to Sacramento Union, Feb. 1: Sol Truitt, vice-president and manager of the Bernard Livery Stables, was seriously injured by a fractious horse. The animal, which had been but recently brought off the range, had not been trained to livery work. Truitt and an assistant were trimming its fetlocks when it suddenly kicked Truitt on the right leg, just below the knee. He had for some time been suffering from varicose veins in that limb, and the calk on the horse's shoe severed one of them. It required the services of several physicians to stop the flow of blood, and for a short time it was feared that he would bleed to death.

Glenn.

IRRIGATIONISTS CONVENE.—Orland dispatch to Sacramento Union, Feb. 5: A mass meeting resulted in a decision to proceed in the matter of asking the National Government to construct an irrigation system here under the provisions of the National Reclamation Act, and the Orland Water-Users' Association was formally organized. Articles of incorporation were prepared and application for the construction of the project will be made to the Secretary of the Interior. A board of directors was selected as follows: P. D. Bane, W. A. Greenwood, S. F. Ehorn, G. D. Mecum, W. L. Thompson, T. J. Hicks, G. A. Reager, D. A. Shelloe, W. E. Scarce, Harry E. Moore, George E. Wright, C. F. Schmidt, V. C. Cleek, M. S. Holt, Willard Clark. After the adjournment of the mass meeting, the board of directors met and elected officers as follows: President, P. D. Bane; vice-president, W. A. Greenwood; secretary, T. J. Hicks; treasurer, W. E. Scarce. The Orland Water-Users' Association will be the first organization of Sacramento valley land owners to ask for the construction of irrigation works under the provisions of the National Reclamation Act. The total area signed up at this time is 45,790 acres. The committee has definite promises of 7,000 acres additional, making more than the required area. The total number of land owners who have signed up is 152. The Water-Users' Association will be incorporated with a capital of \$1,000,000, representing 50,000 acres, at an estimated cost for construction of \$20 per acre, it being customary to issue one share of stock for each acre to be irrigated and to place the value per share at the estimated cost per acre of the works. Thirty-three land owners have signed the articles of incorporation, representing a total land area of 16,759 acres. Others will sign at the first opportunity. The largest number of shares that will be issued to any one person is 160, representing the acreage the owner is privileged to retain, surplus lands being covered by agreement to issue the stock when sold in accordance with the requirements of the Reclamation Act, the purpose of which is to create homes upon the land. The total number of shares subscribed was 3,735, representing as many acres owned by 33 individuals and representing \$74,700 of capital stock.

Lake.

THE BEST APPLES.—Lake County Bee, Jan. 31: Euvelle Howard made an investigation of the apple question during his last visit to the city. He interviewed a number of the leading dealers in fruits, asking them what varieties of apples they found to be the best and most satisfactory, taking into consideration size, color, general appearance, flavor, keeping qualities and season. Each and every dealer, in a list of the best six, included Yellow Newtown Pippin. The other five, in the order of their popularity, are: Baldwin, Spitzenberg, Gravenstein, Rhode Island Greening and Bellefleur.

Napa.

ROBINS MAY BE KILLED.—Napa Register: District Attorney Benjamin writes that he has received so many inquiries

lately as to whether the game laws prohibited the shooting of robins that possibly a public statement in regard to the law dealing with robins will be of benefit to many who are in doubt. The shooting of robins was specially prohibited up to 1901, and during that year the law was changed, leaving them out. In 1905 the Legislature passed a statute prohibiting the shooting of any 'wild bird,' but specially stated that the statute did not apply to any 'game bird.' Mr. Voglesang, secretary of the State Game Commission, in conversation admitted that the question whether a robin was a 'wild bird' or 'game bird' was debatable, and that the only reason why he believed it was to be classed as a 'wild bird' was because the Commission's attorney had so advised them. It is a well-known fact that robins are good for food, and several States have defined a 'game bird' as one suitable for food. Other States have classed the robin with 'game birds.' Under these circumstances he is of the opinion that robins are 'game birds' and are not protected by the State game laws, and that it is not unlawful to kill them. He will advise all justices of the peace not to issue any warrants of arrest for persons killing them in this county.

Placer.

A WELCOME CHANGE.—Newcastle Correspondence to Republican, Feb. 1: Several ranches which were last year run by Japs or Chinese will this year be handled by white people. Among those we have heard named are the Bellview, Drury's, White's, Bond's, Walker's, Household-ers, Robertson's, etc. It will be a welcome change.

Sacramento.

FLORIN STRAWBERRIES.—Sacramento Union, Feb. 5: The acreage of strawberries in the Florin district is decreasing very appreciably, and persons on the ground and who have given the matter considerable thought, incline to the belief that it will be one-fourth less this year than it was last. David Reese explains while new fields have been planted to berries, the number that have been given over to vineyards far exceed them. He figures that if there be a good crop of berries next season, the decrease in acreage will be good for the growers. The output will not necessarily glut the markets and run prices down to the bottom notch just when the rush begins. Last year the Florin berry farmers made some money, but Reese points to the fact that the crop was short, that the yield was little if any more than half produced during a good year. When the farmer plants his berries he alternates the rows with Flame Tokay grapes. In four or five years the vines have attained maturity and yield heavy crops. Then the berries are rooted out and the tract becomes a vineyard. It no longer figures as a producer of berries. Many such tracts will be given over exclusively for vineyard purposes next summer and the result will be a very material decrease in the strawberry acreage in the Florin district. According to those who have given the subject their best thought, it will also mean that the crop can be marketed with profit to the grower, and that the prospect for gluts in the markets up north will be reduced at a corresponding ratio.

BUY CONE ESTATE.—Red Bluff special to Sacramento Bee, Jan. 24: A deed was filed Friday in the Hall of Records at Red Bluff from Mrs. Anna R. Cone to the Sunset Syndicate, of San Francisco, conveying about 20,000 acres of land in the eastern part of the county, being chiefly range land. The property which has changed hands is north of Molinos river, a small stream which empties into the Sacramento, 12 miles south of Red Bluff, and east of Antelope creek, which runs north to the Lyonsville country.

Santa Clara.

SHOOTING ROBINS.—Mountain View Register, Feb. 2: The shooting of robins, which is against the law at all times, has become such a pest to the orchardists that Grove Wyman, Deputy State Game Commissioner, made several arrests this week. In three cases the parties pleaded guilty and were fined, the hearing for the other is set for February 6th. Most of the shooting is being done by Japs and by Italians, who do not understand that it is unlawful. They go shooting along the highways and in the orchards, filling trees full of shot and making it dangerous for orchardists to be about.

Stanislaus.

A MODEL FRUIT FARM.—Oakdale Leader, Feb. 2: N. J. Lund, residing a few miles west of Oakdale, is setting out 2,500 fruit trees this season, and when completed he will have an orchard comprising 85 acres. The trees, in variety, planted during the past few years are all in a thrifty condition. He has 100 acres of river bottom adjoining his uplands, all of which he will plant to wine grapes. He

will plant a portion of these rich bottom lands to grapes this season and continue from year to year until the work is completed. Mr. Lund supplies water for irrigation purposes on his extensive orchard with electric power, pumping water from the river.

Sutter.

BOUGHT ORCHARD.—Yuba City dispatch to Sacramento Union, Feb. 4: Matt and P. J. Arnoldy of Marysville have purchased the Robert Davis orchard, south of Yuba City. This is one of the finest fruit orchards in this county, and the price paid for the place was \$6,000. Mr. Davis, owing to old age, was compelled to give up ranching, and will probably go to the southern part of the State.

SANBORN BUYS LAND.—Yuba City dispatch to Marysville Appeal, Feb. 5: Attorney M. E. Sanborn has purchased of Fred Dahling 160 acres of his ranch, 3½ miles southwest of Yuba City.

EXPERIMENTS IN WHEAT GROWING.—Yuba City special to Sacramento Bee, Jan. 27: H. F. Blanchard, who was in Yuba City for several weeks in the interest of the Government Wheat Experimental Station at Yuba City, departed yesterday for Modesto, where he will look after a similar station which is located at that place. When interviewed by the Bee correspondent, Mr. Blanchard had the following to say in regard to the progress that has been made at this station: "The seeding has just been completed and the Monitor disc drill which was used in putting in the grain at an even depth proved to be very successful. It covers the grain nicely. Many varieties of wheat, oats, barley and rye were planted. Varieties of wheat, rich in gluten and good yielders, were soon on large plots so as to determine their adaptability to the Sacramento Valley conditions. They were of the red semi-hard types which have done so well in the Middle West in late years, and they appear to be doing exceedingly well where they have been tried in this State; also many softer white wheats, the seed of which was obtained from different parts of the State and have many characteristics in their favor. The rotation experiment has been started with the idea of increasing the nitrogen and humus content of the soil. The legumes, consisting of horse beans, field peas and vetches, are being grown in connection with this experiment. These will be plowed under this spring and be followed by wheat seeding in the fall. It is hoped that the conditions of the soil will be so changed as to allow of some crop each year. The effect of fertilizer on wheat is also being considered. The idea is to determine what is lacking in the present condition of the soil and whether the application of certain fertilizers to the soil, used to grow wheat, would be a practical investment to the farmer or not. Whether it is advisable or not to change seed from one locality to another is also under investigation, and the effect of size and condition of seed, as to whether it is plump or shrunken upon the following crop, is considered. In the changing of grains grown in this locality to more starchy conditions, it is being endeavored to discover reasons for these changes and as to whether they may be overcome or not. In all of the comparative work, plots of the common California wheat will be grown, so that other varieties may be compared with them. This will overcome the question that is proposed by some of a poorer or better condition of the soil as compared with the general condition of the locality."

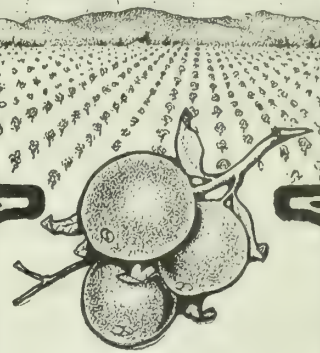
Yuba.

OLIVE PICKING.—Marysville Democrat, Jan. 26: Olive picking has been resumed at the Olive Hill orchard, at Browns Valley. On account of the storm last week, progress of this work was very much retarded.

ALMONDS AND CHERRIES.—Wheatland dispatch to Sacramento Union, Feb. 1: Sheridan Harding of Wheatland has 10 acres of almonds and he states that his average crop is 11 tons, with an average

price of 12½c. per pound, giving him an average price per annum of \$2,750. He says he has not had a failure in the last eight years. But his cherry crop, he claims, he always banks on. This year he shipped 1,200 boxes and received from \$1.75@2 per box, making his returns over \$2,000 for over less than 10 acres of cherries. He also has a few acres in English walnuts and about three acres in oranges and lemons.

250.000 Trees



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for failure, where we say it will cure, has never been claimed. All druggists sell it.

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TUTTLE'S ELIXIR CO., 33 Beverly St., Boston, Mass.
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The Home Circle.

Morning on the Farm.

When the white dove coos to his drowsy mate
And the birds in the trees rejoice,
Old Brahma stands on the barnyard gate
And shouts in a lusty voice:
"I feel better this mor-ning."
And the Bantam thinks 'tis true,
For he answers back in a tenor tone:
"Without—a doubt—you do-o."

The house dog lies with his head on his paws
And blinks at the morning call;
The cat with a field mouse in her jaws
Comes running home on the wall;
While the Brahma heralds the morn again,
And the Bantam takes the cue:
"I feel better this mor-ning."
"Without—a doubt—you do-o."

The birds with a glorious burst of song
Make glad the orchard boughs;
And the farmer, swinging his pails along,
Goes out to milk the cows;
The work of the day begins again,
And the roosters call anew:
"I feel better this mor-ning."
"Without—a doubt—you do-o."

—Youth's Companion.

A Psalm of Farm Life.

Tell me not in broken measures
Modern farming does not pay,
For the farm produces chickens,
And the hens—do they not lay?
Eggs are high and going higher,
And the price is soaring fast;
Every time we get to market
It is higher than the last.
Not a coop but it produces
Every day an egg or two;
So each farmer gains his millions,
Even though his hens be few.
Every egg is very precious,

And the hens are held in awe;
When a hen begins to cackle,
Then the farmer goes 'Haw, haw!'
In the broad and busy farmyard
Struts a rooster now and then,
But the shrewd, bewhiskered farmer
Only notices the hen.
Trust no rooster, howe'er showy
Be the feathers in his tail;
Pay attention to the biddies,
And your wealth will never fail.
Lives of farmers all remind us
We may roll in wealth some day,
If we hustle to the market
With the eggs our pullets lay.

—Chicago Chronicle.

The Old Garden.

I know of a haunted garden, where the
old-time flowers grow;
There are hollyhocks and lilies in a long
and stately row;
There are lilac trees by the gateway, and
roses white and red,
And the southernwood's spicy fragrance
follows in the careless tread—
A memory-haunted garden, out of life's
busy way,
Where the spell of vanished summers lin-
gers the livelong day.
The hands that planted these flowers
have moldered back to dust,
But their hearts are true and steadfast,
and they seem to hold in trust
The memories of the old time, and those
whom men forget.
Perhaps for the lilac and lily the dead are
living yet.
Those whom our eyes can see not may
tend them still—who knows
Of the strange, sweet secrets hidden in
the red heart of the rose?

—The National Magazine.

Story of War and a Debt Repaid.

At one end of the rue Pyrenees, about
twenty federals, men, women and chil-
dren, had taken refuge in a deserted
lodge, and for over an hour had defended
themselves against the soldiers of Ver-
sailles, who were attacking them on
every side. But now, worn and spent
by incessant fighting for three days,
their ammunition gone, the federals
knew the moment of their surrender
was near. In an inner room was a
woman, the cantonier of the troop. In
her arms were three children, trembling
with fear.

Suddenly a file of the enemy burst into
the house. Before he could speak, the
father, who stood firing at the window.

was seized and bound and placed against
the wall. A dozen muskets were
brought into position.

The woman threw herself at the feet
of the enemy. "Ah! do not kill him,"
she said; "he is my husband, the father
of these little ones. Have pity upon
him and us."

The soldiers seized her and threw her
to one side. "He is a rebel," they
shouted; "he must die."

"Cruel! cruel!" moaned the wife.
She rushed to where her husband stood.
"Kill me first," she cried, "and then
these little ones."

As she spoke a young lieutenant,
revolver in hand, entered the room.
"What's the racket?" he demanded,
brusquely.

"This man was caught in the act of
firing on us. He is a rebel, and we
would have settled the matter before
this if this woman had not deafened all
our ears with her cries," replied one of
the men.

At a glance the officer apprehended
the threatened tragedy. He saw the
man, the father, watching the children
with a look of anguish, his wife wide-
eyed in horror and the soldiers drunk
with blood, whom no reasoning could
move.

"What, did he try to resist you?"
the lieutenant roared, addressing his
men. "Here, take the woman, but do
her no harm; French soldiers do not
fight women." Then seizing the man,
who still stood before the wall, he said:
"I will see to this affair myself."

He pushed his prisoner into the next
room, closing the door roughly behind
him. Firing his revolver into the empty
air, he hastily unbound the man's ropes,
and, slipping some money into his hand,
whispered: "Get away through this
window here. I will send your wife to
meet you in a moment; then may the
devil give you a safe escape."

Without waiting for a reply, the
lieutenant went back to the other men,
and, laughing brutally as he re-loaded
his pistol, said: "Come, men. One
rebel the less for us. Let us get on."
He pushed the soldiers from the room,
whispering a low word to the woman.

* * * * *

"Name of a name! Do they send
me girls of a boarding school now? Are
there no men left in France?"

Captain Desplaces, one of the most
famous soldiers of the African regi-
ments, growled as he passed in review
before fifty new recruits.

He came to a stop before a young
man, scarcely more than a boy, with a
boy's fresh cheek and brow.

"Aren't you afraid you may get hurt,
out here so far from home?" he de-
manded roughly.

The boy almost smiled. "I made my
choice," he said, confidently.

Desplaces passed by, a queer light
gleaming in his bright eyes.

A month later, the roar of the cannon,
the hiss of flying shrapnel and the
moans of the wounded told of a heavy
fight.

Captain Desplaces, at the head of the
battalion, was leading a furious charge
against the Touaregs who, repulsed for
the fourth time, were beginning to flee
in disorder. Beside his captain, brave
among the brave, rode the boy. Des-
places smiled suddenly, as a lull came
in the fight, and said proudly:

"Well done, my lad. I am sorry I
called you a girl. You have the cour-
age of a lion!"

As he spoke, a tall Arab chief, rising
from behind a clump of bush, rushed
upon the captain, his sword glittering
over his head.

Quick as a flash, the boy rushed in
front of his officer, and the blade sank
to its hilt in his breast.

The captain uttered a cry of rage
and, beating down the Arab with one
hand, he caught the lad with the other,
and, supporting him, carried him to a
quiet spot away from the battle.

The surgeon, who had followed him,
unbuttoned the boy's tunic and ex-
amined the wound.

"Well?" asked the captain, anx-
iously.

The surgeon shook his head. "No
hope," he said, shortly.

For the first time, Captain Desplaces' eyes filled with tears.

Presently the boy opened his eyes.
Motioning the officer to lean down, the
young soldier whispered faintly:

"Do you remember the May of 1871,
when you saved the life of a federal
soldier? I am his oldest child. We
learned your name afterward, and have
never forgotten it. Today it is my
honor to pay my father's debt."

He smiled happily, then lay dead.—
Denver Post.

Hints to Housekeepers.

When soaking beans a tiny pinch of
soda in the water will be an improve-
ment.

When slicing an onion to flavor a
stew or salad score each slice first
before cutting it off.

Carrots and turnips will keep for
weeks, if not for months, if placed in
layers in a box of sand.

Never allow a cake of fat to remain
on the top of soups and stews. It
makes them turn sour more quickly than
they otherwise would.

Spots may be removed from gingham
by being wetted with milk and covered
with common salt. Leave for an hour
or so and rinse out in several waters.

Sheep sorrel will take out rust stains
from cloth. Rub thoroughly on the
stains, and then take out the resulting
grass stains with either molasses or
alcohol.

Carpets and rugs can be thoroughly
cleaned by being hung over a clothes-
line and having the garden hose turned
upon them. This will do no harm to
any carpet. Dry in a shady place.

A most useful article with which to
scale fish is the ordinary currycomb.
Grasp the fish by the mouth by a pro-
tected finger, and the operation, pur-
sued from tail to head, will be found
very practical.

A good way to keep silver bright
that is in daily use is to place it in hot
borax water occasionally and allow it
to stand an hour or two; rinse with
clear, hot water, and then wipe with a
clean, dry towel.

The washing of meat is detrimental
to its quality. In some cases it may
perhaps be necessary. As a rule, how-
ever, scraping the outside and trim-
ming it carefully are all that will be
needed, except occasionally in summer,
when it may be desired to wash it.

Nutmeg is a spice of which it is not
wise to use too much. Some people
spoil dishes by a too generous use of it;
but a tiny pinch in some recipes is
excellent. A certain well-known chef
adds a tiny pinch of nutmeg to his white
potato croquettes and to his baked
macaroni. Another chef adds a tiny
pinch of nutmeg to his maitre d'hotel
butter.

One housewife just home from Paris
has found an excellent way of boiling
eggs. She places a napkin ring in a
saucepan, partly full of hot water and
sets the egg small end up in the ring.
She then punches a hole in the top of
the egg and lets the water boil around
it. The gas in the egg escapes while
the egg is cooking, which makes it
much better in flavor.

One of the annoyances of cleaning
fluids is their invariable habit of leav-
ing a ring around the cleaned spot.
An authority says that the proper way
to avoid this is to draw a ring around
the spot with gasoline before rubbing
the spot itself. There are several good
cleaning fluids on the market which are
said to be non-explosive. If gasoline is
preferred, let it never be used but by
the most responsible and care-taking
person in the house.

How many women adhere to the old-
fashioned method of marking linen with
a new steel pen and marking ink? It
is the simplest thing in the world to
mark linen with a stencil and brush.
Each member of the family should have
his own stencil, which does not cost
much if only initials are used. The boy
or girl at school will need the full name,
which costs more. An entire ward-
robe may be marked in a half hour's
time by means of stencils, and the dan-
ger of the ink spreading is reduced to
a minimum.

Cure for Slight Burns.

Put the part instantly in cold water,
or cover it with moistened baking-
powder, and then with a wet cloth.
When the skin is destroyed the point to
be attained is to exclude the air; do
this by covering the burn with sweet
oil; cosmoline, vaseline, linseed oil, lard,
cream, carron oil, or with flour spread
thickly on a linen cloth or with cotton
batting. An excellent covering for
burned surfaces is made by mixing com-
mon whiting (used in kitchens for pol-
ishing purposes) with sweet oil, olive
oil, or cotton-seed oil, or even water,
into a thick paste. With this the burn
is carefully covered by means of a
feather, taking care not to break the
blister; then the whole part is covered
with cotton cloth and kept clean and
moist. In severe cases cover the pa-
tient warmly in bed and give opiates
and stimulants. Burns of large size
are always dangerous, often resulting
in death, and always should receive the
careful attention of a skilled physician.

Domestic Hints.

SPICED CRAB APPLES.—Five pounds
fruit, four pounds brown sugar, two table-
spoons of cloves, a tablespoon of cinna-
mon, a half tablespoon of allspice, a pint
of vinegar; cook slowly 2½ hours.

MOCK MINCE PIE.—Roll eight crack-
ers fine; add three cups hot water, one
cup chopped raisins, one-half cup vinegar,
one cup molasses, one cup sugar, one-half
cup melted butter, one-half teaspoon cin-
namon, clove, nutmeg and allspice.
Makes two pies.

CHOCOLATE PIE.—One coffee-cup milk,
two tablespoons grated chocolate, yolks
of three eggs, two-thirds cup sugar. Boil
the chocolate and milk together; add the
yolks of the eggs and sugar beaten to a
cream. Flavor with vanilla and bake in a
nice pastry pan and when done frost with
the whites of the eggs and two table-
spoons of sugar. This makes one pie.

LEMON PIE (WITH TWO CRUSTS).—
Two cups of hot water, put on stove and
bring to a boil, with one tablespoon of
butter, two cups of sugar, two table-
spoons of cornstarch or flour, two lemons,
juice and pulp; one egg. Mix this all to-
gether and pour into the water and but-
ter; cook until thick. Have plates lined
and fill, put on upper crust. This will
make two large or three small pies.

BOILED SALAD DRESSING.—Four table-
spoons butter, one tablespoon flour, one
tablespoon sugar, speck cayenne, three
eggs, one cup milk, one-half cup vinegar.
Let butter get hot, add flour, stir smooth,
being careful not to brown, add milk, boil
up. Place pan in another of hot water,
beat eggs, sugar, salt, pepper and mus-
tard (dissolved) together; add vinegar.
Stir into boiling mixture. Stir until it
thickens, which will be in about five min-
utes; improved by a little whipped cream
when served. Cook slowly.

CHICKEN JELLY.—Season three-quar-
ters cup chicken broth to taste with salt
and pepper. Cover one teaspoon granu-
lated gelatine with one tablespoon of cold
broth. Heat the remainder of the broth
to the boiling point; add the softened
gelatine and stir until dissolved. Add a
few drops of lemon juice. Strain through
double cheese cloth into a cold, wet mold
or cup. Put into a cold place until solid.
Serve cold. It may be garnished with
parsley or celery tips. Beef tea or lamb
broth may be used in the same manner.

FISH CROQUETTES.—Melt one table-
spoon butter in a small saucepan, add one
heaping tablespoonful cornstarch and a
little cayenne; mix and pour on gradually
one cup of hot milk; when thick and
smooth add one cup of shredded codfish
previously saturated in boiling water and
drained, beat it well and set away to cool,
then shape into small rolls, adding a little
cracker dust if too soft, roll in fine bread
crumbs, then in beaten egg, and then in
crumbs again, and fry in hot, deep fat;
drain on soft paper and garnish with
parsley.

STUFFED POTATOES.—Wash and wipe
large, fair potatoes and bake soft, cut a
round piece from the top of each and
carefully preserve it; scrape out the in-
side with a spoon without breaking the
skin and set aside the empty cases with
the covers; mash the potato which you
have taken out smoothly, working into it
butter, a raw egg, a little cream, pepper
and salt; when soft, beat in a saucepan,
set over the fire in boiling water, stir un-
til smoking hot, fill the skins with the
mixture, put on the caps, set in the oven
for three minutes, serve in a heated
napkin.

THE BOTANIST.

Roots, Their Functions and Importance to the Plant.

An essay by EIZO KONDO, a first-year student in agriculture at the California Polytechnic School, San Luis Obispo. A regular exercise in botany.

Hidden at the bottom, like the engine of a steamer, the root is a most important organ of the plant life. The functions are three-fold, as a rule: it anchors the plant to the soil, it absorbs the nutriment for the plant from the soil, and it serves in many cases as a store-house of food for the future use of the plant.

The firmness of plants in the ground depends upon the nature of their roots, though the depth and character of the soil, to a certain degree, influence the extent of the roots and the tenacity of their hold. The roots of the maize in a rich, tenacious soil, for instance, extend but two or three feet, while those in a light, sandy earth have been traced to a length of 15 ft. In general, those plants which are exposed to much stress of weather have large and strong roots. Thus tall trees and herbs are fastened to the ground by an elaborate root system, while those whose circumstances do not require such have but few slender roots.

All the underground roots may be divided into two classes. The dicotyledonous plants or exogens have at first a single descending axis, the tap root, from which, in most cases, the lateral or secondary roots branch out in all directions. The order of their branching is more irregular in older plants than in younger ones, owing to the mechanical hindrances of the soil. This mode of growth beginning with one main root is called the axial mode. The monocotyledonous plants or endogens have no single axis, but produce what are called the crown roots or fibrous roots, whose mode of growth is monaxial or radial—that is, they radiate in all directions from the base of the stem. This distinction has important bearings in agriculture, for the roots belonging to the first kind draw their plant food from the lower strata of the soil, while those of the second class spread near the surface and consequently are more dependent upon the external conditions.

Before describing the most important functions of roots—absorption—it is necessary to consider their structure. The root is composed of four parts: the epidermis, the outer covering for protection against harms and re-absorption of the sap by the soil; the cortex, or the soft layer beneath the vascular cylinder; the hard, woody axis running through the center; and the medullary rays, which are fine, silvery lines radiating from the center. Besides, the tip of root hair is termed the spongiolite from its texture. This important section is well protected by the root-cap, consisting of cells that have been loosened from the main structure, and thus serve merely as an elastic cushion to defend the true termination of the root.

The growth of the root is mostly in length, but very little in thickness. Wigand, in an experiment, divided the young root of a sprouted pea into four equal parts, by ink marks, and after three days he discovered that the two upper divisions had scarcely lengthened, while the third was double and the fourth was eight times its previous length. This is the reason that a root cut off in transplanting never afterwards extends in length. The quantity of roots actually belonging to any plant is usually far greater than can be estimated by roughly lifting them from the soil. A conservative estimate of four well-developed corn plants gave an aggregate length of over a mile of roots, not counting the root hairs. The entire root system of a squash vine was found by actual measurement to be over 15 miles in length, not considering the root hairs, and of this length the major part must have been produced at the rate of 1,000 ft. per day. (Osterhout.) The quantity of roots in per

cent of the entire plant in the dry state was found to be as follows:

	Per Cent.
Winter wheat, examined last of April	40
Winter wheat, examined last of May	22
Winter rye, examined last of April	34
Peas, examined four weeks after sowing	44
Peas, examined at the time of blossom	24

Now, the imbibing the nourishment from the soil is of the utmost importance to plant life. The root, however, is ingeniously fitted for this work. The root hairs, which are exceedingly minute and delicate and cover the young portions of the root system, absorb by osmosis the plant food very dilutely dissolved in water. The raw sap thus imbibed from the soil is carried upward by the root pressure and capillarity, through the vascular cylinders of the various portions of the plant, to the leaves—the starch factory; then a portion of the manufactured food is carried down back to the roots for their growth, and often for storing it for future use. It would almost appear that the root is endowed with instinct in its search for food. From the very beginning of their development, strenuously fighting against obstacles, groping around with numerous rootlets, penetrating through chasms, undermining rocks, they go down day and night until they strike their goal, the plant food. Their spread also, as a rule, corresponds to that of the branches, so that they may drink every drip of rain and dew falling from their own mother plant.

Now, for the majority of the biennials and for some of the perennials, the roots serve as the store-houses of the plant food. This is one of so many wonders performed by nature. Plants like the dahlia and hawkweed perish above ground in winter, being unable to withstand the frost and cold, but survive underground through the supply of nourishment stored in their roots, so that they may start afresh in spring with all the advantages over their less prepared competitors in the never-ceasing struggle for existence and reproduction. Again, the hardy winter herbs, such as the plantain, dandelion and common dock, which keep a rosette of green leaves above ground throughout the winter, are supplied with more or less fleshy roots, full of nutriment.

The soil is not the only medium for roots to live in, though it is the most proper and common one. Many plants are living in water, fed and supported by the aquatic or water roots, which may be easily distinguished from the subterranean roots through their white, thread-like, tender and succulent texture. The parasites have a sort of roots known as haustoria, a term meaning suckers or absorbents, for they draw sap, either raw or digested, from their hosts for their own use. The aerial roots are those which have no concern with the soil, nor are dependent upon other plants—except, perhaps, for anchorage, as the orchid—but acquire the plant food and moisture from the atmosphere. Often, however, they serve as merely the climbing roots, as in the case of the poison ivy or the trumpet vine. The adventitious roots occur on the stems, as those which appear at the lower nodes of corn. They serve to firm the plant in the soil, as well as to perform the other functions of ordinary roots. Most plants are, fortunately, able to produce adventitious roots when they are covered or kept in contact with the ground, thus making their propagation by cuttings and layers possible.

Hastily, by way of conclusion, the root may be defined as a body of tissues provided with vascular bundles, which originate from an older, previously existing part of the plant; its growth is not limited, and it never directly gives rise to a leaf.

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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, Feb. 7, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday	85 1/2 @ 84 1/4	84 @ 83 1/4
Thursday	84 1/2 @ 84 1/4	83 1/2 @ 83 1/4
Friday	84 1/2 @ 84	83 1/2 @ 83
Saturday	85 1/2 @ 84 1/4	84 1/2 @ 83 1/4
Sunday	85 1/2 @ 84 1/4	84 1/2 @ 83 1/4
Tuesday	85 1/2 @ 84 1/4	84 1/2 @ 83 1/4

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday	44 1/2 @ 44 1/4	44 1/2 @ 44 1/4
Thursday	44 1/2 @ 44 1/4	44 1/2 @ 44 1/4
Friday	44 1/2 @ 44 1/4	44 1/2 @ 44 1/4
Saturday	44 1/2 @ 44 1/4	44 1/2 @ 44 1/4
Sunday	45 1/2 @ 44 1/4	45 1/2 @ 44 1/4
Tuesday	44 1/2 @ 44 1/4	44 1/2 @ 44 1/4

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	Dec., 1905.	May, 1906.
Wednesday	1 28 1/2 @ 1 28 1/4	1 34 1/2 @ 1 34 1/4
Thursday	1 28 1/2 @ 1 28 1/4	1 34 1/2 @ 1 34 1/4
Friday	1 28 1/2 @ 1 28 1/4	1 34 1/2 @ 1 34 1/4
Saturday	1 28 1/2 @ 1 28 1/4	1 34 1/2 @ 1 34 1/4
Sunday	1 28 1/2 @ 1 28 1/4	1 34 1/2 @ 1 34 1/4
Tuesday	1 28 1/2 @ 1 28 1/4	1 34 1/2 @ 1 34 1/4

Wheat.

The wheat market has become quite an enigma, and it requires a great deal of thought to study the conditions from all over the world. These conditions at the present time are not of an inspiring character. A great amount of talk has been indulged in by various interests as to the strength in the foreign markets. Contradictory reports from Argentina in reference to the crop of the season are still being made, but it has been officially acknowledged that that country will have a large crop which will soon be placed on the market. Buyers abroad are not certain that a drought exists in India. In the meanwhile very little buying is being done abroad. Prices in Europe are easier, although the decline is by no means material, and, in fact, it may be said values have been maintained with remarkable steadiness. Locally, buyers are not loading up. Sellers are very scarce since the decline in prices, and a good premium will have to be paid before any of the wheat remaining in the country can be dislodged. Holders in Oregon and Washington are very firm in their ideas, and maintain that higher prices will prevail. The export interests are not chartering any new tonnage anywhere on the coast, but are confining their operations to cleaning up old engagements. The prospects for the new crop have been materially improved by the rains throughout the State. Farm work has been resumed, and the grain acreage materially increased as a result of these rains. Early grain is in fair condition all over the State, and the usual predictions of a record-breaking crop are heard on all sides. Local millers are not buying as freely from the North as heretofore for future delivery. But the crop is not yet made, and a great many changes can take place between now and harvest. A bad north wind is not without the range of possibilities, and in the case of such an event the young shoots would be blighted and a new face put on the market altogether.

California Milling	1 37 1/2 @ 1 42 1/4
Cal. No. 1 shipping	1 35 @ 1 37 1/4
Northern Club	1 35 @ 1 37 1/4
Northern Bluestem	1 37 1/2 @ 1 42 1/4
Northern Red	1 32 1/2 @ 1 35

PRICES OF FUTURES.

Wednesday, at the forenoon session of Exchange May, 1906, wheat ranged from \$1.34 1/4 to \$1.34 1/2.

Flour.

The situation in the flour market has not changed since last week. Millers cannot see any prospect of an early resumption of business, though a few believe that some improvement will shortly take place. Foreign buyers manifest very little inclination to purchase fresh supplies at the present time. Cables from the Orient during the week have been very light, and there is very little inquiry for prices. Very little new business will be consummated until the large stocks now held by Japan can be worked off. There is some flour going abroad on each steamer from the North, but this is mostly confined to a few mills which have some old orders to clean up. The steamer sailing from Portland on the 30th of January carried over 51,000 barrels, of which 38,000 barrels went to China. No new developments in reference to the Chinese boycott have come to light, and it is thought that the greatest trouble is over. No new business has been received from South America, and the usual monthly shipments still continue. From the United Kingdom no orders have been received of recent date. The local demand has not increased materially.

Patents, California	4 85
Second Patents, California	4 60
Straights	4 25
Superfine No. 1	3 50
Superfine No. 2	3 00
Oregon Bakers	3 90
Washington Bakers	4 00
Eastern Patents	5 50

Barley.

The barley market is rather quiet this week. The prices on futures have declined somewhat, but the cash article has remained steady. Offers are light and there is no life among buyers. The prospects point to a good crop but dealers are generally waiting for developments, as the crop is not as yet assured. Feed, good to choice, is worth \$1.20 to \$1.22 1/2, and there is some demand for brewing at \$1.25 to \$1.30.

Brewing	1 25 @ 1 30
Feed, No. 1	1 20 @ 1 22 1/2
Feed, fair to good	1 17 1/2 @ 1 20
Chevalier, No. 1 to choice	1 25 @ 1 30
Chevalier, common to fair	1 20 @ 1 25
December	94 1/2 @

Oats.

The oat market is stronger, especially for choice Black oats and choice Red oats. Oats suitable for cereal purposes seem to be decidedly scarce, and whatever supplies of these are left in the hands of the growers are being firmly held. There is some talk of importing choice milling oats from the East. The importing of feed oats into California is not particularly heavy, but reports from Portland are that feed oats are coming in very freely there from the Middle West. Quotations show an advance in the upper figures of both Black and Red oats.

White oats	1 50 @ 1 65
Black oats	1 35 @ 1 55
Red oats	1 45 @ 1 70

Corn.

There is no great change in the corn market. The same quotations which prevailed a week ago prevail at present. Eastern corn is coming in freely for feed purposes and the consumption is very large. The growth of green feed is expected to check this demand, and some falling off in corn quotations are likely to follow a continuation of warm weather.

Large White, good to choice	1 17 1/2 @ 1 22 1/4
Large Yellow	1 17 1/2 @ 1 22 1/4
Small Yellow	1 15 @ 1 60
Egyptian White	1 38 1/2 @ 1 40
Egyptian Brown	1 22 1/2 @ 1 25
Kafir	1 20 @

Rye.

The rye market is in remarkably good shape. Stocks are firmly held, and the market is stiff at unchanged prices. All indications are that rye will remain firm until the market begins to be influenced by the coming crop.

Good to choice	1 50 @
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Buckwheat.

San Francisco dealers regard the buckwheat season as over, nearly all of the crop having been disposed of. The situation is quiet, but firm, and there will probably be no material change in the market until the new crop comes in.

Good to choice	1 50 @ 1 65
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Beans.

Nothing has yet developed in the bean market to cause any great change in values. There has been a slight falling off in quotations for red kidney beans, some being sold as low as \$3.25. Lima beans are considered a little easier, there having been no sales during the past week at the \$5 mark reached the week before. The highest price named this week is \$4.85. There is no further news from the East and no large transactions are reported, but the general movement to consumers is satisfactory. In most lines stocks seem to be ample for requirements.

Small White, good to choice	2 90 @ 2 25
Large White	2 25 @ 2 60
Pinks	1 75 @ 2 00
Pinks, damaged	1 00 @ 1 25
Bayos, good to choice	3 30 @ 3 60
Red Kidneys	3 25 @ 3 75
Reds	3 00 @ 3 10
Limas, good to choice	4 75 @ 4 85
Black-eye Beans	4 40 @ 4 50

Dried Peas.

The situation in dried peas shows no material change. The light stocks and good demand continue to favor sellers and quotations are in all cases well maintained. The advances noted last week have continued, though there have been no further changes.

Green Peas, California	2 15 @ 2 50
Niles	1 75 @ 2 00

Hops.

Hops are still reported quiet, with very few transactions. Dealers quote prices ranging from 6c. to 10c., or about as heretofore. Very little movement is anticipated in this market, as dealers report that practically all of the stock is now cared for except some inferior lots near Sacramento. It is known that some growers who are still holding their stocks are expecting higher prices, but San Francisco buyers do not seem anxious to secure the stocks remaining in first hands.

Medium to fair	6 @
Good brewing	8 @ 8 1/2
Prime	9 @
Prime to choice	10 @

Wool.

On the whole, the wool market continues fairly steady, though quiet. Some varieties have declined slightly in prices, though transactions continue very limited. Those wools which have suffered a decline are: Middle county, defective; San Joaquin and Southern, free; and San Joaquin and Southern, defective. These have gone down about 1c. There is very little wool arriving at this market, and in general not much interest is felt in the local situation. The Boston market still continues fairly active, with indications of slightly better prices.

	FALL.	SPRING.
Humboldt and Mendocino	15 @ 16 1/2	14 @ 16
Northern, free	14 1/2 @ 16	14 @ 16
Northern, defective	11 @ 13	11 @ 13
Middle County, free	10 @ 14	10 @ 14
Middle County, defective	10 @ 12	10 @ 12
San Joaquin and Southern, free	5 @ 10	5 @ 10
San Joaquin and Southern, defective	7 @ 10	7 @ 10
Oregon, valley	23 @ 25	23 @ 25
Eastern Oregon	15 @ 17	15 @ 17
Nevada	15 @ 19	15 @ 19

Hay and Straw.

There has been a decided increase in shipments of hay to this market during the week, the total showing 4,400 tons as compared with 3,250 tons last week. This increase is partly due to the fact that cars are now more plentiful and partly due to the general idea throughout the country that a new crop is now assured. The latter has tended to release many lots of hay that were being held back for emergency and speculative purposes. The interior demand throughout the State continues very good, and some claims are made that from 50 to 75 per cent of all cars loaded go to points other than San Francisco. The market has been depressed during the week, owing to the heavy arrivals, although strictly choice hay, both in the wheat and tame oat lines, continues to sell at top quotations. There is also a continuing scarcity of the very cheapest grades of hay for stock purposes. The weakness is most marked in the medium grades, such as have been selling from \$11 to \$12, although, as yet, the decline is only about 50c. per ton. Alfalfa is dull and neglected, with plentiful shipments. The straw market continues very sensitive, any oversupply producing an immediate weakness in prices.

Wheat, choice	14 00 @ 16 00
Wheat, other grades	8 00 @ 13 00
Wheat and Oat	8 50 @ 12 00
Tame Oat, fair to choice	8 00 @ 12 00
Wild Oat	8 00 @ 9 50
Barley	7 00 @ 9 50
Clover	6 00 @ 9 00
Alfalfa	9 00 @ 11 50
Stock hay	7 50 @ 8 50
Compressed	10 00 @ 13 00
Straw, 1/2 bale	80 @ 50

Millstuffs.

In general the demand for millstuffs is rather quiet, owing to the increase of green feed. Bran and shorts, however, both continue to hold fairly firm, and there is some talk of an upward tendency in prices. Northern mills are oversold, and are declining orders even for future delivery. This is due to the uncertainty of the flour market, and while this condition has not yet affected California mills it may do so later on, unless the demand for flour picks up. Prices are quotably as heretofore.

Alfalfa Meal, 1/2 ton	21 00 @ 22 00
Bran, 1/2 ton	20 50 @ 21 00
Middlings	27 50 @ 29 00
Shorts, Oregon	21 00 @ 22 00
Barley, Rolled, choice	26 00 @ 26 50
Cornmeal	28 50 @ 29 50
Cracked Corn	29 00 @ 30 00
Oilcake Meal	39 00 @ 40 00
Cocanut cake or meal	24 50 @ 25 50

Seeds.

Seeds continue about as last week, with an active demand for nearly all varieties. The most notable feature of the week is the advance in hemp seed, which has gone up from an outside figure of 5c. to as high as 6c. Ordinary stocks are selling from 5 1/2c. to 6c. Canary seed is slightly easier at a reduction of 1/4c. over the prices of last week.

Alfalfa	12 50 @ 14 00
Flax	3 25 @ 3 50
Mustard, Yellow	3 75 @ 4 25
Mustard, Trieste	4 50 @ 4 75
Canary	6 @ 6 1/4
Rape	2 1/2 @ 3
Hemp	5 1/2 @ 6
Timothy	5 1/2 @ 6

Honey.

The honey market has remained firm throughout the week, without further decline in prices. Large shipments of extracted honey are arriving daily and, although considerable sales have been effected, the trade here seems to be expecting a further easing off in prices. No further arrivals of Hawaiian honey are reported.

Extracted, Water White	4 1/2 @ 5
Extracted, White	4 @ 4 1/2
Extracted, Light Amber	3 1/2 @ 4

Extracted, Amber	3 @ 3 1/2
Extracted, Dark Amber	2 1/2 @ 3
Extracted, Hawaiian	2 1/2 @ 3
White Comb, 1-frames	10 @ 12 1/2
Amber Comb	9 @ 10

Beeswax.

As usual, there is very little activity in beeswax. The market is unchanged, both as regards prices and demand. Dealers here expect the present situation to be permanent.

Good to choice, light	27 @ 28
Dark	25 @ 26

Live Stock and Meats.

The meat market continues very strong with pronounced activity in most varieties. A lively interest is still manifested in hogs, and a further advance of a quarter cent is noted. The light shipments now arriving are quickly taken at prevailing prices, and a further advance is generally anticipated. Beef, mutton and lamb are reported very firm, though prices are still held at the old figures.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net	5 1/2 @ 6
Beef, 2nd quality	5 @ 5 1/2
Beef, 3rd quality	4 @ 4 1/2
Mutton—ewes, 8 @ 9c; wethers	9 1/2 @ 10
Hogs, hard grain, 150 to 250 lbs.	6 1/2 @ 6 1/4
Hogs, large, hard, over 250 pounds	6 @ 6 1/4
Hogs, small, fat, under 150 lbs.	6 1/4 @ 6 1/2
Veal, large, 1/2 lb.	6 @ 7 1/2
Veal, small, 1/2 lb.	8 @ 9
Lamb, spring, 1/2 lb.	11 @ 12

Hides, Skins and Tallow.

The hide market has been a little more active this week, though no very large transactions are reported. Prices still continue in the same uncertainty as throughout January. Local tanners are fairly well supplied with hides and are not disposed to pay fancy prices for the off grade stock now offering.

Bags and Bagging.

Few spot transactions in bags have been made this week, as very few bags are needed for present requirements. Interest centers on the prices of future grain bags and a number of inquiries and a few sales for future delivery have been made. The extraordinary firmness of the bag situation in Calcutta has given rise to some talk of a combination at the primary market to force the prices up, and there is some question as to the ability of the reputed combination to hold the prices up until the big summer demand sets in. At present the market is firm and quiet at the old quotations.

Bean Bags	7 @
Fruit Sacks, cotton, No. 1, 8 @ 8 1/2; No. 2	7 1/2 @
Fruit Sacks, jute, as to quality	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 22x36, spot	7 1/2 @ 7 3/4
Wool Sacks, 4-lb.	36 @ 37
Wool Sacks, 3 1/2-lb.	32 @ 34

Poultry.

Owing to the presence of large shipments from the East, the market has been easy this week, with a decline in some of the smaller varieties. A fair demand continues, however, for good large broilers, fryers and fat hens. The market for turkeys continues to be uninteresting and prices remain nominal. The market for game of all kinds remains good and prices in these lines are sustained.

Turkeys, choice Young, 1/2 lb.	1 @
Turkeys, live gobblers, 1/2 lb.	15 @ 16
Turkeys, live hens, 1/2 lb.	17 @ 18
Hens, small, 1/2 dozen	4 30 @ 5 20
Hens, large	6 00 @ 7 00
Roosters, old	4 50 @ 5 50
Roosters, young (full-grown)	6 00 @ 7 00
Fryers	4 50 @ 5 50
Broilers, large	3 00 @ 4 00
Broilers, small to medium	2 00 @ 3 00
Ducks, old, 1/2 dozen	5 00 @ 6 00
Ducks, young, 1/2 dozen	6 00 @ 7 00
Geese, 1/2 pair	2 00 @ 2 20
Geese, 1 pair	2 00 @ 2 20
Pigeons, old, 1/2 dozen	1 00 @ 1 40
Pigeons, young	2 00 @ 2 20

Butter.

The market for butter is just a trifle easier this week, especially on the better grades, which are quotably about one-half cent lower. Prices for all other grades remain about as heretofore, with a slightly firmer feeling in California storage. The volume of business done is considered satisfactory, especially in storage stock. Fresh Eastern butter remains firm, under a lighter supply. The warm weather has not yet begun to effect the market materially, though it is expected to be felt very soon in increased supplies of off-quality stock.

Creamery, extras, 1/2 lb.	30 @ 31
Creamery, firsts	28 @ 29
Creamery, seconds	24 @ 25
Dairy, select	20 @ 25
Dairy, firsts	23 @ 25
Dairy, seconds	20 @ 22
California storage	25 @ 26
Mixed Store	19 @ 20

Cheese.

Liberal supplies of cheese have been coming in during the week from the California creameries. The continued warm weather is considered responsible for this, and a continuation of the present situ-

ation may result in still lower prices. Prices on Eastern stock remain unchanged with a fairly active market. Buyers of California cheese are holding off, anticipating lower prices within a few days.

California, fancy flat, new.....	14	@	—
California, good to choice.....	12	@	13
California, fair to good.....	11	@	12
California, "Young Americas".....	13	@	14
Eastern, new.....	15	@	16

Eggs.

The egg market has declined steadily this week under increased supplies of ranch eggs, which are available at lower prices. Owing to the warm weather and the good prospects for still larger supplies next week, buyers are manifesting considerable cautiousness and are inclined to keep their stocks well cleaned up. Prices for California stock are expected to go still lower during the next few days. So far, Eastern stock has suffered only a slight decline.

California, select, large, white and fresh.....	25	@	27
California, select, irregular color & size.....	25	@	26
California, good to choice store.....	24	@	25
Eastern firsts.....	20	@	21
Eastern seconds.....	17	@	18

Potatoes.

There has been some fluctuation in Oregon Burbanks this week, but the general tone of the market is about the same. Oregon Burbanks are now quoted at from 80c. @ \$1.15. All upper-grade stocks remain steady with plenty of buyers at full quotations. While a good part of the low-grade stuff has been disposed of during the last two or three weeks, a large quantity of this still remains, and concessions are being made to sell it.

River Burbanks, 3/4 cental.....	50	@	75
Salinas Burbanks.....	1 25	@	1 65
Oregon Burbanks.....	80	@	1 15
Tomatoes.....	90	@	1 00
Sweet Potatoes, fancy.....	1 25	@	1 50
Sweet Potatoes, good to choice.....	75	@	1 00
Early Rose, fancy.....	1 35	@	1 50
Early Rose, good to choice.....	1 25	@	1 35

Vegetables.

The vegetable market has become more active during the week, and quotations have changed in a number of instances. Asparagus has commenced to arrive from the river in moderate supply, and is selling at from 60 to 75c. per pound, according to quality. Shipments of rhubarb from the south are also appearing in small quantities. Mexican tomatoes are coming in and are finding ready buyers, but as a rule the quality is poor. Peas are also in the market and are selling freely, though of the low grade. String beans have practically all been withdrawn from storage, and are in general out of the market. The few still to be had are selling at 20 cents.

Fresh Fruits.

The fresh fruit market is now practically reduced to apples, there being but one lot of pears left. These are selling in small quantities at \$2.75. Transactions in apples have been frequent, and business continues very brisk. All fancy grades of apples are firm at quotations, while the lower grades are reported to be somewhat easier.

Apples, choice to select, 50-lb box.....	1 50	@	2 00
Apples, good to choice, 50-lb. box.....	75	@	1 00
Apples, common.....	50	@	75
Pears, Winter Nellis.....	2 75	@	—

Dried Fruits.

The market in dried fruits continues very firm. The past week has witnessed no material change in prices except in prunes, which have been advanced a quarter of a cent in nearly all sizes. Prunes are in active demand, and stocks are being reduced quite rapidly. Whether or not the advance just made will serve to check the demand is not yet known, but it is generally held that present stocks will easily pass into consumption at the new prices before the next crop comes in.

Raisins.

The raisin market is still a matter of interest, but as yet there are no notable developments since the change in prices noted last week. Trading on the coast has been fair, but no new Eastern business is reported. As was to be expected, the large Eastern buyers will hold off for a time to watch developments and ascertain how other buyers are receiving the advance. Holders here express confidence in the situation and do not seem anxious to get rid of their stocks.

(Fresno delivery except otherwise specified.)

London Layers, 2-crown, 20-lb box.....	1 50	@	—
London Layers, 3-crown, 20-lb box.....	1 60	@	—
Fancy Clusters, 4-crown, 20-lb box.....	1 75	@	—
Dehesas, 20-lb box.....	2 00	@	—
Imperial, 20-lb box.....	2 50	@	—
2-Crown Standard loose Muscatel.....	5	@	—
3-Crown Standard.....	5 1/4	@	—
4-Crown Standard.....	5 1/2	@	—
Seedless Thompsons, 50-lb boxes.....	4 1/4	@	—
Seedless Sultanas.....	4	@	—
Seedless Muscatels.....	3 1/4	@	—
Fancy, 16-oz. Seeded.....	6 1/2	@	—

WOOL SALE.

The Century Mercantile Company is conducting regular sales at its warehouse. This interests all growers. Full particulars by mail. Office, 14 Sansome St., San Francisco.

Choice, 16-oz. Seeded.....	6 1/4	@	—
Fancy, 12-oz. Seeded.....	5 1/4	@	—
Choice, 12-oz. Seeded.....	5	@	—
Fancy Seeded, bulk.....	6 1/4	@	—
Choice Seeded, bulk.....	6	@	—

Citrus Fruits.

The market for oranges has been active all week, and an advance in quotations made early in the week has not sufficed to check the demand. The only oranges which seem to be easier are the fancy and extra fancy grades. These have not reached the same higher figures as last week. Owing to the good demand in the East for oranges, southern California shippers are inclined to divert stock toward the Eastern centers and local dealers apprehend a consequent falling off in receipts here. However, large shipments have been received here this week, and at present stocks are sufficient for requirements. Seedling varieties are very scarce, and have practically disappeared from the market. The Mexican limes, which came in last week, are very firm, and those which remain in stock are held at an advanced figure.

Oranges, fancy.....	2 00	@	2 50
Oranges, choice.....	1 50	@	2 00
Oranges, standard.....	1 00	@	1 50
Oranges, Seedlings.....	1 00	@	1 25
Lemons, California, fancy, 3/4 box.....	2 00	@	2 25
Lemons, California, good to choice.....	1 00	@	1 50
Lemons, California, standards.....	60	@	75
Grape Fruit, 3/4 box, new.....	1 00	@	1 50
Grape Fruit, seedless.....	2 00	@	2 50
Limes, 3/4 box.....	3 50	@	5 00

Nuts.

The nut market seems to have settled down to a normal quietness, and there is little indication of any interesting developments in the immediate future. There have been but few inquiries from the East, and very little stock either of walnuts or almonds is being shipped out to supply Eastern requirements at the present time. The general feeling here is, that Eastern demands have been supplied and no additional orders of importance are expected from that source before the new crop comes in, though it is possible that the Eastern trade may have underestimated its needs.

Peanuts, fair to prime.....	4 1/4	@	5 1/4
Cal. Walnuts, No. 1 soft shell.....	—	@	13
Cal. Walnuts, No. 2 soft shell.....	—	@	9
Cal. Walnuts, No. 1 hard shell.....	—	@	12 1/2
Cal. Walnuts, No. 2 hard shell.....	—	@	8 1/2
Almonds, IXL, 3/4 lb.....	11 1/4	@	12 1/2
Almonds, Ne Plus Ultra, 3/4 lb.....	11	@	12
Almonds, Nonpareil, 3/4 lb.....	11	@	13
Almonds, Languedoc, 3/4 lb.....	8 1/2	@	—
Almonds, Golden State, 3/4 lb.....	8	@	—
Hard Shell, 3/4 lb.....	5	@	—

Cyphers Incubator Catalogue.

The Cyphers Incubator Co. announces eighteen distinct separate and valuable points of improvement in their 1906 pattern standard Cyphers Incubator. Certainly such an announcement ought to interest poultry growers and prompt them to send for a catalogue describing all these improvements to Cyphers Incubator, Buffalo, New York.

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The fact that the growth of the firm of Woodin & Little requires removal to more commodious quarters will interest many readers. They will now be found at 209-211 Market street, filling four stories with the motors, pumps and fittings for which they are well known.

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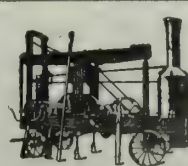
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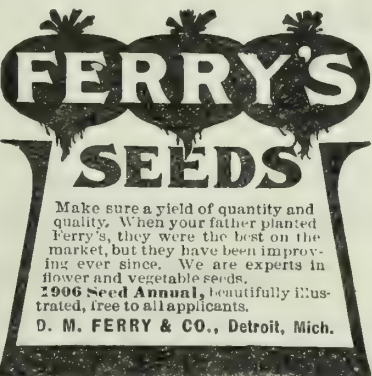
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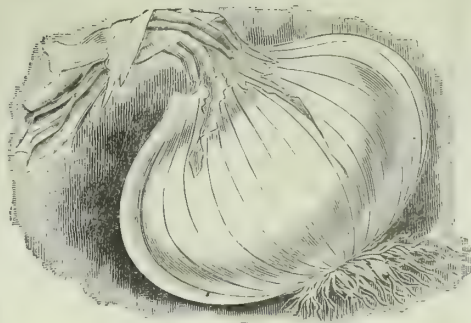
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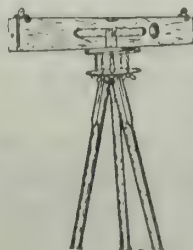
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THE DAIRY.

California's Dairy Output.

In two previous issues we have presented the figures compiled by the State Dairy Bureau, showing the production of butter and cheese for the statistical year ended October 1, 1905. Through the work of Mr. W. H. Saylor, secretary of the Bureau, it is now possible to give the product of the milk-condensing factories of California and to add the usual annual estimates of the value of the dairy production of the State.

According to returns made to the Bureau by the five milk-condensing factories in the State, the total output was 244,878 cases on a basis of 48 20-oz. cans to the case. At the prevailing wholesale price for this product is represented a valuation of \$820,341.

The value of the butter output is given on a basis of the average wholesale price paid in San Francisco. In view of the fact that this market gets the surplus product of the State, the price ranges lower than local prices throughout the State, and hence a valuation based on the average of the San Francisco market is extremely conservative, but even on this basis the value of the State's butter output for the year ended October 1, 1905, was \$10,490,262.

If the value of the cheese production is figured on the same basis, that is, the average San Francisco price, it will amount to \$722,480.

It is not easy to place a valuation upon the value of milk and cream consumed in the State, except by estimating it on a basis of averages that have been worked out by statisticians. The United States census for 1900 showed the average per capita consumption of milk to be a trifle over 30 gal. a year. A recent investigation by an expert of the United States Department of Agriculture showed that the average consumption in the city of Boston was 39 gal. In view of these reports, we can safely say that the population of a State with as large a percentage of rural population as California consumed an average of 30 gal. a year, or a total of 44,851,590 gal., worth \$6,279,226, on a basis of the San Francisco wholesale price, which is 14c. per gallon.

There are approximately 350,000 dairy cows in California. The value of their calves at \$5 a head is worth \$1,750,000.

In producing 41,961,047 lb. of butter there was left as a by-product 1,007,065,128 lb. of skim milk, to say nothing of buttermilk and cheese factory whey. Manufacturers of commercial casein are not able to purchase skim milk in the State at 15c. per cwt., indicating that the dairymen place a higher value upon it for feeding purposes, but even at this price it would make the annual value of the skim milk produced in the State \$1,510,597.

Recapitulating the above estimates, we can take the following table as a conservative statement of the annual value of the dairy output:

Value 41,961,047 lb. butter.....	\$10,490,262
Value 6,020,672 lb. cheese.....	722,480
Value 244,878 cases condensed milk.....	820,341
Value milk and cream consumed.....	6,279,226
Value calves produced on dairies.....	1,750,000
Value skim milk from butter production.....	1,510,597
Total.....	\$21,572,902

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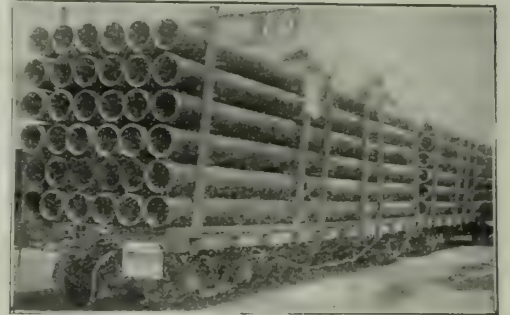
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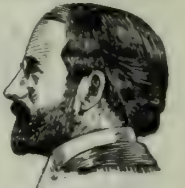
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Patrons of Husbandry.

Tulare Grange Meeting.

Tulare Grange convened at its hall on Saturday, the 3d. There was a good attendance and a delegation from Dinuba Grange present.

After the formal opening, W. V. Griffith, the Worthy Master of the State Grange of California, was introduced and conducted by the Steward and formally presented to the Worthy Master of Tulare Grange. Sister Amanda O. Swanson, who, in a short but happy address welcomed him to Tulare Grange, expressed the honor this Grange felt at his visit, inviting Worthy Master Griffith to fill the Master's chair. This was declined, but with expressions of pleasure at the opportunity of visiting Tulare Grange, which has a standing in the Order of Patrons of Husbandry second to no subordinate Grange in California.

Worthy Master Griffith told of his presence in Tulare county the past week, in the vicinity of Woodville, Poplar and Porterville, in company with Brother F. E. Styles. Next week they will canvass Exeter and Lindsay. They have received much encouragement from the farmer residents of the districts where they have visited, have a good charter membership for one new Grange, which will be inaugurated in a few days, and believe others can, also, be inaugurated in the coming week. Wherever they have gone they have met with only expressions of approval of the work being done by the Order of Patrons of Husbandry. It is the only national organization of farmers in the land. It fills well a place in our national existence. Its work is thoughtful, timely and done well.

After the regular routine work of the Grange was through, the literary exercises were called. Under this head, there was a general discussion on Farmers' Mutual Fire Insurance Associations. Under this head came up necessity of insurance against loss by fire. It was conceded by all participating in the discussion that all property, liable to destruction by fire, should be insured, but that the rates charged by joint stock insurance companies are so exorbitant as, in too many cases, to be prohibitory; that the Boards of Underwriters in the several States issue one-sided and unfair policies and their premium rates are too high for farmers to pay, thus being prohibitive; that the remedy for farmers is mutual, co-operative fire insurance associations; that the report of the Commissioner of Insurance for California, for 1904, shows that the stock insurance companies of this State in 1904 charged an average of \$1.50 premium on the risks written and that there are in California 10 county mutual fire insurance companies whose premiums averaged only 50c. on the risks written.

Board companies and their agents claim this cannot be done. This is an unmitigated untruth, for since passing the law in 1897 authorizing the formation of mutual county fire insurance companies, every loss and every expense have been paid and a large surplus remains on hand to meet future losses. The board companies also assert the mutual companies are not safe. This is another unmitigated untruth. Nothing can be safer, for the law authorizing the formation of such companies makes everyone insuring in the company a member of it and responsible for his pro rata of losses, and the by-laws of the companies provide that a failure to pay an assessment to meet a loss forfeits the insurance until paid. Incorporated fire insurance companies may fail and do fail; the county mutual insurance companies cannot fail.

Sonoma County Farmers' Mutual, the first to organize under the law, organized Jan. 7, 1898; had risks on Jan. 7, 1906, of \$690,462. Its charge on the risk is \$2.50 on each risk written and one mill on the dollar of risk, or 10c. per \$100 per annum. This has paid all expenses and all losses to the first of this year, with a cash balance of \$1,963.15 on hand and a membership of 602. How can such a company fail? Stock insurance companies are organized to make money for the stockholders, by unfair combination. Competition is eliminated and all the business will bear is exacted. Mutual companies are organized to make losses mutual, to protect the individual against ruinous loss at the least possible expense of doing it. No mutual fire insurance company can do business until it has \$50,000 in risks. The smallest company in the State has three times that amount. Nor can it take a risk outside its county or over \$4,500, nor for more than 75% of the value of the property insured. Very many of the States east of California have mutual fire insurance companies at charges of 3 to 18c. on the \$100, while

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several foreign countries, notably Switzerland and New Zealand, have governmental fire insurance, at a charge of 3c. on the \$100, and a State insurance is what it should be in California. The provision of the law, which prohibits mutual companies from insuring property in excess of 75% of its value, is just and commendable, as it assures the insured that he will get the amount he pays premium on. It is outrageous that the incorporated joint stock companies do not have to meet the same requirements of law, for it is well understood that joint stock companies—that is, many of them—take premiums on risks greatly in excess of the value, but, by clauses in their policies and by law, are not required to pay, and do not pay, more than the value, or three-fourths of the value of the loss. Why should the law allow them this unfair advantage?

On motion the Worthy Master appointed a committee of five to take preliminary steps to organize a Patrons county mutual fire insurance company for Tulare county. The members present pledged themselves to insure to the amount of nearly \$20,000. Half the membership of the Grange was not present, and the delegates from Dinuba Grange pledged their Grange to assist in every way. It was concluded, among the members, that \$75,000 can be had in risks, as soon as the papers for signing are ready, and there will then be a Grange Mutual Fire Insurance Association in Tulare county. Let the good work go on.

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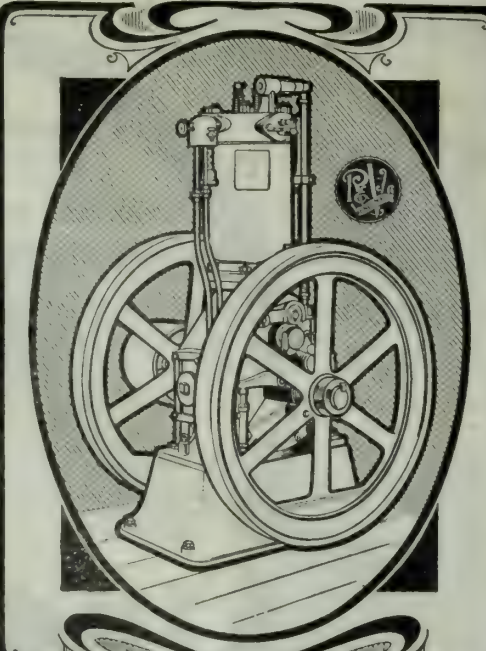


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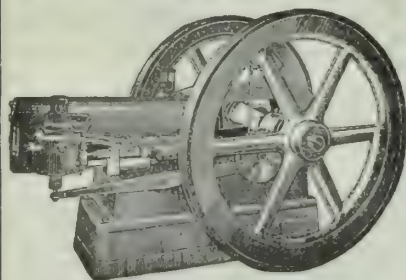
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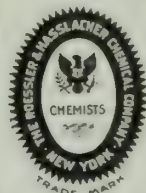
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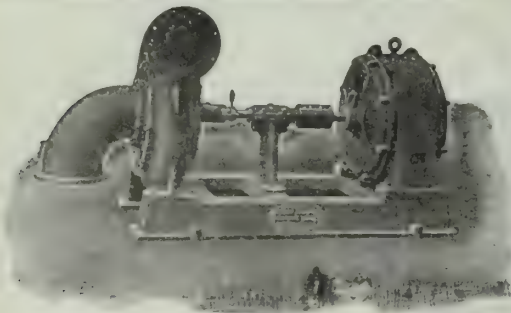
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Vol. LXXI. No. 7.

SAN FRANCISCO, SATURDAY, FEBRUARY 17, 1906.

THIRTY-FIFTH YEAR.
OFFICE: 330 MARKET ST.

Closing Acts in Canning.

At our last reference to the operation of canning fruits, comments were made upon the importance of processing, or the act of applying heat to sterilize the contents of the can so that no germs shall remain to start fermentation, and then, while the affair is still hot, closing the tiny vent-hole with a drop of solder. This prevents any access of outside air to the interior of the can, and therefore no new introduction of germs to take the place of those killed by the heat. When this is done, the successfully processed can becomes sound and durable for an indefinite period. There has been some claim now and then that all cans should be indelibly marked with the date of their preparation, so that the consumer might know whether he was receiving fresh canned fruits or not. This is certainly an unnecessary refinement so far as our well-canned fruits and vegetables go, for the simple reason that they are as good at the end of the year as at the beginning, and not only at the end of the first year, but at the end of several years. If canned products are only durable a year or less a large block goes out of the foundation of the whole canning proposition. If a can is sound and good a few days after closing, it is likely to remain good for a few years. There may be trade reasons why it might be desirable to have the date of packing ineffaceable, but it is not necessary with respect to the contents of the can if they were ever first-class

and commendable to consumers.

But the can is finished and now needs only cleansing, identification and adornment. The first is simply washing with

cold water from a hose to dislodge any scum which may have attached itself as it rose from its scalding bath. The picture shows the cleansing of one of

the frames of cans as it has been moved in mass from the processor's bath to the open air. Just as soon as the heat has been sufficiently applied to penetrate the fruit with its germ-killing agency, it should cease. Therefore, the cold water is applied, the contents of the can shrink a little as they cool, a vacuum is produced and the outside air pressure generally hollows the ends of the can a little.

Canned goods are not handsome as they come from the process: they are too stark and tinny. They need labeling to establish identity and the producer has seized his opportunity for embellishment. Probably no one is so unsusceptible to the influence of art that he is not pleased with the appetizing pictures, which belt the cans. It may be gastronomic art and not fine art, but it adds a lot to the trade value of the can and to the satisfaction of the purchaser also. We will not quarrel with the artist if his labels, in drawing and coloring, sometimes do not closely resemble anything on the earth nor under it. They may be conventionalized, but decorative and suggestive they certainly are, and they are never bad enough to take the edge off the can opener nor the appetite: so we may vote them suited to their purpose. Labeling is swift work by those who are skilled at it. The two women whom the picture shows at work in the J. H. Flickinger Co.'s cannery at San Jose have a record of labeling 17,000 cans in one day.



Washing the Cans After Processing at the Flickinger Cannery at San Jose.



Carrying, Labeling and Boxing the Finished Product in a California Orchard Cannery.

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E. J. WICKSON..... Horticultural Editor

SAN FRANCISCO, FEBRUARY 17, 1906.

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The Week.

A warm, wide-reaching rain is falling as we go to press and giving satisfaction everywhere. The immense area which has been handled for field crops and fruit products during the last fortnight will be greatly benefited by such a gentle, soaking rain. It looks as though we should get the average February rainfall, which is 3½ inches in San Francisco, and this will be all that will be needed to carry growth into the March period, when the rain which shapes the season comes. Everything is looking well, though the grass is still rather backward, and a little quiet heat after these rains will be very welcome.

In our last issue we had some interesting observations on frost in the southern citrus region, and probably readers noted the absence of discussion of frost fending by fires which were so freely talked about in recent years. The frost was lighter than was feared, and the efficiency of such mild protective agencies as windbreaks and the use of irrigation water chiefly occupied the writer's attention. It really looks as though California growers of tender plants were disposed to take the small risk of injury rather than undertake the cost and trouble of warming the air by distributed fires, although that has proved feasible. This is rather significant testimony that frost dangers are small in the places best suited by nature to the orange. We are reminded of this fact by the sight in the last issue of the *New York Tribune-Farmer* of a full page devoted to the orange industry in Florida, which is wholly occupied with pictures of the effects of the great frost of a decade ago and discussion of what has been done since then in restoration of the orange interest. The present surety of the Florida groves is said to be in adequate protection by tents or fires, because hard freezes have been encountered frequently and as late as December, 1905, a blizzard from the north carried a temperature of 16° to Jacksonville. Therefore it may be concluded, as the writer in the *Tribune* seems to conclude, that present confidence in Florida orange growing is built upon the feasibility of fire protection. This is the reason why we claim that California's apparent abandoning of firing, the efficiency of which was demonstrated in this State, is very significant.

We seem to have given our notion to Florida because we conclude we no longer need it. It may not be generous to give away what one no longer has use for; but it will be fortunate, if not generous, if such should ultimately prove to be the fact.

Speaking of distant fruit affairs, it is interesting to note that having their seasons inverted by living in the southern hemisphere, is working out quite according to the anticipations of the South African fruit growers. They have always claimed that they would market summer fruits in midwinter, not only in London, but in American cities. This seems to be beginning briskly, for it is announced that 200 packages of peaches, apricots and plums reached New York by steamer about February 1 from Cape Town, South Africa. This fruit was generally pronounced the finest lot that had ever come from that part of the world; in fact, prices at which the fruit sold proved that it was more than superior in every way, because the peaches (Alexanders, 15 to 21 to the box) sold from \$4.50 to \$6; plums (Wicksons same sizes), \$3 to \$4; while the apricots (Moorparks, 35 to 45 to the box) sold at \$2.50 to \$4. The peaches were remarkably fine, and at the highest prices quoted above equal 40c. for each peach. The boxes weighed seven pounds each and were quickly taken even at such high prices. Much more is arriving and on the way.

California can, however, challenge South Africa in one way, even if we cannot send peaches and plums to New York in February. California is doing more for woman suffrage than lightest Africa, and we take our northern sister, Oregon, in this commendable enterprise with us. At the annual convention of the Women's National Suffrage Association in Baltimore the report of the treasurer showed receipts, including last year's balance, of \$28,333.92, and the five States contributing the largest amount of money to the treasury are Pennsylvania, Oregon, California, Massachusetts and New York. Thus the Pacific Coast does well. The membership was never so large or the financial showing so good. An active woman suffrage campaign is in progress in Oregon, to be terminated by the voters at the election in June, 1906. It looks as though Oregon would lead us, however, in inviting women to vote, but Californians are busy for the next Legislature.

Germany is getting wise from her own point of view, at least, and will try to kill two troublesome birds with one stone. The telegraph says that at a dinner last week of the German Agricultural Council, Prince von Buelow, the Imperial German Chancellor, acknowledged the Council's favorable reception of his policy on the subject of the scarcity of meat. Efforts, he said, should be made to raise livestock in Germany, and so make the nation independent of other countries in that respect. The Chancellor added that it was necessary to strengthen the position of the German farmer, who, when he is making a tolerable living at farming, is the best bulwark against the social democracy. The Chancellor is probably right. If the farmers have a fair show they are a strong conservative force, and efforts to radicalize the farmers do not make much headway when produce prices are good. It will hit the United States pretty hard if Germany grows all her own meat, but our dried fruits are not menaced, and so we enjoy the conflict. California products cannot be made in Germany!

A very interesting stock growers' meeting is to be held in Fresno on March 10. An association has been formed of those who are grazing their stock on the forest reserves in the Sierra, on the east of the San Joaquin valley, and they propose to assemble as stated for discussion of matters affecting their interests and for social purposes. The idea is a good one and Forest Supervisor C. H. Shinn is doing what he can to promote the success of the organization. Certainly there is community of interest among these tenants of the Government, and the Government in the form of the Forestry Service proposes to co-operate with them freely and to adopt forest policies and regulations as far as possible to the promotion of their prosperity. The meeting will doubtless be very interesting and important.

QUERIES AND REPLIES.

Nuts and Gums.

TO THE EDITOR: Is loamy river-bottom soil, with a small proportion of gravel, suitable for the growth of the almond and the English walnut? Also, which variety of each is most profitable to grow? Which variety of the Eucalyptus grows largest and fastest, thus bringing best returns for fuel?—SUBSCRIBER, Stockton.

River-bottom soil will do well for English walnuts, providing the water does not stand too near the surface. A walnut tree should have several feet of clear soil which is not filled up with stagnant water. Such situations are, however, not to be thought of for the almond and are usually dangerous for the walnut also, because of the late frosts which generally occur in the river bottoms. Still, there are some such places where English walnuts do well. The common blue gum is usually the largest and fastest growing Eucalyptus, and is, therefore, most widely grown for fuel. In places where the winter temperature falls low enough to injure this variety, the Eucalyptus *rostrata* and the Eucalyptus *rudis* are preferred, because they are somewhat more hardy.

Brown Scale on Apricot.

TO THE EDITOR: I send you sample cuttings from apricot trees, showing brown scale, together with a black smut. Is the black smut a product of the brown scale, or has it anything to do with shot-hole fungus? Which is the cheapest and best spray to apply to remedy this and clean up the trees. Is lye of any service in such case?—AMATEUR, Napa.

The black smut is a product of the brown scale and has nothing to do with the shot-hole fungus. The best spray for the brown scale is the Resin-caustic-soda wash. The twigs seem to indicate that your apricot trees need a thorough pruning. This will force out much more satisfactory new growth. A tree which has only been making an inch or two of shriveled new wood, like the specimen that you sent, needs a thorough cutting back for renewal of the top.

For Curl Leaf.

TO THE EDITOR: Is one spraying, according to the formula given in the *PACIFIC RURAL PRESS* of December 30, sufficient to prevent curl leaf on peach trees? If not, when should the next spraying be done, and what should be the mixture?—READER, Fresno.

Once sprayed before the blossoms appear generally cleans the bark of curl leaf spores and ends the trouble for the season. If the variety or the locality is unusually bad for curl, a second spraying with the 4-4-40 Bordeaux formula, just as soon as the trouble begins to appear on the leaves, will usually check the disease at that point. It is common only to spray once.

Aphis Eggs.

TO THE EDITOR: I am mailing you under separate cover some apple twigs for you to examine and tell what they are and what spray to use.—ORCHARDIST, Colorado.

The objects, which occur in abundance upon the apple twigs which you send, are the eggs of one of the apple aphids. They are exceedingly difficult to destroy. Probably some are destroyed by a winter use of the lime sulphur and salt, but very effective work can be accomplished by watching until the little lice begin to appear upon the under sides of the new leaves and then attack them thoroughly with kerosene emulsion spray.

About Plants.

TO THE EDITOR: Will you kindly favor me with information regarding the following plants: Artichoke, Feijoa sellowiana and Cassava?—ENQUIRER, Redlands.

The Jerusalem artichoke grows very successfully in most parts of California, but has not proved, on the whole, very valuable for stock feeding. Those who begin with it very enthusiastically generally turn their attention to something else very soon. Cassava has not thus far proved successful in this State. It seems to require heat in connection with moisture, while we, as you know, have heat and dry air, which does not satisfy any tropical plant, although some of the semi-tropical plants seem to grow to perfection with this combination. The Feijoa sellowiana has been tried to some extent in southern California, and I think you can get information about it from C. P. Taft, Orange.

Thistles and Salt for Bloat.

TO THE EDITOR: How can I dispose of the Canada thistle and its conqueror, the Russian thistle, both of which are here? The first named I pulled up and piled preparatory to burning, the second I do not know, but understand it is here. I own a few cows—good ones—and fear the bloat. Thus far they are safe, though two or three have been slightly affected. The lightness of the attack, I am fain to attribute to the desire the cows have for salt. I never saw cattle go to the salt-box every day as eagerly as these. Could it be a specific? I am watching and studying this phase. They are young and poor, yet they graze on the alfalfa moderately.—DAIRYMAN, Lathrop.

Please send us by mail what you consider the Canada thistle and the Russian thistle. We have never seen the Canada thistle in California, and doubt if you are not mistaking some other plant for it. You can get information about the Russian thistle by sending to John Isaac, Secretary to the Horticulture Commission, Sacramento, California, who has recently made a publication on that subject. We are glad that you are succeeding in avoiding the bloating of your cattle. Undoubtedly salt would have an effect toward preventing it, but it can hardly be called a specific, because the cows could readily eat too much fermenting material to be affected by the amount of salt which they would take. You will have to look out when the alfalfa gets rank, and it is a good idea to give them straw or something dry, which will prevent their overeating alfalfa.

Berry Growing.

TO THE EDITOR: I wish to plant some berries for market. Have tried Black raspberries. They do not stand our summers well. I do not want strawberries, because I do not have water for irrigating all summer. Besides these, I want any variety that suits this climate and pays well, Loganberries and common blackberries have done well for me in a small way. I have heard of a seedless blackberry, the vine of which does well here, but, I know nothing further of it. How about it and the Mammoth blackberry?—GROWER, Selma.

We have had a good deal about berries in our correspondence and shall always be glad to have more information from readers. The berries to plant commercially are the ones which you know will do well. In such plantings do not reach out for novelties; try a few of them, but do not risk your business on them. They need proving. Increase your acreage of Loganberries, or put in some of the Phenomenal, which is doing well in the interior and is being preferred by many. Plant the blackberries which you have succeeded with largely and put in Mammoth on trial. It is doing very well in some places. We have heard of the Seedless blackberry, but do not know enough to commend it. It needs wider trial.

Walnuts on Wet Land.

TO THE EDITOR: Will it pay to plant English or French walnuts, grafted or budded on black walnut roots, in very wet land? The piece of land I want to plant is under 1 to 6 in. of water from 10 to 60 days in the winter, and is but 3 ft. to surface water at any time. I can not drain it. The land is quite sandy and easily worked. What variety will do best, in case any will do?—READER, Sutter county.

The California black walnut will grow pretty close to the water, but we cannot say whether it would stand what you describe or not. We should think not. Rye grass and red clover for pasturage or rough hay would be our choice for such land, but it might make a good, late crop of asparagus. We should not try to put trees on it.

Not Root Knot.

TO THE EDITOR: With this mail I am sending you some small peach roots taken from nursery stock. Are they affected with any root disease? Please give them a thorough examination, as a great deal depends on your decision. What do you advise me to do with them?—ENQUIRER, Tehama county.

We have examined carefully the peach rootlets which you sent, and recognize upon them what seem to be small tubercles which might be taken for root knots; but on careful examination of these bodies they are seen to be composed of a little abnormal tissue collected around the base of the rootlet, which has apparently died off, and this is the effort of the plant to heal the injury. We do not see any indication of disease in these specimens. We advise you to plant them.

Blighted Canes.

TO THE EDITOR: Am sending you per same mail cuttings from Zinfandel vines for your diagnosis. Here and there throughout the vineyard are stout and apparently sound vines, on which these blighted canes occur, sometimes extending into the old wood. Please let me know what you think of it.—READER, Sonoma county.

We cannot diagnose the trouble from these manifestations. They may be simply the result of sunscald, and this seems likely because the injury is always on the top of the cane, sometimes reaching around to the lower sides; sometimes there is a healthy strip on the under side. If the vine has blighted canes and others strong and healthy, the injury is local and not due to any functional derangement of the vine. We see no sign of specific disease on these specimens. They should all be cut back into healthy wood, or obliterated entirely when the blight runs back to the spur.

Treatment for Old Vines.

TO THE EDITOR: Will you please tell me how to get the moss off vines (Muscats)? They are about 20 years old. Also, will cutting the long prongs off that have been allowed to run out in all directions bring new canes in on the stump of vine?—GROWER, Oleander.

You can kill the moss by spraying with bluestone water, one pound to four gallons, or with weak concentrated lye, one pound to six gallons of water. Do this before any new growth starts. You can improve the heading of your vines by sawing off part of the prongs and saving suckers which come from good places below, and by continuing this process soon reach a new set of spurs. We would not think of sawing off all around in one year; you would be likely to get too many suckers, all of them too weak and most of them in the wrong place.

California Mole Cricket.

TO THE EDITOR: With reference to your illuminating reply to a Redwood City correspondent, who asked concerning the California mole cricket, it is a coincidence that when the Saturday issue of Feb. 3 came to hand I had bottled one of these big-bellied insects for you to pass upon. They first struck my notice fifteen years ago. I was then unaware that after death these 'potato bugs' put the fumes of sulphureted hydrogen to the blush. I sent a particularly juicy specimen, unpreserved, to a renowned savant in Europe. Unhappily the package arrived immediately prior to the gentleman's matutinal meal, and upon being opened, interest in breakfast and bugs died simultaneously. From your reply, it is assumable that the insect is confined to California; yet Eastern artists frequently depict the California mole cricket, or fair counterparts, in the natural history form of facetiousness which is dear to certain illustrated journals.—ALAN OWEN, Santa Barbara.

There are other mole crickets than ours which have a rough semblance to our species, but, so far as we know, they are different from ours. You are right that the popular journals do indulge in funny science. The popular demand is for that element, and it largely goes without competent judgment as to its truth or age. Some of it is as rank intellectually as your canned potato bug was physically.

Nitro-Culture for Beans.

TO THE EDITOR: Considerable inquiry off and on in your paper is made regarding the nitro-culture for beans. One farmer here, W. G. Battles, has tried it and he has found it very favorable for light soils. He showed me beans from light sandy soils that were as prolific in bearing as that of far superior lands. But on the heavy lands he has not given it a fair test. However, there is no doubt but that the culture is beneficial, only it should not be made too heavy on beans, as there would be a tendency to too much leaf growth, instead of seed or bean growth.—L. E. BLOCHMAN, Santa Maria.

This is interesting and the conclusion is rational. We shall be glad to hear from all who have used nitro-cultures whenever they get results which seem to them significant.

The Sugar Prune.

TO THE EDITOR: As to Sugar prunes, I have a few and I think growers had better not be discouraged too soon. Year before last my trees bore a few for the first. The clusters at the top were heavy and bent the limbs nearly to the ground. The prunes were exposed to the sun, and when they were dried were stringy and woody. Last year they set the same way, and I had the ends of the limbs with their fruit cut off. The balance of the fruit was very much better and made a fine appearance, but it was

not dried. This year I have thinned the trees and also cut them back some, expecting to give the fruit more shade.—SUBSCRIBER, Selma.

This observation is interesting. The question is, if the Sugar prune does not make a good dried fruit, what is it good for? All observations on this point are important.

WEATHER AND CROPS.

Report of the U. S. Weather Service for Week Ending February 13, 1906.

ALEXANDER MCADIE, Forecast Official and Section Director.

Sacramento Valley.

Warm weather prevailed during the week, with light showers during the latter part, and conditions were very favorable to all crops. The rain was beneficial to grain and grass. Early grain is looking well and making satisfactory growth. Plowing and seeding are progressing rapidly and work has commenced in the hop yards in Yuba county. Grass is not making very rapid growth, but is steadily advancing, and green feed is becoming plentiful in some sections. Stock are in fair condition and improving. The seasonal rainfall is still considerably below normal. Deciduous fruit buds are developing rapidly and almonds are beginning to bloom. Orchards and vineyards are in excellent condition and present prospects are good for average crops of fruit and grapes.

Coast and Bay Sections.

Partly cloudy, warm weather prevailed during the week, with showers toward the close. Conditions were unusually favorable in all respects for farm work and the growth of crops. Good progress was made in plowing, seeding and the cultivation of orchards and vineyards. Early grain is in excellent condition and making good growth, with prospects for at least an average crop. Grass is growing rapidly and green feed is quite plentiful in most sections. Stock are in good condition and improving. The first carload of asparagus was sent East from Alameda county on the 9th, being twenty days earlier than the first shipment last year. The first rhubarb shipment was made from the same district on the 10th. Apricots blossomed on the 5th in San Luis Obispo county. Peach buds are swelling and all deciduous fruits are advancing rapidly.

San Joaquin Valley.

Warm and generally cloudy weather prevailed during the past week, with thunderstorm and heavy rain in the central and southern portions of the valley Thursday night, and light showers Saturday and Saturday night over the entire valley. Grain and grass have made rapid growth and are in excellent condition. Almond trees are in bloom and apricot and peach buds are swelling. Grain seeding is about completed. Work in the orchards and vineyards is progressing and preparations are being made for planting a large acreage of new vines. Sugar beet planting is progressing. Green feed is becoming plentiful and stock are improving rapidly.

Southern California.

Cloudy, warm weather prevailed most of the week, with heavy rain in some sections and light showers in others Thursday, Friday, Saturday and Sunday. The rain was of great benefit to all growing crops and replenished the reservoirs very materially. One of the largest reservoirs in San Diego county is full and all streams are running. Grain is in excellent condition and growing rapidly, with promise of a large crop. Green feed of good quality is plentiful and stock are doing well. Potato planting is in progress. Prospects are good for a record-breaking yield of honey. Orange shipments were light during the week. Orchards and vineyards are in good condition and cultivation is in progress. Early deciduous fruits are beginning to blossom.

EUREKA SUMMARY.—Weather continues favorable for all vegetation. Plowing and seeding are progressing. Early sown grain is in excellent condition and making rapid growth. Grass is doing well. Stock are thin but much improved.

LOS ANGELES SUMMARY.—Generous, well-distributed rain during the week benefited vegetation, and grain and grass made good progress. Seeding continues, but will be finished this week in some places. Olive crushers are busy making oil of fine quality.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, February 14, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.....	Total Seasonal Rainfall to Date.....	Total Seasonal Rainfall to Same Date.....	Average Seasonal Rainfall to Date.....	Maximum Temperature for the week..	Minimum Temperature for the week..
Eureka.....	.00	11.33	22.67	28.52	62	44
Red Bluff.....	.32	8.74	24.27	17.07	70	42
Sacramento.....	.34	7.21	16.02	14.75	64	46
San Francisco.....	.12	6.25	11.61	6.01	68	44
San Jose.....	1.10	4.70	7.91	5.43	68	44
Fresno.....	.09	3.63	1.65	2.55	60	32
Independence.....	.04	9.68	14.28	13.21	66	44
San Luis Obispo.....	1.04	8.49	10.89	9.24	70	44
Los Angeles.....	.32	7.25	8.01	5.92	64	48
San Diego.....	.02	5.06	2.33	2.31	72	48
Yuma.....						

* Missing.

HORTICULTURE.

Growing Early Plants for Sale.

TO THE EDITOR: That the new settler often finds it hard to provide the needful 'pin-money' for the wife and children, is a truism that none realizes as well as the new settler himself—except the aforesaid wife and children.

How one such family managed may contain suggestions for others.

They came three years ago, bought a piece of entirely unimproved land and began to 'make a farm.' The cost of getting started was so great that the wife began to look around for ways to add a few dollars to the family income. She soon noticed that the new settlers, nearly all coming from the East, wanted to raise their own gardens. They wanted plants: tomatoes, cabbages, sweet potatoes and peppers were called for, but none were for sale in the little colony town.

So a pit 24 ft. long by 4 ft. wide and 18 in. deep was dug in the sunny location on the south side of a levee. A cheap board frame was made to set around the edges, with the back or north side highest, so as to provide a slope for the covers to turn water, in case of too much rain. Common six-inch fence-boards were used—some old ones, worth very little. A brace across the bed every four or five feet kept the frame from being crowded in by the dirt that was banked up on the outside of the frame. Sixty-five cents' worth of packing-boxes made the covers for a 24-ft. bed. They were taken to pieces carefully, the nails saved, then arranged in shutters about three or four feet wide, cleated, so as to hold together and not be too heavy for the 10-year-old boy who sees to covering the bed each night. A 14-year-old boy cleated the covers, dug one bed, pitched the manure, etc.

Now for the filling of the bed. The 'men folks' left the stable uncleaned for a week or so. There were six horses; so with the bedding of straw thrown on each night, it made three good, big, two-horse loads. They hauled it out and piled it at the side of the pit, wetting and tramping it some as it was piled. Then some wet straw was thrown over the outside. On Saturday, three days after it was piled, the schoolboys (aged 14 and 10) put it in the pit, one pitching and the other tramping. As there had been heavy rains in the meantime, they did not wet it down any more. If it had been dry, they would have wet down each layer well as they packed it in the bed. Six or seven inches of rich soil mixed with sand was then put on top of the manure and the bed was finished.

In three more days, the second heat having come on and the soil being well warmed, the seeds were planted. Four packages of tomato seed and one of pepper seed filled the 24-ft. bed, costing 25c. An ounce of seed is said to produce 1,500 plants. At retail prices, plants usually sell at 10c. a dozen. By letting their neighbors know they had them, they sold a good many that way.

Those that were sold through the stores were carefully transplanted into boxes of earth and were well dampened. She received 75c. a box containing about 10 dozen.

Some grocers will sell plants on commission. They usually charge about 10%, and if any are left unsold they are the grower's loss.

The care during the growth of plants consisted of watering when needed and covering up every night for the first few weeks, and then only on cold nights during the latter part of the time. Of course, some weeds had to be pulled out. Such a bed can be used to grow sweet potato plants. They can be bedded out here in Stanislaus county from the middle of February to the middle of March—six weeks before you wish to set out the plants is the rule. They must not be set out while there is danger of frost.

While there is good demand for plants, two sacks of seed sweet potatoes should raise plants enough to bring from \$10 to \$20, according to the price you can sell them at and the care you give your bed. The bed must not get too hot or they will cook, not too wet and cold or they will rot.

Instead of soil, use sand out of the ditch bottoms, which is put on four inches deep over the manure; then, when warm, the potatoes are laid as close as convenient *without touching*. No watering is done till they begin to sprout. When they begin to come up water well, and thereafter as they need it. If well cared for, the same potatoes will give several crops of sprouts, which are pulled off the old potato while it remains in the bed.

Pepper plants are in some demand. They can be grown the same as tomatoes, only are rather more tender. Egg plants are also started the same way, but it is not necessary to sow them till the last of February or the first of March.

To provide for a succession of plants of a marketable size, it is a good plan to have beds made at different times, from early in January on through till into March. Then plant a good bed in the open to provide late plants for the belated people who are looking for tomato plants along in May or June, after the early plants are all gone or too large.

Cabbage plants can be grown nicely in a 'cold

frame'—simply a frame and boards to cover it, and good, rich soil inside. If the plants are watered with rather warm water it helps them along. Just draw some water from the tank, set it in the sun during the day and water just before covering the bed at night.

Onion plants can be started in August or September and sold from December to February. New-comers are glad to get them at 200 for a quarter, or 'two bits.' In this case, though, we must be sure of watering them often enough, and no bed or covering is needed.

Strawberry, loganberry and dewberry plants are also easily grown and profitable, 'but that is another story.'

Ceres.

W. W. C.

A Plea for Better Orcharding.

By MR. O. E. BREMNER, assistant horticultural commissioner at the Fruit Growers' Convention, Sonoma County.

The finest of our horticultural products today are, for the most part, the result of years of careful cultivation and selection, and it is reasonable to suppose that such specialized organisms are able to resist the ravages of diseases and pests due to unsanitary and unnatural conditions. The problem that confronts the grower today is how to produce absolutely sound, clean fruit at the least possible expense. Every lot of California fruit destroyed or refused landing in a foreign country or other State acts as a check on our industry. The markets of Oceania and the Orient stand with open arms to our California deciduous fruits in particular. Then why are we not supplying them? Our fruit will not pass the quarantine requirements, for it is a fact that the grower who sends a shipment to Honolulu, Australia or New Zealand does not stand an even chance of landing it.

NEGLECT.—If you have traveled through deciduous orchards, it must have pained you, as it has me, to see the almost criminal negligence used in the propagation and distribution of our deciduous products. Our friends in the citrus fruit industry have learned their lesson and stand foremost in the production of clean, sound products. In many places I have found the brush from pruning an orchard used as a fence or barrier around the orchard, for filling ravines, or thrown in waste corners. The culls of the fruit are allowed to remain undisturbed on the ground, or are dumped in piles at the edge of the orchards. Sacks are carelessly left in the crotch of trees to provide winter quarters for the codlin moth. In one such sack I found 82 chrysalids, and in the entire orchard only 18 more, and these under the bark of dead limbs that should have been removed. Practically the next year's supply of codlin moth was contained in these few acts of carelessness. After pruning the trees the brush is dragged across the orchard and dumped in some ravine or waste place, and is not destroyed, if at all, until the following spring. Meanwhile the dragging has disseminated any pests such as scale, tent caterpillar, canker worm, tussock moth, etc., which may have been confined to a few trees, practically over the whole orchard. A few apple boxes, a bunch of shakes, a few shingles or boards left in close proximity to an orchard, particularly apples, forms an ideal retreat for many of our worst pests.

MOB SHELTERS.—Do you own a small dryer or packing-house, and did you ever stop to think what proportion of the codlin moth you were affording winter protection in your house, to infest your orchard the following spring? Over 90%. Is there a grower here who does not believe it? Then go into your own orchard the last of February or March and start on a hunt for moth larvæ and chrysalids. If your orchard is well taken care of, no dead limbs or loose bark hanging over large unburned areas, sacks in the crotches, old bands which you have not removed, you will be greatly surprised at the extremely small number you will find in half a day. I said your dryer contained 90%, but in most cases I believe it to be 99%. Well, no, not the dryer alone, but including the pile of fruit boxes in the shed or against the back of the dryer or barn; in nearly every box you will find from one to fifty larvæ or chrysalids. If you think your packing house does not contain codlin moth, just knock off a brace on your peeling table or a batten on the side of the building. I have found over 100 under a single batten, three feet long, on a window sill. I have taken 25 from a three-foot tray in a packing-house; around the bins where the apples are stored I have taken hundreds.

GET AHEAD OF THE MOTH.—I think I am quite safe in saying we are controlling every pest, with the exception of codlin moth, in our California apple orchards today, where proper precautions are used. The pernicious scale, which once threatened the destruction of the industry, is practically a thing of the past. The other insects and diseases are now readily controlled by proper methods. But the codlin moth gains each year, in spite of the deluge of noxious and poisonous sprays. What, then, are we to do? My contention is a change in the methods of combating this persistent foe. Do not wait for the

moth to storm our parapet of arsenate of lead or paris green, but carry the fight into his own country, rout him from his winter quarters. I speak more particularly of the codlin moth for several reasons. Its destructive work is perhaps more widely disseminated than any other pest on account of the universality of apple and pear culture. Fruit growers are at present exercising greater care and are putting forth greater exertions to eliminate this pest than any other one insect. And on California in particular is centered the interest of all other apple-growing States and countries on account of our present parasitic campaign against this insect. While I do not believe this cleaning up campaign would of itself exterminate the codlin moth, at the same time I believe it would greatly facilitate the work of the parasite.

THE PHYLLOXERA.—The grape industry is another example of where careless methods resulted in great losses. The introduction of phylloxera into many sections has unquestionably been by the shipping of boxes long distances from infested regions into unaffected vineyards. The mixing of boxes at the cellars has a tendency to quickly disseminate the pests throughout districts. It is conceded by all that the introduction from one country to another by means of rooted cuttings is, at the present day, inexcusable; yet I have seen growers replanting with diseased vinifera areas destroyed by phylloxera, and the cuttings themselves have already been infested while still in the nursery. The rapid increase in a section is often or generally augmented by careless cultivation and failure to isolate the plague spots. I have even seen a vineyardist buy old stumps pulled out on account of their condition due to phylloxera, and still maintaining living roots, haul them home for firewood and dump them in close proximity to the vineyards. Cases of phytoptus vitis, where the brush should have been destroyed on the spot and is instead dragged through unaffected portions, occur through being scattered and spread in this manner. I might go on almost indefinitely and give examples of this kind; of how spiders, mites, insects, fungi and bacteria are harbored and distributed by the loose methods which at present pervade the cultivation and distribution of many of our most important products; of the rapid and almost universal spread of the devastating pear blight; of the consternation caused by the increasing ravages of walnut blight; of the evident increase of grape diseases on the Pacific Coast; of the dissemination of the asparagus rust. But why call up unpleasant reminiscences? The thing that should command our interests and guide our exertions is how to stop the onward march of destruction by these forces. If the taxes we now pay were actually increased by the loss sustained by the insect pests alone, the storm of protestation that would assail those responsible would sweep away all opposition. But this inertia manifested by the growers in removing the tax, which, by good authority, amounts to over \$700,000,000 annually in the United States alone, is quite inconceivable.

THE LAWS.—The laws of California are certainly comprehensive enough. They read "infectious diseases, scale insects of any kind injurious to fruit trees, fruit, vines or other plants or vegetables, Russian thistles or other noxious weeds, codlin moth or other insects that are destructive to trees." The State and county commissioners are also vested with ample authority to deal with all cases. Then it must be up to the growers to set on foot the movement that is to sweep away all opposition. Opposition? Where does it come from? Must I say it? The grower himself.

It is quite common for men with orchards and living in orchard sections to order, by mail, express or freight, fruit trees, shrubs, plants, etc., from nurseries outside their county and State, and even from foreign countries, when it is quite possible that better stock could have been purchased at less cost from their local nurseries. They know nothing of the existing conditions of these places, yet they deem it expedient to procure these plants without having them fumigated or even inspected by the State or county authorities. They must surely realize what grave chances they are running of introducing some very dangerous pests or diseases, and should, instead, insist on having a proper inspection and also fumigation, if there is the least possible cause for suspicion.

How a grower can look upon such treatment as working an injustice to him, and why he should seek to evade such conditions, thus thwarting the work of his protector, is one of the strangest things that I have ever encountered, for, surely, in our campaign against our fruit tree evils, the quarantine work is the most important, and had greater care and diligence been used years ago, what a cost would have been saved to the grower! Today, instead of relaxing in any way our watchfulness, every one connected with the industry should feel it his duty to strengthen the commissions which stand as barriers between the horticultural industries of California and the insect and fungous invaders.

PROTECTION.—Surely, in no field of activity, do precise methods and clean culture bring better results to the individual than in horticultural pursuits. If you should ask me how the ideal conditions are to be

brought about, I would say, by concerted universal campaign of careful methods, by which no phase of the industry would be left susceptible to an attack by either insect or disease, by cleaning up and keeping clean every nook and corner where an insect could pass the winter in comfort, by fumigating every box, sack, basket, or tray used about the orchard, packing house or dryer.

One hopeful sign is that many of the growers are now washing their boxes with powerful disinfectants whenever they come in contact with such diseases of fruits as bitter rot of apples, apple or pear scab, etc.

Packing houses and dryers should be fumigated at the close of each season, both for insects and diseases. Prunings from trees should never be dragged through the orchard, but should be destroyed on the spot or hauled to the place where they are to be burned. Why wait for the commissioner to cut out the weeds and thistles? Why allow the county road to remain a stock-breeding place for all kinds of noxious weeds? If the road master does not attend to it, clean them out yourself. In short, be not one of those who, instead of having their own interest at heart, instead of having the good of the industry at heart, seem to have only the narrow interest of getting rid of their own rubbish in the quickest and easiest way, regardless of these interests. The great actuating principles with us should ever be, advance and improve; study and seek continually to get a better and wider knowledge of our business, that we may be able not only to make it a sure and sound financial investment, but, also, a fascinating occupation, and in this way, and in this way only, will we be able to gain and occupy the foremost rank in the horticultural world.

Looking to the future of this great State, we should not count it greatest in cities, in manufacturing or commercial enterprises, or even in its mineral productions, for, as great as all these resources are, they are in no way equal to the capabilities of soil production, but it takes seeing and thinking, active and energetic work to make the latter more than equal the former in productive wealth.

THE VINEYARD.

The Table Grape Business.

"The development of Eastern markets for California table grapes is in its infancy; in fact, it has hardly commenced," said A. B. Humphrey, of Humphrey & Stephens, recently to a Sacramento Bee interviewer.

"There are hundreds of undeveloped grape markets in the big cities of the Eastern States. When they are opened to the grower of the Tokay, the harvests of San Joaquin and Sacramento counties will not fill the demand.

"Over-production of the Tokay of quality and color is simply an impossibility. For this variety there will always be a market at good prices to producers.

"With the present system of marketing, from my knowledge of the table grape situation in our own State and from a careful study of the Eastern markets, the industry for the future, in my opinion, appears particularly bright."

The firm of Humphrey & Stephens has made Mayhew, a small village in Sacramento county, famous throughout the Eastern table-grape market. He returned last week from a four months' tour of the Eastern and principal Middle Western States. Mr. Humphrey is a practical viticulturist, and among the first shippers of Tokay grapes to the Eastern markets. He made the trip across the continent for the purpose of studying the grape market, the methods of handling the crops, of diverting cars in transit and the conditions that must prevail to continue the splendid prices of the past seasons. And he has returned stronger than ever in the belief of the impossibility of overdoing the table-grape market.

In fact, the market for Tokays, Mr. Humphrey says, is practically in its infancy, so far as concerns the grower of the Tokay of quality and color. It is the attractive color, the deep, rich crimson, explained Mr. Humphrey, the dealers first look for, and the Tokay that has this essential characteristic necessarily has the flavor. These are the predominating qualities of the Sacramento and San Joaquin Tokays.

Mr. Humphrey expressed surprise at the large number of Eastern cities whose markets have never offered a California table grape for sale.

"Why," said he, "if it were possible to supply the demand of one-half the undeveloped markets that I investigated, I am sure these markets alone would consume every acre of table grapes grown in both San Joaquin and Sacramento counties."

Such statements coming at this time from one of the biggest table-grape shippers in California should at least tend to allay any apprehension on the part of those who have feared over-production.

SALT.—The chief salt-producing States are New York and Michigan, and the combined output from these two States amounts to about two-thirds of the total production of the United States. The five leading salt-producing States during 1904 were New York, 8,600,656 bbl. (39.04%); Michigan, 5,425,904 bbl. (24.63%); Ohio, 2,455,829 bbl. (11.15%); Kansas,

2,161,819 bbl. (9.81%), and Louisiana, 1,095,850 bbl. (4.97%). These five States contributed 89.60% of the total quantity of salt produced in the country during the year.

THE VETERINARIAN.

Equine Parasites.

TO THE EDITOR: What shall I do for my horse? He has been troubled with worms, and I have given him 12 powders (one daily in bran)—areca nut 1½ oz., santolin ½ oz., Barbadoes aloes 2 oz., iron sulphate ½ oz., male fern 2 drachms, made into 12 powders; also calomel 3 drachms and tartar emetic 1 drachm. Appearances indicate that I have not succeeded entirely in getting rid of the worms. He was poor but high-spirited when I got him, nearly a year ago. He is still poor and quite weak, but eats heartily and is in fairly good life.—SUBSCRIBER, Pearyn.

We do not know what kind of worms your horse has, but the following account from the veterinary department, experiment station, Kansas State Agricultural College, is interesting, and the remedy is likely to expel all worms from the intestinal tract:

During this autumn (1905) complaints have been quite numerous from different parts of the State regarding a peculiar, fatal trouble among horses. In some localities the disease has been called 'malarial fever' on account of the symptoms of the animal resembling somewhat malarial fever in man. In other sections it is called 'blind staggers' and 'poisoning,' and in still others the staggering gait of the hind quarters of the animal might seem to warrant the name given to it, 'partial paralysis.' The trouble is caused by the armed strongle or palisade worm, *Strongylus armatus* or *sclerostoma equinum*, a dull gray or reddish brown worm, which, in its immature stage, is found in nearly all parts of the body of the animal. This worm, when full grown, is from three-quarters of an inch to two inches in length, and is then found almost entirely in the beginning of the large intestine. It is expelled sometimes in great numbers with the excreta.

DESCRIPTION OF THE PARASITE.—Thick at its head end, it tapers backward, ending in a blunt point; its mouth is round, open, and furnished with several hard rings, of which the outer one bears six short, blunt, teeth-like projections, and the innermost a row of closely set, pointed teeth. The female has a blunt, pointed tail, but the male has two lateral projections joined by a rudimentary central lobe. This minute description is given in order to distinguish it from the *strongylus tetra-canthus*, a somewhat lighter colored and smaller worm, which it resembles in many respects and which is found in the intestines only, either free or attached to the intestinal wall.

LIFE HISTORY.—The worms are found in the horse in two periods of existence. The mature worms are usually found attached to the mucous membrane of the intestinal wall of the large intestine—*cæcum* and *colon*—with the head sunk deep for the purpose of sucking blood, which gives them the brown or red color. The immature are found sometimes in the same organs in a small capsule or covering, in small pellets of manure, in cavities or cysts varying in size from a pinhead to that of a hazelnut in the walls of the intestines, and also in the arteries and other structures of the body.

The egg being laid in the intestinal canal of the horse sometimes hatches there, but more often does not hatch until a few days after it reaches the external world. If conditions are suitable in the way of moisture and temperature, the worm may live for several months in this stage in damp places, such as fodder, pasture or stagnant water. It is in this stage that the worms are taken into the system of the horse. Reaching the intestine of the animal, they bore their way into the mucous membrane and encyst themselves. Should they find a blood vessel in their migrating, they are carried into the circulation. It is the most common parasite found in the circulatory system of the horse, and it is in this way that it is carried to almost any organ of the body.

SYMPTOMS.—When present in the kidney or in the arteries leading to the kidneys, or in the surrounding tissues, a horse is especially sensitive to pressure over the loins, and they have been known to cause paralysis.

When found in the brain, an animal during work suddenly begins to stagger, the eyes are fixed, and the horse shows many of the symptoms of 'blind staggers.'

When the large arteries of the abdomen are affected, and this is their favorite location in the circulatory system, the animal is frequently subject to colics, which often result in death. This is also the case when found in great numbers in the intestine. It has been estimated that in some localities as high as 90% of colics are caused by this parasite.

TREATMENT.—Is both preventive and curative. Preventive, by thoroughly inspecting the food and water supply, to see that there are no parasites present in the drinking water. Keep the horses from all stagnant ponds. All surface wells should be inspected. Hay and fodder from swampy lands are to be looked upon as suspicious. Even pastures which are subject to overflows and seepage should be avoided; cattle seem to be exempt. Medicinal treatment in the way of prevention, as well as curative, consists of a prolonged, careful use of some of the essential oils. The most of these, if they can be had at all in the smaller towns, are too expensive for general use. It is, therefore, necessary to take the best obtainable in the form of a common remedy, and that has proved to be the oil or spirits of turpentine. An ordinary animal will stand two ounces of turpentine given in a pint to a quart of raw linseed oil, thoroughly mixed. If the animal is badly affected, the above dose may be given night and morning for two or three days, then omit for a week or two and repeat. The remedy should be discontinued as soon as the animal shows signs of irri-

tation of the kidneys. Some horses are more sensitive in this respect than others. Two to four doses may be given every two to three months to expel the worms from the intestinal tract.

CAUTION.—This trouble should not be confounded with the 'blind staggers' (cerebritis) frequently present in the fall of the year, which is caused by the animals eating moldy corn or fodder. For this latter trouble there is, as yet, no satisfactory cure. If the animal has had access to affected corn or stalks, the cause of the trouble may probably be decided upon without further investigation.

THE POULTRY YARD.

Poultry in Ireland.

Consul Knabenshue, of Belfast, responding to inquiries, furnishes the following report on a system of poultry raising recently established in Ireland:

The Department of Agriculture and Technical Instruction for Ireland, which was organized under act of Parliament, entered upon its duties four years ago. Among the many objects within its purview is poultry raising. An annual appropriation of public money is made to each county for poultry improvement. According to the last general report of the Department, there were employed during the year ending September 30, 1904, 30 instructresses in poultry keeping. The objects aimed at are, first, to improve existing breeds of poultry by infusion of pure-bred stock; second, to develop the industry on the two lines of egg production and rearing fowls for table use.

To promote instruction in the best methods of hatching and rearing, the Department recommended to the county committees the appointment of an official whose duty it is to stimulate popular interest. Of the 33 administrative counties in Ireland, only one failed to adopt the recommendation. In each of the 32 counties meetings have been held and poultry keepers have been advised and assisted in procuring eggs of pure breeds from the Department's egg-distributing centers. The amounts appropriated that year by the Government for poultry work ranged from \$3,475 in County Cork and \$2,186 in County Antrim to \$778 in County Carlow, the lowest. During the year there were 3,165 meetings held in the interests of poultry improvement. The 392 egg-distributing stations sent out 10,357 dozen of chicken eggs for hatching. The selection of breeds was left to the county committees, but the Department's regulations require a selection from the following:

Laying breeds—Minorcas, White or Brown Leghorns.

General-purpose breeds—Houdans, Plymouth Rocks, Orpingtons and Faverolles.

The choice of the county committees mainly fell on the Buff Orpington and White Leghorn. The instructors in poultry work are allowed \$9.75 per week, in addition to second-class railway fare, jaunting-car hire where necessary, or bicycle allowance of 4c. per mile in lieu thereof. Their duties are to lecture upon the selection of breeds, the hatching, rearing, feeding and housing of chickens, and marketing the product; to visit poultry runs, and give such practical advice as may be needed; to inspect the egg-distributing stations, and to report upon the work of the Department. All the lectures are under the supervision of county committees as to the places and local arrangements. The lectures are given in rural localities and on evenings from early autumn until the close of the hatching season. There is no charge for the eggs distributed for hatching, but those receiving them must agree to keep one pure breed of hens only; to dispose of all fowls of other breeds; to keep no male birds except of the selected breed. In case a premium is competed for on hens alone, to keep not less than 30 nor more than 60, and to feed and care for the birds, under instruction.

A Great Hen Combination.

Mr. W. N. Woodson of Corning has issued a circular about a great hen enterprise he is now developing. He proposes to issue shares in the Maywood Poultry Farm, incorporated. One phase of the business is to rent hens to Maywood colonists. A rent, or royalty of four cents on each dozen eggs laid by these rented hens is to be collected by the corporation. On these terms a hen earns for the corporation about 50 cents a year for two years. She is then called in, fattened and sold for 50 cents. Shareholders in the corporation enjoy a preference in the allotment of hens. The wants of shareholders will be supplied before hens are rented to outsiders.

The dividends, or profit, on this stock come from three sources: First, from the sale of eggs for setting purposes at \$5 per 100, and from sale of eggs for eating purposes at market prices; second, from sale of cockerels at market prices; third, from the renting of hens to colonists.

The 240 acres of land in the plant are valuable and becoming more so as time goes on. The buildings are new and modern in construction.

The plan of this corporation is to build up until it owns 100,000 hens. Twenty-five thousand are to be kept on the plant and 75,000 are to be rented.

THE STOCK YARD.

Alfalfa Hay as a Sole Roughage in Feeding Steers.

The use of alfalfa hay as the sole roughage in full-feeding cattle is becoming quite general in Kansas and seems to give the best of results. Some feeders, however, are of the opinion that where too much alfalfa of high quality is supplied to steers, they will not consume enough grain to produce satisfactory results. It has been observed in the progress of previous feeding experiments at the Kansas Experiment Station that cattle receiving nothing but alfalfa as a roughage always seem to have a taste for coarse roughage of various kinds.

It was decided by the Station to make a comparative test of alfalfa alone, with alfalfa and several other kinds of cheaper roughage supplied, so the cattle could select and eat at will whatever they desired. It was thought that where a variety of roughage was supplied in this way the steers could choose at will, and, in a measure, balance their own rations. The relative cost of the two methods of feeding also entered into the question. If as good gains could be produced by the use of a variety of roughages, in which alfalfa hay was used as the chief, and cheaper fodders used with it, the cost of feeding would be reduced and more of the rough feed of the farm could be utilized.

MANNER OF FEEDING.—In order to make the conditions as nearly like those on the average farm where the cattle are fed, the steers were placed in lots with open sheds only for protection. The hay was fed in large, movable racks, into which a ton or more could be placed at a time. A manger extended along each side, and the cattle had free access to the roughage. The grain was fed separately in feed troughs. Lot No. 1, which received the variety of roughage, had alfalfa hay and prairie hay before them all the time. During part of the experiment they had also a small quantity of corn ensilage furnished them each day. The grain was the same for both lots, being corn-and-cob meal, and toward the end of the experiment, cornmeal and cotton-seed meal.

The steers used in this experiment were purchased in Kansas City in the open market. They were high-grade Angus cattle, fairly uniform in quality. The average weight at the time of purchase was 918 pounds, and the average price per hundredweight was \$3.49.

GETTING THE STEERS ON FEED.—The experiment was started January 1, 1904. The steers were all placed in one lot and fed corn-stover and alfalfa hay, with a small amount of fodder corn from thick planting. They were fed in this way through the greater part of December. Toward the latter part of the month a small feed of ear corn was given in the troughs. In this way they were very slowly gotten on feed; and by the first of January all were eating well. On this date the steers were divided into two lots of ten each. The lots were divided as equally as possible, taking into consideration the type, quality and size of the different animals. The weights were taken about 1:30 P. M., and, as there was no intention of doing any experimental work with individual

steers, the total weight of the lot alone was taken and this one weight considered as the weight of the lot at the beginning of the experiment. In the case of getting the weights of individual steers, the daily fluctuations are such that it is necessary to get the average of several days' weight in order to have a correct weight of the steers. In getting the weight of a lot, the daily fluctuations of individual steers will tend to balance each other.

WEIGHTS AND GAINS.—In Table I is shown the weights and gains of the two lots by months. The gain for the first month is very large. It is probably due in part to the filling-up process which takes place when the cattle are first put on feed. These steers, however, had been receiving grain for a

TABLE I.—WEIGHTS AND GAINS BY MONTHS.

DATE.	LOT I. Alfalfa Hay With Other Roughage.			LOT II. Alfalfa Hay Alone.		
	Weight, lb.	Gain, lb.	Average daily gain per steer, lb.	Weight, lb.	Gain, lb.	Average daily gain per steer, lb.
January 1.....	9,615			9,555		
February 1.....	10,730	1,115	3.59	10,925	1,370	4.41
March 1.....	11,390	660	2.27	11,740	815	2.81
April 1.....	12,100	710	2.29	12,600	500	2.77
May 1.....	12,695	595	1.92	13,380	780	2.51
May 23.....	12,945	250	1.25	13,615	235	1.17
Total gain.....			3,330 lb.			4,060 lb.
Average daily gain per steer.....			2.32 lb.			2.83 lb.

month, and on the day the experiment started received 118 lb. of ear corn per lot, or 11.8 lb. per head. There was a steady decrease in the average daily gains as the feeding period progressed, and it will be noticed that for the last 22 days the two lots gained at the rate of only 1.19 lb. daily. This phase of the fattening process in cattle had been pointed out by a number of investigators. The gains steadily decreased and the amount of grain consumed to produce a given gain steadily increased. It follows that the quicker cattle can be placed in condition for market after beginning to feed, the more economically beef can be produced. This is due to the fact that the body increase becomes proportionally greater than the digestive capacity of the animal. For illustration, an 800-lb. steer has, as a rule, the same digestive capacity as he will after he has gained a weight of 1,200 lb. Therefore, since the body increase is one-third more at 1,200 lb. than at 800 lb., it follows that a more concentrated and assimilative ration must be fed to obtain the same rate of gain at the end as produced in the early part of the feeding period. However, this can seldom be done with economy, consequently if the same food is fed throughout the feeding period the gain will necessarily decrease. One should not be led to believe from this that half-finished cattle are always the most profitable, for well-finished cattle always will command a higher price to make up for the loss of the rate of gain.

KIND AND AMOUNT OF FEED CONSUMED.—Table II gives in concise form the total amount of feed consumed by each lot. The first week of the experiment the steers received 14 lb. of ear corn daily, or

14.5 lb. per thousand pounds live weight. The grain ration was changed to corn-and-cob meal January 16. By the end of the month they were consuming 17 lb.

TABLE II.—TOTAL FEED CONSUMED.

LOT.	Ear Corn.....	Corn-and-cob Meal.....	Cornmeal.....	Cotton-seed Meal.....	Alfalfa.....	Ram-corn Stover.....	Sorghum Stover.....	Prairie Hay.....	Ensilage.....
I.....	2,078	21,605	4,000	530	15,480	3,100	540	5,045	1,400
II.....	2,078	21,605	4,000	530	18,465				

a day per steer, or 15.7 lb. per thousand pounds live weight. By the end of February they were consuming 19 lb. of corn-and-cob meal daily per steer, or 16.4 lb. per thousand pounds of live weight. In one month more the grain ration had increased to 20 lb. of corn-and-cob meal per steer daily, or 16.2 lb. per thousand pounds live weight.

By the end of April, 24 lb. of corn-and-cob meal was the daily grain ration per steer, or 18.4 lb. per thousand pounds live weight. At this point the grain ration was gradually changed to pure cornmeal. At the same time cotton-seed meal was introduced into the ration, fed at the rate of 1.15 lb. per thousand pounds live weight. Reference to the last two

TABLE III.—WEIGHTS AND GAINS WITH POUNDS OF FEED CONSUMED PER 100 LB. OF GAIN.

No. of LOT.	No. of Steers.	Weight Jan. 1, 1904.	No. of Days Fed.	Weight May 23, 1904.	Total Gain, lb.	Pounds of Feed Consumed Per 100 lb. of Gain.		
						Alfalfa	Grain	Roughage
I.....	10	9,615	143	12,945	3,330	2,327	715	01 742 50
II.....	10	9,555	143	13,615	4,060	2,835	578	25 454 80

columns of Table III shows that these steers consumed very small amounts of feed for the gains made. If this had not been the case they could hardly have been fed at a profit, considering the small 'margin' between the buying and the selling price, the price paid in Kansas City being \$3.49 per hundredweight, and \$4.50 being the selling price. It is not generally considered safe to figure on feeding cattle for a smaller margin than \$1 per hundredweight between buying and selling price.

CONCLUSIONS.—The results of this experiment would seem to indicate that the advantage lies with the feeding of alfalfa as the sole roughage in comparison with the feeding of other kinds in connection with alfalfa.

The total gain made by Lot I in the 143 days of feeding was 3,330 lb.; of Lot II, 4,060 lb., an increase of 22.2% over Lot I. It took 126.76 lb. more grain, or 21.9%, to produce 100 lb. of gain in Lot I than in Lot II.

The profit per steer in Lot I was \$1.12; in Lot II, \$5.85, or more than double. The profit in either case was very small; indeed, so small as to hardly warrant steer-feeding except as a means of marketing the feed of the farm. Alfalfa hay and corn-and-cob meal form a most excellent ration for fattening, and unless future experiments change these results, we shall have to admit that this combination gives better results than the use of a greater variety of roughage.

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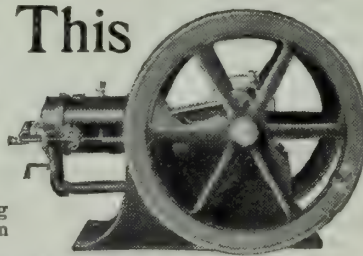
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Agricultural Review.

Butte.

VIRUS DRIVES GOPHERS MAD.—Chico dispatch to Sacramento Union, Feb. 11: The discovery of a virus that promised to be the means of exterminating the pocket gopher has attracted considerable attention, especially among farmers whose fields of alfalfa, orchards and vines have been damaged by these troublesome rodents. This matter was referred to Professor P. H. Dorsett, in charge of the National Plant Introduction Garden here, and he in turn forwarded it to the Chief of the National Biological Survey at Washington, with a request for a report concerning the value of the Danysz virus, which, it has been stated, gave promise of being effective in the destruction of gophers. Mr. Dorsett has received from H. W. Henshaw, Acting Chief of the Biological Survey, the following letter, which is of interest to all persons concerned in the growing of alfalfa, vegetables, fruit or vines of any kind upon which the gopher preys: "I have to acknowledge receipt of your communication of January 25 with reference to the destruction of pocket gophers. In reply, I have to state that the Biological Survey is deeply interested in the matter, and considers the gopher pest to be one of the most pressing and important of economic problems. We are daily expecting from France a supply of fresh Danysz virus with which to inaugurate a series of experiments in co-operation with the Bureau of Animal Industry, with a view to testing in the laboratory the efficiency of this virus in the destruction of rats and mice, and also to ascertain its keeping qualities. If the experiments are successful, we propose to test the virus extensively in the field upon various rodent pests, including the pocket gopher. Until these experiments have been made we are not in a position to recommend the virus for practical use. We have experimented with poisons, traps and gases for the destruction of the pocket gopher and have found them to be efficient and reliable, especially when only small areas are infested. A bulletin on the use of these agents is now in press."

TESTS MADE IN GROWING OLIVES.—Oroville Register: While Lon Rose was in charge of the big olive grove of John C. Gray at Mt. Ida, he noted that many of the trees did not ripen their olives as early as others. Those not ripening in time were in danger of being hurt from frost. He observed, too, that the larger the crop the smaller the olive. Some trees were injured, had limbs broken off or in some manner became damaged, and he trimmed off a portion of the foliage. He noted that these trees bore large olives that year and they ripened early. This set him to thinking, and as a result, he began pruning the trees, and found this was just what had been required. They needed to be pruned, just as a peach or apricot does, in order to bear large fruit and to mature early. E. W. Fogg each year gave his orchard the best care, plowing the ground and keeping it thoroughly tilled. This was done for a number of years. Then he noted that on the bluff and in places where the ground was neither plowed nor tilled in any manner, the trees looked better than in his garden-like orchard. There were no trees with yellow leaves on the bluff, the trees were strong and vigorous and bore well. He said to himself, "I am cutting off all the roots that feed the tree. I will stop this and note the result." During the last two years he has not plowed the ground. Today the orchard looks better than it ever did before.

MONEY IN ORANGE GROWING.—Gridley special to Sacramento Bee, Feb. 3: As evidence of the fact that the orange industry is a commercial success, the ledger account kept on the Campbell orange grove, three miles southeast of Gridley, during the past season would be a good exhibit. A. W. Campbell is the owner of this orchard, which is three and one-half acres in extent, but from which several trees are missing. It has been planted about 12 years and has been a paying property for a good while. This year, however, broke the record for cash returns, though last year the oranges averaged larger in size. Richard Campbell and Sewall Young, the former a son and the latter a son-in-law of the owner, bought the crop on the trees and picked and packed the oranges at the ranch. The fruit was shipped and their net returns, after deducting freight, amounted to \$1,037.94. The men who packed the crop are not members of any association, nor is Campbell. The fruit evidently sold on its merits and in open competition with that from other parts of California. A recent shipment realized to the sellers a net return of \$1.45 per box. At Biggs, where soil conditions are somewhat dif-

ferent, H. S. Brink has one acre of oranges from which he gathered and sold, two years ago, \$400 worth of fruit. Very little planting of orange trees has been done in this locality for several years, but it is probable that there will be quite a revival within the next year.

Contra Costa.

NEW ASPARAGUS.—Antioch Ledger, Feb. 10: The first asparagus of the season was shipped to New York from this place on Tuesday by W. E. Meek. This is about 17 days earlier than asparagus was ever shipped before. The mild winter and recent warm weather is the cause of the early appearance. Everything is being made ready at the warehouse for early shipments, and it will be but a short time until the rush will commence.

Kings.

PROLIFIC DUCKS.—Hanford Journal, Feb. 9: James Holman and J. N. Hoyt, who own and conduct the Model poultry farm, south of Hanford, have 18 ducks which were five months old the 22d of September last. The ducks began laying on the 29th of September and have laid from 10 to 14 eggs a day ever since. In just four months, as shown by a careful record kept by Mr. Holman, the ducks laid 1,000 eggs. The ducks were of the Indian Runner variety and they lay an egg which looks like an extra large, white hen's egg. The quality of them is fine.

Mendocino.

CUTTINGS AT UKIAH.—Ukiah Press, Feb. 9: The grape cuttings that were promised the growers in this vicinity by the Asti company through the courtesy of Dr. Rossi, president of the company, were shipped this week to the committee who had taken the matter in charge—L. B. Frasier, J. B. Sanford and W. O. White—and have arrived in good condition and are now being distributed to the people who are putting out vineyards. There were a few over 100,000 cuttings of the finest grapes to be had and out of the choicest vineyards of the Asti colony. The cuttings are thoroughly disinfected and instructions for planting and the variety of grape best suited for various qualities of soil have been sent so that the recipients can make no mistake and will get the best results possible. Mr. Frasier has volunteered to attend to the matter of distribution of the cuttings and is having them placed in trenches for what is known as the healing-in process that will enable them to be kept until they are all distributed. Parties wishing these cuttings can obtain them with full instructions by calling on Mr. Frasier at his office at 206 Standley street, Ukiah.

HOP WORK FOR JAPS.—Most of the hop men have contracted the cultivation of their hops this year with the Japanese. The price paid is reported to be \$20 an acre. The price adopted by the hop-grower's association was from \$16 to \$18, but the brown men have commenced to assert themselves and refused to work for any such amount. It is reported that 7½c have been offered for what remains of last year's hop crop. So far no one has accepted it.

Nevada.

TO ERECT CANNERY.—Nevada City special to Sacramento Bee, Feb. 11: At a meeting of the Nevada County Cannery Association it was decided to raise suffi-

cient funds for the erection of a cannery and evaporating plant near Nevada City. It was estimated that the cost would be in the neighborhood of \$10,000. However, about half of this amount has already been pledged by fruit growers and business men, whose offer has been standing since last spring. The Association members are convinced that the requisite amount can be raised in time to build for this year's crop.

Placer.

FIND PEAR BLIGHT NEAR COLFAX.—Colfax special to Sacramento Bee, Feb. 9: Pathologist W. M. Scott arrived in town yesterday, having been sent here by the United States Department of Agriculture at Washington. He is on a professional trip through the fruit sections of this part of the State, and while here interviewed some of the orchardists of Colfax and Weimar in regard to pear blight. Mr. Scott claims that the pear trees in this section are infected with the blight, and that the only way to rid the trees of it is to cut off the infected parts. He says, however, that the trees in this section are in much better condition than in many other places throughout the State, but still are bothered with the blight, and he advised local orchardists to be very careful. Pathologist C. L. Shear, who is now located at Newcastle, will arrive here in about 10 days and will make a thorough canvass of the district to warn the orchardists of the presence of pear blight, and also aid them in exterminating the disease.

Riverside.

SEEDED 8,000 ACRES TO GRAIN.—Perris Progress, Feb. 8: J. T. Kerr, of Armada, has seeded 8,000 acres of grain this year. Mr. Kerr is one of the latest converts to the method of summer fallowing for dry ranching, and says that if he had known as much ten years ago as he does now about it, he could have made a fortune from dry ranching in Perris valley. This year he expects to summer fallow an extensive tract.

Santa Clara.

FUTURE FOR PRUNE CROP.—San Francisco Call, Feb. 12: "Don't worry, Santa Clara valley prune growers and fruit ranchers over the State of California, for there will be a strong Eastern and foreign market in 1906 for the dried products of the Golden State." So declares H. Cartan, one of the largest Eastern handlers of California dried fruits, who is at the St. Francis Hotel on a trip of combined business and pleasure. Cartan points out that the foreign market will be exceptionally good this season. Already large orders have been placed with the Eastern dealers by the wholesalers of Germany and other European countries. Germany has taken the lead thus far and promises to greatly surpass her imports of prunes for last year. The California prune has won great favor with the people of Germany and they are willing to pay the prices asked for the goods. England, too, has already sent in orders to Eastern representatives and she will import heavily of California dried fruits. The price promises to be good this year because of the new demand. With a market ready to take all it can get of dried fruits, and a price high enough to bring a fair profit, things look rosy for the California grower and packer of this year. The news of the opening of the great foreign market will come as a welcome surprise to the ranchers of the Santa Clara valley. Last year was better than others, yet many of the growers and packers about San Jose and neighboring towns complained because of their inability to market their goods at a fair profit. So gloomy was the situation that some of the growers cut down their prune orchards in despair of ever getting reasonable returns for the time and money invested. It is probable that the outlook for this year will save many orchards that would otherwise have been sentenced to the ax.

Solano.

DOGS DEVOURING SHEEP.—Dixon dispatch to Sacramento Union, Feb. 11: The sheep men are complaining of the depredations of dogs in this vicinity. Night before last E. D. Dudley lost about 10 ewes and had a number of others bitten so severely that some may die. Measures are being taken to destroy all dogs found running about the fields where sheep are pastured and some of our dog owners will miss their canines if they are not kept at home. George Hoag, of Davisville, trapped a large coyote last Wednesday in northern Solano, on the Hamel ranch, and the event causes great satisfaction to the sheep-raisers. Mr. Hoag will receive a reward of \$15 from the Solano County Sheep Men's Association and \$5 from the county.

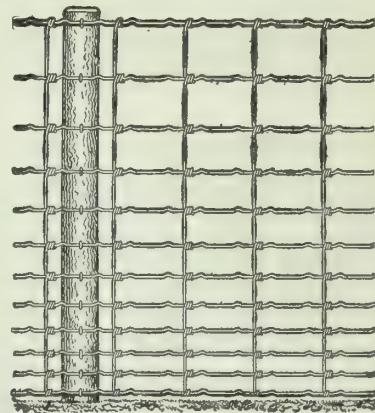
Sonoma.

READY TO MAKE DISPLAYS.—Cloverdale dispatch to the Call, Feb. 11: The addition to the Citrus Fair Pavilion is

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American fence is a structure of hard, stiff steel wires, possessing great strength and flexibility, adjustable to uneven ground, sound, durable and guaranteed. Great improvements are continually being made over the fences of years ago. See the modern, up-to-date American fence, built of big lateral wires, with heavy upright or stay wires hinged—the most perfect structure for a square mesh fence.

The thirty plants of the American Steel & Wire Co. make every known grade of wire, from the stiffest wire for pianos to a wire almost as soft as silk for weaving into wire cloth. With these enormous facilities for manufacture and observation of the action of wire in all kinds of service, not only is the best wire made for the use required of it, but for less money.



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We sell through dealers all over the country. In this way, the buyers' interests are best looked after. Dealer then becomes your business friend and he will see that you are treated right. See him, examine different styles, get catalogue and make selection to suit your requirements. Or, write us direct and we will send catalogue and tell you where you can get the fence.


NOT EXPENSIVE.—Prices range from about 17 cents a rod up, according to height, style and location of your place.

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completed and more than half of the entire space in the enlarged building has been reserved by those who are preparing exhibits for the fair to commence February 20. More than usual interest is being taken by residents of the citrus belt in planning new and handsome designs for the coming fair. A visit through the orange orchards this week shows the fruit in fine condition and the growers all anxious to make the best display ever made.

NEVADA.

TO GRAZE UPON FOREST RESERVES.—Reno special to Sacramento Bee, Feb. 11: D. B. Sheller, of Tacoma, forest superintendent; J. H. Hatton, of Tacoma, forest inspector, and S. N. L. Ellis, of Sonora, ranger for the Tahoe and Yuba forest reserves, held a meeting in Reno with stockmen who intend to graze during the coming year on the Tahoe and Yuba reserves. The applications for permits to graze upon both reserves were numerous. Superintendent Sheller stated that the Government would be unable to grant all of the applications, and that it would be necessary to give preference to those stockmen living within the reserves or who had been grazing thereon in former years.



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Curb, Splint, Sweeney, Capped Hock, Strained Tendons, Founder, Wind Puffs, and all lameness from Spavin, Ringbone and other bony tumors. Cures all skin diseases or Parasites, Thrush, Diphtheria. Removes all Bunches from Horses or Cattle.

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The Home Circle.

The Little Minstrel in the Street.

His hands are soiled, his throat is bare,
His face is streaked with dirt, and thin,
And many a slip is in the air
He plays upon his violin;
A sadness dwells within his eyes,
The shoes are ragged on his feet,
And scoffers stop to criticize
The little minstrel in the street.

There by the curb he plays away
Where flakes float past and winds blow
chill,
And maybe, as the critics say,
He lacks the tutored artist's skill—
But now and then a little strain,
Played faultlessly and soft and sweet,
Floats up from where he stands out
there—
The little minstrel in the street.

Say, ragged little minstrel, why
Must people listen but to hear
The false note, ever passing by
The strain that rises soft and clear?
Oh, it were well with us if we
Might in our own way sound the sweet
And faultless notes as oft as he—
The little minstrel in the street.

—S. E. Kiser.

A Prayer in Darkness.

This much, O heavens—if I should brood
or rave,
Pity me not; but let the world be fed.
Yea, in my madness if I strike me dead,
Heed you the grass that grows upon my
grave.

If I dare snarl between this sun and sod,
Whimper and clamor, give me grace to
own,
In sun and rain and fruit in season shown,
The shining silence of the scorn of God.

Thank God the stars are set beyond my
power,
If I must travail in a night of wrath,
Thank God my tears will never vex a
moth,
Nor any curse of mine cut down a flower.

Men say the sun was darkened: yet I had
Thought it beat brightly, even on Cal-
vary;
And He that hung upon the Torturing
tree
Heard all the crickets singing, and was
glad.

—Occasional Papers.

Overdue; An Ocean Tragedy.

At the extreme end of the Cornish coast, on the most southerly point of England, stand the sentinels of the Past and the Future; a great ragged rock rears its head above the sea some four miles from the shore, barren but for tufts of sickly grass, uninhabited save by the sea birds. For centuries the rock has stood amid the wild waters, once an island green and fair, now gradually being devoured by the insatiable waves, gradually crumbling and passing with the ages from the knowledge and memory of man. Once it was a guide to the unwieldy ships that sailed seeking empires, a landmark to sailors, the first glimpse of homeland to wanderers; now it is a danger mark to the huge, black liners—a forgotten sentinel of the past.

And a little inland stands a small turret house, with a wooden mast pointing skyward and square, glass eyes ever staring oceanward—a little house built by man's clumsy fingers, not one-fiftieth the size of the fading rock, a speck on the ocean—yet it is Time's fingermark; it is the ear of the ocean, the sentinel of the future.

The clouds had been driving round the Lizard point for several days, forming solid banks of blackness in the southwest, swooping across the green seas, that hourly grew more restless and often hid the old barren rock from the strongest telescope. The lonely watcher—one by day and one by night—in the gray house, Marconi's wireless telegraph station of the south, had long known of the approach of the storm. Ships already caught in its fierce clutches had telegraphed its advent to the watcher, and he, Jove-like, had hurried electric warnings of the danger to other boats.

And this evening, as John Priest walked along the narrow cliff path to

relieve his companion for night duty, it seemed as if Nature's great struggle were about to begin. The wind had dropped a little, the breakers, far below, ceased to throw their shining, white foam arms upward; instead the waves heaved and rolled in large, greasy mountains. An unnatural silence had fallen, almost terrifying to the lonely human being.

Ere he reached its shelter big drops of rain began to fall, slowly, with an ugly, regular splash; flashes of lightning lit the horizon, dividing green and black.

John Priest felt the nervous excitement in the air communicate itself to his body, filling him with a vague unrest and fear.

His companion was waiting at the door.

"I'm glad you're not late," he said. "I fear even now I shall get caught in the storm before I can cover those three miles along the cliff. Good-night."

"Good-night," replied John Priest. He watched the other run swiftly down the path and along the cliffs. He felt a strange longing to call him back to ask him to share the watch that night. The quiet threatening of the night, quivering with electricity and storm, thrilled his nerves.

"I wonder what's wrong with me?" he said aloud, and then checked himself, unpleasantly conscious of his own voice—that none could hear or answer. Quickly his companion disappeared, enveloped in clouds and darkness.

Nothing living was visible—not even a tree, not a bird on the wing, nothing. With an effort he laughed and banged and bolted the door loudly and entered the operating room—the room with the square eyes facing seaward. It was a round, plainly furnished chamber, containing one comfortable sofa, a bookshelf filled with books, several maps and charts, a list of rules and explanations concerning the working of the Marconi wireless telegraph, and in the center of the room the instrument itself.

Priest looked at his watch; eleven and one-half hours of solitary confinement, practically cut off from all human communication! He leaned against the window and stared into the darkness.

He looked at the instrument, fingered it, saw all was in order, tried to keep himself busy with trifles, praying for the time to pass quickly, for the storm to come or go. When he looked at his watch again what had seemed an hour proved fifteen minutes. Then he swore quietly at himself for a fool and filled his pipe deliberately. As he put it to his lips a sudden blaze of light lit the room and a terrible crash rent the air, tearing silence and the night asunder and echoing from cliff to cliff.

With the first great crash all the elements sprang to life. To the watcher it seemed as if fire, earth, air and water were swirling and struggling through space inextricably mixed together.

How long he watched with awe and wonder he did not know, but the rushing winds howled him into a semi-conscious sleep, in which he heard the waves rising and roaring nearer and nearer.

He awoke with a start, feeling something or someone had spoken to him. The yellow light burnt more dimly, but instinctively he glanced first at the Marconi instrument. All was in order. The tapper was silent, motionless. As he wondered what had suddenly called him the instrument clicked.

Someone had called! Whence could a message come on such a night and from whom? Was it a trick of the storm that yet raged and shrieked like a furious beast outside?

He drew his chair to the table and bent over the instrument and waited.

Again that little spark of light behind him and simultaneously the click—dot—"—LE—LE—LE—DH—DH—DH," it said.

Still the same question: "Can you send help?"

His answer?

With horrible vividness he saw 500 men and women huddled together on the sinking ship in the midst of the raging tempest waiting for that answer, praying heaven that it might be "Yes;" trusting, believing it would be "Yes."

His hand moved slowly, steadily now, as he spelt out four words in the dark-

ness, and he felt the darkness was best, though there were none to see, or hear, or know—

"Impossible to send help."

Five hundred men and women: husbands, wives, lovers! Children, too—500. He, John Priest, safe on land in the little room with its square eyes looking seaward, and 500 souls far away across the boiling waters calling out to him, waiting for his message—of life, or death.

He had sent death!

Had they received it yet? What did they think or feel? He could speak with them, but he couldn't save them!

He jumped from his chair and rushed to the window and stared out; black, black everywhere! Impotently he beat his hands against the window and mercilessly the rain and the wind and the sea spume beat back.

Who were they on board the boat sinking out yonder? What ties had they, what passions bound them to the red earth and the things of the earth?

Back to his seat he rushed and of a sudden an inspiration came. If, perchance, there was another boat anywhere near that he could telegraph to!

Hope yet; a chance of life yet!

He relit the lamp and turned up the book giving the names of vessels fitted with wireless telegraphy. One by one he read and passed the names; all those were in port or a thousand miles away. The last boat on the list, the Scotsman, there was just a chance it might be in the English channel, the vaguest chance, he knew; but it was possible.

Hastily he telegraphed now, "Am trying to signal Scotsman; if within distance will send it to help you."

He waited for an answer, but none came; had it already gone down?

"DH!" That was no trick of the storm; yet he did not know the call. Quickly he turned to the code:

"DH"—SS. Delilah, mail and passenger steamer, 9,000 tons. Good heavens! what did the Delilah want, and where was it? Surely, if he remembered right it was due at Liverpool two days ago.

For an instant John Priest hesitatingly watched and listened. Whence amidst the thousands of miles of mad waves was this message sent? With unsteady hand he held his machine, replied:

"Go on," and waited. No answer. He held his breath and counted the seconds.

At last an answer, "LE" again; an instant's pause, then the machine began slowly with many pauses and breaks, as if the message, flying on magnetic wings through space to the little gray turret on the Cornish coast, was battling each yard of its way with the wind, the sea and the rain—the machine began to spell its message:

"The Delilah—damaged by terrific seas—fear fast sinking—400 passengers—send help!"

Priest gasped and his grip on the machine tightened. Delilah sinking, four hundred passengers and crew; send help! What did it mean! Breathless he waited, watching the tapper with distended eyes; it clicked; was silent. The perspiration broke out on his

forehead; a thousand questions flashed through his brain; his body stiffened and quivered; he felt 500 lives in his hand—fighting death. The little square room, dimly lit with the yellow lamp-light, ceased to exist; the storm no longer roared in his ears, nor the sea spray and raindrops to beat the windows; a silence greater and more intense than the silence of the afternoon wrapped itself round him.

Flash "DH. Where are you?"

He found a difficulty in breathing—how the seconds dragged—minutes, surely, now, and no answer. Again, "Where are you?"

At last an answer: "S. S. W. of Lizard, about 100 miles off; instruments damaged; rudder broken; can keep afloat few more hours—is help"—The rest was unreadable; still the tapper clicked again, "is help!"

Help! How could he send help? He sprang from his seat and rushed to the door and unbolted it. With a yell of triumph the wind rushed in, shaking the little house to its foundations and hurling him back to the ground.

He had forgotten the storm! It took him some time to shut and bolt the door again; then he returned to the room, bruised and wet. The lamp had been blown out, and all was dark. As he searched for the matches he heard the click of the machine.

He groped his way to the table and bent over it; he could read the message in the dark.

If so—hastily he changed the signal call—the machine clicked—and waited. He was fighting the storm now, fighting Nature, who gives no quarter; fighting death, who open-mouthed, panted for 500 lives.

Why didn't it answer? Wherever it was it should receive the message! Ah, at last—

"M. S. Delilah sinking fast; are you near enough to help?"

Presently the answer:

"Fear impossible, but will look out for it—trying to beat down channel myself." Then after a long pause. "Am trying to get into communication with it."

Again Priest flashed: "For God's sake, do your best—400 passengers."

He leant back in his chair and wiped his brow. He dared not call the Delilah again; he feared lest no answer should come.

He waited and for an instant the silence lifted and he heard an exulting shriek from the wind and sea outside, and the house trembled. Where were those 500 souls?

Click!

Close over the table he bent and held his breath.

"Cannot keep afloat until the morning; have you been able to send help?"

"Yes. Spoken Scotsman beating down channel; it is looking for you. Keep afloat as long as possible. All I can do"—His fingers ceased to move. The horror of having done no more, the weakness of that message! He set his teeth.

Again the taper moved and now he feared what it would spell.

"Thanks; don't leave instrument."



U. S. Government Inspected.
For Quality, Unsurpassed.

Western Meat Company,
San Francisco.

Communicate with us as long as possible, or until Delilah sinks."

He whispered a prayer as he sat before the table; "Please, God, save them, forgive and help," and at the same time he telegraphed:

"Shall not leave instrument; will communicate with you until help comes."

A few minutes elapsed and no further message was sent; then suddenly with long pauses between each letter:

"We are getting out the boats."

Another pause that seemed hours. A stronger gust of wind seemed to make the little building rock. A flash of lightning momentarily filled the room with a blue glare, and the crash of thunder deafened Priest for a moment. When the last rumble died away again he heard the instrument again clicking. Had he missed something during that appalling crash? "Have launched one of the boats." A pause that seemed to last for hours. Then, "Boat has overturned with twenty passengers. All lost." Another wait longer than the first. In imagination Priest saw men and women struggling in the relentless waves. He pictured the others huddling at the side of the helpless liner, and at each flash of lightning thought he could see the ghastly terror on pale faces. "Good heaven, they will drown, drown!"

he cried aloud, in agony. He seemed to feel the sting of the cold water himself, and wished that he could go down with the vessel rather than endure this racking torture of waiting—waiting for what he felt was inevitable, waiting for something that he could not prevent.

Again the instrument ticked out its piteous message: "Two more boats launched. Both overturned. Fear must abandon hope. Fast filling."

A long pause. Priest sat motionless, his eyes steadfast on the machine coldly ticking of approaching doom to the only man in the world who knew and could not save.

Then, "Passengers have behaved splendidly. Perfect order; no panic."

A still longer pause. Priest dropped from the chair to his knees and began hysterically to pray, while he watched with staring eyes the tapper and heard the click—dot—beat into his brain.

Passengers 440—250 men, 170 women, 20 children—remainder crew, officers—

"Save them, save them!" cried Priest aloud, and the storm shrieked derisively. Unconsciously his fingers, convulsively touching the machine, spelt those two words, and the message was carried out into the night, over the seas to the sinking ship.

"There is still hope," the women whispered; "he is sending for help." But the men—guessed.

"Cannot decipher your last message—stern of ship nearly under water—a matter of minutes now—passengers ask will you kindly convey to friends—the letters danced before Priest's eyes and he became confused. He fancied he heard the voices of men and women calling—he sprang to the window and looked out. A pale gray light in the east. Was that dawn?

The tapper still clicked but the words it spelled were confused. Then it stopped.

What is happening now beyond that bar of light, on the gray dawn?

Where is the Scotsman?

Frantically he seized the instrument and called the Scotsman again.

He is answered: "Have sighted Delilah—making for it."

One, two, three, four—how the minutes slide away, each one an hour. Ten, fifteen—the bar of light has grown, the gray dawn peeps of a sudden through the square windows of the little house, the sentinel of the future, and touches the cold, bare sides of the rock at sea, the sentinel of the past, and John Priest hears a rush and swirl of waters—and then an oppressive silence and a void. Still he watches the machine; the tapper quivers; the final message slowly spells itself: "Have passed up and down where we saw the Delilah; nothing visible save wreckage.—Scotsman."

This is the final message. The gray dawn is over all now.—Chicago Tribune.

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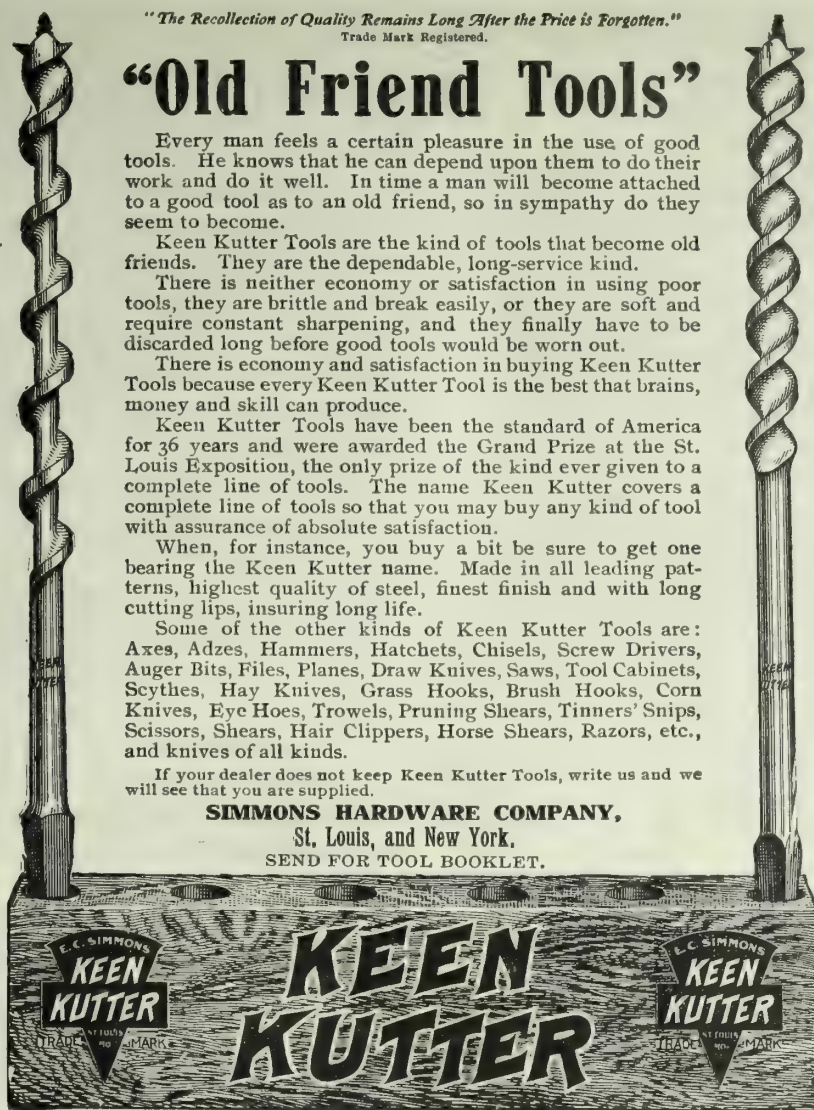
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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, Feb. 14, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday	85 1/2 @ 84 1/2	84 1/2 @ 83 1/2
Thursday	85 1/2 @ 84 1/2	84 1/2 @ 83 1/2
Friday	85 1/2 @ 84 1/2	84 1/2 @ 83 1/2
Saturday	85 1/2 @ 84 1/2	84 1/2 @ 83 1/2
Sunday	85 1/2 @ 84 1/2	84 1/2 @ 83 1/2
Tuesday	85 1/2 @ 84 1/2	84 1/2 @ 83 1/2

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday	44 1/2 @ 44 1/2	44 1/2 @ 44 1/2
Thursday	44 1/2 @ 44 1/2	44 1/2 @ 44 1/2
Friday	44 1/2 @ 44 1/2	44 1/2 @ 44 1/2
Saturday	44 1/2 @ 44 1/2	44 1/2 @ 44 1/2
Sunday	44 1/2 @ 44 1/2	44 1/2 @ 44 1/2
Tuesday	44 1/2 @ 44 1/2	44 1/2 @ 44 1/2

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	May, 1906.	Dec., 1906.
Wednesday	1 33 @ 1 32 1/2	1 29 @ 1 28 1/2
Thursday	1 33 @ 1 32 1/2	1 29 @ 1 28 1/2
Friday	1 33 @ 1 32 1/2	1 29 @ 1 28 1/2
Saturday	1 33 @ 1 32 1/2	1 29 @ 1 28 1/2
Sunday	1 33 @ 1 32 1/2	1 29 @ 1 28 1/2
Tuesday	1 33 @ 1 32 1/2	1 29 @ 1 28 1/2

Wheat.

The wheat market during the past week has been very quiet, and very few sales have been recorded. Offerings have been very small, and holders are not disposed to let go at current quotations. Exporters are doing nothing in the way of new business, as the European demand is quiet. Very few cables are being received for cargoes, and those that come to light are generally at a figure that would not compensate the exporter for letting go. Foreign news is still contradictory, especially as to Russia. It will be some time before Russian shipments show any appreciable increase. There are plenty of European buyers waiting to purchase Australian wheat, and when prices come down to a reasonable level business will become active. It looks as though the wheat market would depend largely on the new Australian and Argentine crops, and when those countries commence to ship freely, prices will no doubt decline. California buyers are not purchasing very freely in Oregon and Washington at present. Japan is nibbling for some more wheat, and there is no doubt that a number of cargoes will be dispatched from the northern ports before the season is over. Although millers throughout the State claim that they are well supplied, it is said that they are buying from hand to mouth. All indications at present point to a good grain crop this year. Farmers are only wishing for a few more clear days in order to finish their farm work. Crop predictions have brought forth all sorts of rash figures, but notwithstanding many rumors, prices remain fixed at the same place they were last week.

California Milling	1 37 1/2 @ 1 42 1/2
Cal. No. 1 shipping	1 35 @ 1 37 1/2
Northern Club	1 35 @ 1 37 1/2
Northern Bluestem	1 37 @ 1 42 1/2
Northern Red	1 32 1/2 @ 1 35

PRICES OF FUTURES.

Wednesday, at the forenoon session of Exchange May, 1906, wheat ranged from \$1.31 1/2 to \$1.34 1/2.

Flour.

Conditions in the local flour market continue practically unchanged. Business is only moderate. The bulk of recent sales is with local buyers. The export demand has been very slow. Hardly any cables came in from the Orient during the week, and it looks as if buyers there were entirely out of the market. There is no change in the condition as to China account, and no recent orders have been received by millers who have an established trade in Hongkong. Oregon millers have reduced their export price, and are now quoting export brands at \$3.25 and \$3.30 per barrel. The demand from Central and South America shows a slight improvement here, but this has not as yet reached the north, and some of the flour arriving here from the north has been forwarded to those countries. The prospects for the flour output in the coming year are good, though frosts within the next few weeks would make a marked change in the outlook.

Patents, California	— @ 85
Second Patents, California	— @ 60
Straights	— @ 25
Superfine No. 1	3 50 @ 3 75
Superfine No. 2	3 00 @ 3 40
Oregon Bakers'	3 50 @ 4 25
Washington Bakers'	4 00 @ 4 40
Eastern Patents	5 50 @ —

Barley

There has not been much activity in the barley market during the past week, and for the most part there has been no change in quotations. No. 1 feed, however, is now quoted at \$1.17 1/2 to \$1.20,

which is a slight decline from last week's quotation. At the same time it is feared in the north that there will be a shortage of barley there before the middle of June, as the quantity reported on hand is not sufficient to last until the new crop is harvested.

Brewing	1 25 @ 1 30
Feed, No. 1	1 17 1/2 @ 1 20
Feed, fair to good	1 17 1/2 @ 1 20
Chevalier, No. 1 to choice	1 25 @ 1 30
Chevalier, common to fair	1 20 @ 1 25
December	94 1/2 @ —

Oats.

There has been no movement in oats this week and prices are quoted the same as last week. There has been no further talk of importing milling oats from the East, and nothing has developed to create any interest in the consideration of oat prices for the future.

White oats	1 50 @ 1 65
Black oats	1 35 @ 1 85
Red oats	1 45 @ 1 70

Corn

The week has witnessed no change in corn quotations, although the growth of green feed is expected to reduce the demand for this commodity in some localities. However, a shortage in barley in Oregon and Washington is predicted, and it is possible that corn will have to be shipped into those States to make up this deficiency. An increased demand of this kind will not fail to affect the corn market here.

Large White, good to choice	1 17 1/2 @ 1 22 1/2
Large Yellow	1 17 1/2 @ 1 22 1/2
Small Yellow	1 55 @ 1 60
Egyptian White	1 38 1/2 @ 1 40
Egyptian Brown	1 22 1/2 @ 1 25
Kafir	1 20 @ —

Rye.

The rye market continues very firm, and there is no probability that anything will develop to influence the current quotations until the new crop makes itself felt.

Good to choice	1 50 @ —
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Buckwheat.

Buckwheat is in a very firm condition, as there is none coming in or expected. There will probably be little change in prices before the new crop comes in, though an advance is possible later on.

Good to choice	1 50 @ 1 65
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Beans.

The demand for beans continues to be of a limited character and prices are holding steady in the absence of selling pressure. Lima beans have been weaker in the south and a corresponding easiness is noted here. There has been a slight advance in Pinks, which are now quoted at \$2.15.

Small White, good to choice	2 90 @ 3 25
Large White	3 25 @ 3 60
Pinks	1 75 @ 2 15
Pinks, damaged	1 00 @ 1 25
Bayos, good to choice	3 30 @ 3 60
Red Kidneys	3 25 @ 3 75
Reds	3 00 @ 3 10
Limas, good to choice	4 75 @ 5 85
Black-eye Beans	4 40 @ 5 50
Cranberry	3 20 @ 3 35
Garbanzas, small	3 10 @ 3 25
Garbanzas, large	3 50 @ 3 75
Horsebeans	1 75 @ 1 85

Dried Peas.

The market in dried peas is very quiet and there has been no advance in the prices quoted last week, despite the light stocks on hand.

Green Peas, California	2 15 @ 2 50
Niles	1 75 @ 2 00

Hops.

The hop market is dull, most of the buying being done in Oregon. California growers do not find any serious demand on the part of dealers and there is a small movement in this line. Prices range from 6 to 9c, according to section and quality. The last large lot in Sonoma, consisting of 345 bales, was sold on the 10th of this month at 8 cents.

Medium to fair	6 @ —
Good brewing	8 @ 8 1/2
Prime	— @ —
Prime to choice	10 @ —

Wool.

The wool market is very quiet here. There is little demand for California wools, and it is only the long fall wools that are receiving any attention. The Eastern sections show a good demand for yarn wool, but the short and coarser varieties are not wanted at this time. Interest is thus drawn away from the California markets, but while the market is quiet the prices thus far have remained unchanged.

Humboldt and Mendocino	15 @ 10 1/2
Northern, free	14 1/2 @ 15
Northern, defective	11 @ 13
Middle County, free	10 @ 14
Middle County, defective	10 @ 12
San Joaquin and Southern, free	8 @ 10
San Joaquin and Southern, defective	7 @ 10

Oregon, valley	23 @ 25
Eastern Oregon	15 @ 17
Nevada	15 @ 19

Hay and Straw.

Shipments of hay have continued fairly heavy during the week, the total show-

ing 4,150 tons or about 250 tons less than for the week preceding. The rush is probably over and the coming week will see much lighter shipments. The market has been very soft for the past four or five days, except on the choicer grades of hay, and, as most holders believe the situation does not warrant any decline in prices, they have practically all determined to lessen their shipping orders. There is no doubt that many districts were unloading much faster than their stocks seemed to warrant and the move to curtail shipments would seem to be a wise one. The country continues to absorb large quantities of hay and the San Francisco market has been in quite a healthy shape. Quite a block of hay was burned at Hollister on Sunday last, one of the large warehouses of the Lathrop Hay Co., containing 2,000 tons, having been consumed. There is a ready sale for strictly choice wheat or tame oat and a fairly active inquiry for stock hay at low prices. The medium grades of wheat or oat, together with alfalfa, which is coming to market quite freely, are dragging considerably.

Wheat, choice	81 00 @ 16 00
Wheat, other grades	8 00 @ 13 50
Wheat and Oat	8 50 @ 12 00
Tame Oat, fair to choice	8 00 @ 12 00
Wild Oat	8 00 @ 9 50
Barley	7 00 @ 9 50
Alfalfa	9 00 @ 11 50
Stock hay	7 50 @ 8 50
Straw, 1/2 bale	30 @ 50

Millstuffs.

The market in millstuffs remains for the greater part unchanged. Bran has advanced to \$21.50, and there is a good demand at that price. Other feedstuffs are holding firm, with an upward tendency in prices and a good demand.

Alfalfa Meal, 1/2 ton	21 00 @ 22 00
Bran, 1/2 ton	20 50 @ 21 50
Middlings	27 50 @ 29 00
Shorts, Oregon	21 00 @ 23 00
Barley, Rolled, choice	26 00 @ 26 50
Cornmeal	28 50 @ 29 50
Cracked Corn	29 00 @ 30 00
Oilcake Meal	39 00 @ 40 00
Cocanut cake or meal	24 50 @ 25 50

Seeds.

The general condition of the seed market is much firmer. There is a very good demand for nearly all varieties. Hemp continues scarce and none is sold now for less than 6c. Alfalfa is in very good demand and the inside figure is now not less than 13c, while a considerable quantity sells at 14 cents.

Alfalfa	13 00 @ 14 00
Flax	3 25 @ 3 50
Mustard, Yellow	3 75 @ 4 25
Mustard, Trieste	4 50 @ 4 75
Canary	5 @ 6 1/2
Rape	2 1/2 @ 3
Hemp	6 @ —
Timothy	5 1/2 @ 6

Honey.

The honey market presents nothing new this week. There has been only a normal amount of transactions and the prices remain the same as quoted last week. Arrivals are quite free and dealers here still talk lower prices.

Extracted, Water White	4 1/2 @ 5
Extracted, White	4 @ 4 1/2
Extracted, Light Amber	3 1/2 @ 4
Extracted, Amber	3 @ 3 1/2
Extracted, Dark Amber	2 1/2 @ 3
Extracted, Hawaiian	2 1/2 @ —
White Comb, 1-frames	10 @ 12 1/2
Amber Comb	9 @ 10

Beeswax

Beeswax remains as usual, with little demand and no change in quotations.

Good to choice, light 1/2 lb	27 @ 28
Dark	25 @ 26

Live Stock and Meats.

The live stock market is very strong and active. Advances in several of the lines quoted below are noted. Beef has advanced to six cents and higher, with keen competition at the higher quotations. Mutton has advanced a quarter cent, and veal one-half cent. There is a very active market in hogs and prices are quoted higher than last week all along the line. Local packers say that good, fat hogs are very scarce at this time. They complain that prices are too high for them to do any packing, as prices in the East are lower and the packers there can undersell them.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net 1/2 lb	6 @ 6 1/2
Beef, 2nd quality	5 1/2 @ 6
Beef, 3rd quality	4 1/2 @ 5
Mutton—ewes, 8 wethers	10 @ 10 1/2
Hogs, hard grain, 150 to 250 lbs	6 1/2 @ 6 1/2
Hogs, large, hard, over 250 pounds	5 1/2 @ 6
Hogs, small, fat, under 150 lbs	6 @ 6 1/2
Hogs, soft	5 @ 5 1/2
Veal, large, 1/2 lb	6 @ 7 1/2
Veal, small, 1/2 lb	8 @ 9
Lamb, spring, 1/2 lb	11 @ 12

Hides, Skins and Tallow.

There are no anxious buyers for hides. Good, sound hides are closely cleaned up

at sustained prices, but the poorer lines go more slowly. The prices quoted last have not changed.

Nothing but select hides, clean and trimmed, will bring full figures. Culls of all kinds either from grubs, cuts, hair slips side brands or murrain, are not always readily placed at the lower figures.

	Sound.	Culls.
Heavy Steers, over 56 lbs	13 @ —	12 @ —
Medium Steers 48 to 56 lbs	12 @ —	11 @ —
Light Steers, under 48 lbs	11 1/2 @ —	10 1/2 @ —
Heavy Cow Hides, over 60 lbs	11 1/2 @ —	10 1/2 @ —
Light Cow Hides, under 60 lbs	10 1/2 @ —	10 @ —
Stags	7 @ —	7 @ —
Wet Salted Veal	10 1/2 @ —	10 @ —
Wet Salted Kip	12 @ —	11 @ —
Wet Salted Calf	13 @ —	12 @ —
Dry Hides	19 @ —	19 @ —
Dry Kip and Veal, 11 to 16 lbs	17 @ —	15 @ —
Dry Calf, under 4 lbs	20 @ —	19 @ —
Pelts, long wool, 1/2 skin	1 50 @ 2 00	1 50 @ 2 00
Pelts, medium, 1/2 skin	90 @ 1 25	90 @ 1 25
Pelts, short wool, 1/2 skin	60 @ 90	60 @ 90
Pelts, shearing, 1/2 skin	20 @ 50	20 @ 50
Horse Hides, salted, large prime, each	3 00 @ —	3 00 @ —
Horse Hides, salted, medium	3 75 @ —	3 75 @ —
Horse Hides, salted, small	2 25 @ —	2 25 @ —
Horse Hides, dry, large	1 75 @ —	1 75 @ —
Horse Hides, dry, medium	1 50 @ —	1 50 @ —
Horse Hides, dry, small	1 00 @ —	1 00 @ —
Tallow, good quality	4 @ 4 1/2	4 @ 4 1/2
Tallow, poorer grades	3 1/2 @ 3 1/2	3 1/2 @ 3 1/2

Bags and Bagging.

The rumor concerning a combine in Calcutta which caused some little anxiety here has been verified, but it now appears that it was only a short-time agreement, and that no attempt will be made to hold prices up until the summer demand sets in. The market is now very quiet. The old prices remain, except that bean bags are now quoted at six cents.

Bean Bags	6 @ —
Fruit Sacks, cotton, No. 1, 8 @ 3 1/2; No. 2	7 1/2 @ 8
Fruit Sacks, jute, as to quality	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 22x36, spot	7 1/2 @ 7 1/2
Wool Sacks, 4 lb	35 @ 37
Wool Sacks, 3 1/2 lb	32 @ 34

Poultry.

Three cars of Eastern poultry arrived on the market Tuesday and found a good sale at average prices. There were few offerings of local stock and little demand for it. There is a good market for large, fat hens and large, young roosters. Turkeys continue nominal, but fancy stock would find a good market. Arrivals of game are lighter, and prices have advanced. The open season for wild ducks is almost at a close, and the market remains unchanged in this line. Broilers and fryers are in good demand and have advanced during this week.

Turkeys, dressed, 1/2 lb	18 @ 22
Turkeys, choice Young	— @ —
Turkeys, live gobblers, 1/2 lb	15 @ 16
Turkeys, live hens 1/2 lb	16 @ 18
Hens, small, 1/2 dozen	4 20 @ 5 30
Hens, large	6 00 @ 7 00
Roosters, old	5 00 @ 5 20
Roosters, young (full-grown)	6 00 @ 7 00
Fryers	5 20 @ 6 20
Broilers, large	4 20 @ 5 30
Broilers, small to medium	3 00 @ 4 00
Ducks, old, 1/2 dozen	5 00 @ 6 00
Ducks, young, 1/2 dozen	6 00 @ 7 00
Geese, 1/2 pair	1 30 @ 2 20
Geese, 1 pair	2 20 @ 3 00
Pigeons, old, 1/2 dozen	1 00 @ 1 10
Pigeons, young	2 00 @ 2 20

Butter.

The expected influence of the warm weather on the butter market came this week, and butter experienced a decline of three or four cents per pound. However, local dealers claim that there is not a great quantity on hand, in fact only enough to go around, and that it is only a question of a little time when it will be higher again.

Creamery, extras, 1/2 lb	26 @ 27
Creamery, firsts	23 @ 26
Creamery, seconds	23 @ 24
Dairy, select	23 @ 23
Dairy, firsts	20 @ 21
Dairy, seconds	18 @ 20
California storage	21 @ 22
Mixed Store	17 @ 18

Cheese.

Cheese is to be had on the market in considerable quantities, and fresh supplies are arriving. The condition of the weather is now making itself felt, and cheese has declined in sympathy with butter. The highest California cheese is now quoted at 13 1/2c. A further decline is expected as soon as the effect of the low prices in butter is felt.

California, fancy flat, new	13 1/2 @ —
California, good to choice	13 @ —
California, fair to good	11 @ —
California, "Young Americans"	13 @ 13 1/2
Eastern, new	16 @ 16

Eggs.

The egg market has been treated severely by the warm weather this week, and prices have made a spectacular decline. Buyers are very cautious, and the prices are unsteady and unsettled. Large quantities are being shipped to the northwest, where higher prices prevail, and this is expected to better the market here. As soon as the weather begins to settle down, eggs will go into cold storage in large quantities. Eastern eggs remain merely nominal.

California, select, large, white and fresh	18 @ —
California, select, irregular color & size	17 @ 17 1/2
California, good to choice store	16 1/2 @ 17
Eastern firsts	17 @ 18
Eastern seconds	15 @ 16

Potatoes.

The potato market is at present almost

in a state of glut. Large quantities continue to arrive, especially of the lower grades, with the result that prices have receded considerably. The market is weak, and demand is indifferent in the face of a marked selling pressure. Buyers are not disposed to go beyond their immediate needs, as conditions seem especially to favor their interests. A further decline is imminent. Sweet potatoes have begun to arrive in more liberal quantities, but prices have hardly been established yet.

River Burbanks, 50 cental.....	50	@	75
Salinas Burbanks.....	1 10	@	1 40
Oregon Burbanks.....	50	@	1 10
Tomatoes.....	50	@	1 00
Sweet Potatoes, Merced.....	1 25	@	1 50
Sweet Potatoes, good to choice.....	—	@	—
Early Rose, Oregon.....	1 35	@	1 50
Early Rose, California.....	1 25	@	1 35

Vegetables.

The vegetable market is becoming more active and interesting as the year advances. Orions have attracted the most attention this week. The stocks of onions held have been augmented by the arrival of large shipments from Oregon, and it is evident that the Oregon people are letting their holdings go. Many of the imported onions are sprouted and in bad condition. Other vegetables are beginning to play a more conspicuous part in the vegetable market. Asparagus and rhubarb are present in larger quantities and are not all taken away even at easier prices. Peas from the south have exceeded the demand at the former prices and tomatoes are lower and more plentiful. Summer squash and peppers have put in an appearance here.

Celery, 1/2 dozen.....	50	@	—
Radishes.....	10	@	—
Lettuce.....	20	@	—
Asparagus, 1/2 lb.....	15	@	17 1/2
Rhubarb.....	7	@	9
Green Peppers, southern.....	20	@	—
Cucumbers, hothouse, 1/2 dozen.....	75	@	1 00
Summer Squash, southern, 1/2 dozen.....	2 00	@	—
Turnips, yellow.....	1 50	@	—
Turnips, white.....	1 20	@	—
Cauliflower, 1/2 dozen.....	50	@	—
Beans, String, 1/2 lb.....	20	@	—
Cabbage, choice garden, 100 lbs.....	1 00	@	1 25
Egg Plant, 1/2 lb.....	10	@	15
Garlic, 1/2 lb.....	5 1/2	@	6 1/2
Onions, Oregon, 50 cts.....	80	@	1 00
Onions, New Yellow Danvers, 1/2 cts.....	75	@	1 00
Onions, Australian Brown, 1/2 cts.....	1 25	@	1 50
Peas, Green, 1/2 lb.....	8	@	10
Tomatoes, 1/2 box or crate.....	1 00	@	1 50
Artichokes, 1/2 doz.....	50	@	1 25
Carrots, 1/2 sack.....	80	@	90
Hubbard Squash, 1/2 ton.....	25 00	@	—

NOTE.—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top, with hand holes in the ends, and weigh when filled from 50 to 60 lbs gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 35 lbs gross.

Fresh Fruits.

The apple market has remained firm and steady during the greater part of the week and, except for a decline in choice apples, the prices previously quoted remain. The sales in apples are steady in a routine way, with no speculative interest.

Apples, choice to select, 50-lb bx.....	1 25	@	1 75
Apples, good to choice, 50-lb bx.....	75	@	1 00
Apples, common.....	50	@	75
Pears, Winter Nelis.....	2 75	@	—

Dried Fruits.

The prices of dried fruits remain firm and steady. Prunes are commencing to be pretty well cleaned up, and apricots show a marked scarcity and are holding very firm. There has been no change in the quotations since last week.

EVAPORATED OR BLEACHED

Apples, 50-lb boxes, rings, pressed, good to choice.....	8 1/2	@	8 1/2
Apples, extra choice to fancy, 50-lb boxes.....	8 1/2	@	9
Apricots, Royal, good to choice, 1/2 lb.....	8	@	8 1/2
Apricots, Royal, fancy.....	9	@	9 1/2
Figs, 10-lb box, 1-lb cartons.....	55	@	62 1/2
Nectarines, White and Stanwick, 1/2 lb.....	8	@	8 1/2
Nectarines, red, 1/2 lb.....	—	@	8
Peaches, unpeeled, good to choice.....	8 1/2	@	8 1/2
Peaches, unpeeled, fancy to extra fancy.....	9	@	9 1/2
Pears, standard, 1/2 lb.....	—	@	8 1/2
Pears, choice to fancy.....	10	@	12
Plums, Black, pitted.....	5 1/2	@	6 1/2
Plums, Red, pitted.....	7	@	8
Plums, Yellow, pitted.....	6	@	8
Prunes, Silver, good to fancy.....	5 1/2	@	8 1/2
Prunes, in bags, 4 sizes, —c; 40-50s, 5 1/2 @ 5 1/2 c; 50-60s, 4 1/2 @ 5 c; 60-70s, 4 1/4 @ 4 1/2 c; 70-80s, 3 1/2 @ 4 c; 80-90s, 3 1/4 @ 3 1/2 c; 90-100s, 3 @ 3 1/4 c; small, 2 1/2 @ 3 c.	—	@	—

COMMON SUN-DRIED.

Apples, sliced.....	5	@	5 1/2
Apples, quartered.....	4 1/2	@	5 1/2
Figs, White, in bulk.....	2 1/2	@	3
Figs, Black.....	2 1/2	@	3

Raisins.

Nothing has developed in raisins this week and prices remain substantially the same. There is, however, a slight advance to be noted in Seedless Sultanias. Seedless Muscatels have practically disappeared from the market. The other lines remain unchanged.

(Fresno delivery except otherwise specified.)

London Layers, 2-crown, 20-lb box.....	1 50	@	—
London Layers, 2-crown, 20-lb box.....	1 00	@	—
Fancy Clusters, 4-crown, 20-lb box.....	1 75	@	—
Dehesas, 20-lb box.....	2 00	@	—
Imperial, 20-lb box.....	2 50	@	—
2-Crown Standard loose Muscatel.....	5	@	—

WOOL SALE.

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3-Crown Standard.....	5 1/2	@	—
4-Crown Standard.....	5 1/2	@	—
Seedless Thompsons, 50-lb boxes.....	4 1/2	@	—
Seedless Sultanias.....	—	@	—
Seedless Muscatels.....	—	@	—
Fancy 16-oz. Seeded.....	6 1/2	@	—
Choice, 16-oz. Seeded.....	6 1/2	@	—
Fancy, 12-oz. Seeded.....	5 1/2	@	—
Choice, 12-oz. Seeded.....	5	@	—
Fancy Seeded, bulk.....	6 1/2	@	—
Choice Seeded, bulk.....	6	@	—

Citrus Fruits.

The general movement of oranges has been largely restricted to local needs. There has not been much speculative interest in oranges this week and prices have remained very firm. Buyers have remained backward, but dealers have not been anxious to dispose of their holdings, as the stock is somewhat lighter and the recent rain in the orange section is apt to delay shipments for the immediate future. Lemons and grape fruit have held firm at the old prices. There is a very good demand for fancy stock in these lines. A new consignment of limes arrived this week.

Oranges, fancy.....	2 00	@	2 50
Oranges, choice.....	1 50	@	2 00
Oranges, standard.....	1 00	@	1 25
Oranges, Seedlings.....	1 00	@	1 25
Lemons, California, fancy, 1/2 box.....	2 00	@	2 25
Lemons, California, good to choice.....	1 00	@	1 50
Lemons, California, standards.....	60	@	75
Grape Fruit, 1/2 box, new.....	1 00	@	1 50
Grape Fruit, seedless.....	2 00	@	2 50
Limes, 1/2 box.....	3 50	@	4 50

Nuts.

The nut market is not subject to great activity at this time, as most of the business has been done. This week has, however, witnessed a considerable advance in California almonds of nearly all varieties, probably owing to the discovery that there is a smaller quantity on hand than was believed.

Peanuts, fair to prime.....	4 1/2	@	5 1/2
Cal. Walnuts, No. 1 soft shell.....	—	@	13
Cal. Walnuts, No. 2 soft shell.....	—	@	9
Cal. Walnuts, No. 1 hard shell.....	—	@	12 1/2
Cal. Walnuts, No. 2 hard shell.....	—	@	8 1/2
Almonds, LXL, 1/2 lb.....	12	@	13
Almonds, Ne Plus Ultra, 1/2 lb.....	12	@	12 1/2
Almonds, Nonpareil, 1/2 lb.....	12 1/2	@	13
Almonds, Langue Doc, 1/2 lb.....	8 1/2	@	—
Almonds, Golden State, 1/2 lb.....	8	@	9 1/2
Hard Shell, 1/2 lb.....	5	@	—

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Patrons of Husbandry.

Grange Progress.

TO THE EDITOR: The work of the annual installation of Grange officers goes steadily along. Brother Griffiths ably performed the ceremony at Ripon on Jan. 24. Speaking from memory the ritual was rendered impressively and with dignity. It was also my pleasure to address the members on the objects of the Order. The Worthy Lecturer, Sister Graves, is earnest and conscientious, anxious to find out her duties and how to discharge them. After the consultation and preparation of programmes for the next two meetings (second and fourth Tuesday nights of each month), I believe she will keep the Grange meetings full of interest. The officers are: Past Master, A. J. Nourse; Master, L. Bodison; Overseer, T. C. Hughes; Treasurer, H. T. Graves; Secretary, T. H. Wren; Lecturer, Mrs. H. T. Graves; Chaplain, Mrs. L. Bodison; Ceres, Miss Hattie Stephenson; Pomona, Miss Ina Garrison; Flora, Miss Mamie O'Neill.

After the ceremony all adjourned to the banquet hall and enjoyed supper. Ripon Grange promises long life and usefulness. I was sorry the Worthy Master and I could not visit Manteca Grange, but it meets on alternate weeks. I shall try to be at a meeting in the near future.

Another Grange in this valley is at Le Grand, Merced county. I have written twice asking why we receive no reports, what are their difficulties and discouragements, and what help they needed. I urged Brother Griffiths to stop on his way south and investigate, but do not know whether his time permitted. If not, I gave him the Master's name and address and Brother Griffiths will write. He stayed a day at Modesto, and we interviewed several who had been members: among them Brother Vital E. Bangs, who was Master of Modesto and the Pomona granges when they ceased to meet in the hard year when so many left the county. The Master could not stay to canvass the situation. If he does not stop on his return I shall try and organize, although I am not a State Deputy. We consulted about my doing some field work, installing officers, visiting Granges, personally instructing and encouraging lecturers, etc. But it is thought that the funds in the treasury will not suffice for that, and should be reserved mainly for the work of organizing new Granges where possible. "This ought you to do," but whether it is wise to leave the other undone—the visiting, enlivening and strengthening of existing granges—some of which are living "at this poor, dying rate," may be a question. As my business, at present, keeps me pretty closely at home, this does not make much difference. I shall have to confine myself mostly to correspondence and writing for the papers.

I have a reply from the Master of the National Grange, Governor N. J. Batchelor, to an appeal for financial help that our Master and executive committee might put more deputies in the field. Brother Griffiths also made a like request. Also that I might be allowed to announce through the various lecturers the pleasure and profit of an official visit by him to our State, and a few special rallies in various localities to greet and hear him. He replies: "I hope that you will be able to promote the Grange cause along the lines you suggest. The amount of money at our disposal for the extension of the Order is very small compared with the field of labor, and we shall confine our labor mainly to a few States. I would be glad to attend meetings in your State, as you kindly invite me to do. I doubt if I am able to do so this year. During my two years' term I hope to get into every Grange State, and if I do not visit California this year will try to do so next year. I am hoping to do something this year in some of the specially weak States, in which list I do not include California." That is complimentary, but rather "cold comfort." So we must hoe our own row till much needed help can be afforded.

In addition to set subjects for discussion, arranged and announced by lecturers, I urge again the question box. It will stimulate discussion and call out the subjects uppermost in the minds of members on which they desire to hear and speak. Be sure and use your local newspapers fully. Editors are more than willing to publish Grange news, announcements and reports. Judging by the few responses so far received from Granges and lecturers my personal correspondence will not be large. I can give more time and attention to the papers. Our prompt and active State secretary prom-

ises me a list of lecturers as soon as he receives reports. Will secretaries kindly send the names of new officers and full and correct reports? Look for promising places for new Granges and inform the Worthy Master of the State Grange, who is making a tour of observation so as to be personally sure of where to put deputies at work with most likelihood of success. Let us all pull together before the busy season comes on.

Word comes from Sister Twitchell that they decide to hold the fort in Grass Valley. The new Master pledges himself for new names and the members mean to do likewise.

Brother John S. Dore writes that there is a chance to revive Lone Star and West Park Granges, both of which have been resting.
J. W. WEBB,
Modesto. State Lecturer.

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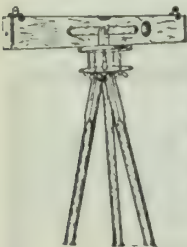
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For Our City Readers.

'Ten Acres Enough' is a new book with what strikes us an old title. However, the book is revived and localized, with an introduction by Prof. I. T. Roberts, late of Cornell University and now an esteemed citizen of California. The publication is by the Consolidated Retail Booksellers of New York. The story of it is as follows:

Many years ago a practical man, who had suffered in mind and in pocket from the panics and financial crises of days before the war, decided to give up the struggle of business in the city and settle with his family on a farm. Untrained in the profession of agriculture, but imbued with a natural love for it, he proceeded to demonstrate that 10 acres, properly cultivated and planted with fruits, were sufficient to sustain his entire family and something more. Indeed, he went further and proved his own theory that 10 acres, with intelligent work and manure concentrated upon them, are worth more than a large farm indifferently cultivated. He had such marked success he decided to tell how he did it in a book, and the telling makes exceptionally interesting, valuable and instructive reading. The author writes in a happy, optimistic and human vein; and even the statistical portions of his narrative hold the reader's attention with a desire to know how he is coming out.

Professor Roberts, in his appreciative introduction to this new edition, says: "What Jethro Tull did to improve the tillage, the author of 'Ten Acres Enough' did to prove that intensified agriculture on small areas could be made not only to support a family, but to yield a handsome profit, and health, freedom and happiness as well."



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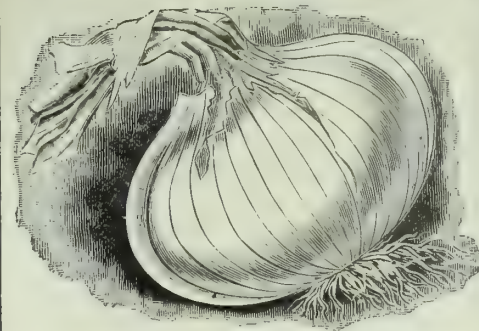
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THE DAIRY.

Butter Making Problems.

By A. JENSEN at the Modesto Convention of the California Creamery Operators' Association.

The subject assigned to me by your committee, that of 'Butter and Cheese Making' had given me considerable thought as to what was really expected of me, but as I am no cheese expert, whatever, and have had only limited experience along that line, I am compelled to entirely drop that part from my paper, leaving the subject, butter making problems to speak on. As this in itself can be discussed from so many sides, I will confine my remarks to some actual experience and observation I have had the opportunity to make. California offers today opportunities for people of nearly any profession. It has the minerals, the forest, the waterways and railroads to promote commerce and it has the climate that makes strong, energetic men and beautiful women. It has the soil and condition that make dairying especially profitable.

The evolution of dairying, like in the East and Middle West, is equally prominent in California. The farm separator that made it possible for the dairy farmer to choose the best buyer of cream, through being able to ship some hundreds of miles at a reasonable rate, is as prominent in California as anywhere. The large central creameries of the East are being imitated in California; abuse and discontent following aggressive moves to obtain more business is also as notable here as elsewhere. Summing everything together, it can be said that unsettled conditions prevail, especially so in reference to butter manufacture. In all successful business where true, honest business methods prevail, men with superior knowledge and energy, together with proper backing, are the winners of today. The creamery operator, who employs only honest methods, and who has the ability to impress it on his patrons, need not fear to be left behind in the profession of making butter of today—a man with integrity and skill and tact; without part or all of these faculties, a creamery is not a success, and you can always pick out the complaining, scheming creameryman as being more or less unsuccessful.

For a creamery to be successful, raw material of sufficient quantity and quality is the first consideration; second is the butter maker; third, the equipment, and fourth, the market. The tendency in some Eastern States and part of California today by some creameries to solicit old, sour and indifferent cream, and paying first-class prices for it, is wrong, and will prove disastrous to the interest involved. So is also the attempt to doctor up with chemicals and other treatment cream for butter making wrong. The consumer of butter has a right to demand a clean, wholesome article that has been properly cared for at all stages through its manufacture.

We have today quite a few creameries in California that might be classed as central creameries. Whether all butter made in this State will be centralized or

not depends entirely on the competition, skill and method pursued; co operative creameries in parts of California are less numerous today, while in other sections new creamery companies are being formed, creating more bidders for cream.

The marketing of butter also is done on much more economical lines than formerly. Butter with real value maintains a lead and prestige over that showing a lack of quality. Butter dealers are selling on smaller margins, and the producer is getting larger returns than anywhere in the United States. The California butter maker is self-made, more than in any other section.

Climatic conditions made it possible to produce fair butter under the old systems. The introduction of separators on the farm, and the buying of cream of much inferior quality than produced by the whole milk system, have demanded more skill than formerly, and, while a number of Eastern butter makers have come to the coast in recent years, of more or less merit, several butter makers with skill are today out of employment. I would discourage hiring a man away from home if a California man can be had.

Proper results from testing are not always obtained by creameries from the fact that the method of operation used is still imperfect; not enough attention is paid to uniformity in method, hence, unsatisfactory results, and it is my experience that more tests are over-read than under-read. Any test not showing clear, transparent fat with clear line at top and bottom is incorrect; any test having a muddy sediment mixed through the fat is nearly always too high. Never should a test be read unless absolutely clear and free from sediment. The patron often complains, with good reason, about too low a test, but more often he gets more than is coming to him. The sampling of cream for an accurate test is often very difficult; especially when the cream is heavy in fat and cold, it is almost impossible then to get correct, composite samples and single tests, as tests from each delivery are the most reliable.

The acid for cream testing should be a little weaker than for milk, or of about 181.5 gravity. The sample of cream should be cooled to about 70° F. and diluted with about 25% water before the acid is added. Besides, it is well to let the bottles revolve for 3 or 5 minutes in testing, after filling with water, before reading.

Starters are coming into more general use in California. A good starter often helps poor flavored cream from one-half to three cents in the selling value of butter.

Pasteurizing of cream is still undeveloped in this State, principally from lack of skill and ability to get churn yield. The use of it should be encouraged only where the operator is capable of employing science in the treatment of the cream. The pasteurizer often

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gets the blame for poor results, when, as a matter of fact, the operator does not even know why he is pasteurizing. Remember, the pasteurizer is a mechanical appliance, and only performs preparatory functions. The advantages of it depend entirely on the operator.

Our dairy schools, the country over, have proven some assistance to the dairy industry, but great mistakes are made by the dairy schools trying to turn out butter makers with only theoretical knowledge. With the bare exception of a couple of dairy schools in the United States, the boy who attends gains very little of practical value. The writer has employed graduates from nearly all of the dairy schools at salaries varying from \$60 to \$125 per month, but with few exceptions, the self-made butter maker, who started with the scrubbing brush and gradually grew into the creamery work, is ahead. The lack with dairy school graduates is to look after details, his work at the school being less thorough, being more in the nature of play.

For my work, I shall never again employ a dairy-school graduate unless he has had three years' experience before entering the school; then, only, can he appreciate the application of technical work with practical work.

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FORESTRY.

Great Structural Timbers of the Pacific Coast.

The study of the structural timbers of the Pacific Coast was begun by the Bureau of Forestry, now the Forest Service, in 1903, in order to determine with greater accuracy the exact scope of their commercial use. At that time the only laboratory in the West suitably equipped for work of this character was that of the University of California. Accordingly, the first testing station was established there, and the programme then prepared has been steadily carried out since. Keen interest and hearty co-operation have greatly aided the work. The lumber mills of the coast have furnished all the timber needed; railroads and steamship companies have given free transportation for the test material; and the University of California has contributed the use of its well-equipped testing laboratory and a supply of power.

In the first series of experiments the Forest Service has aimed to determine the mechanical and physical properties of timbers used in buildings, bridges, and other structures where strength is called for. The test specimens have been selected from the mill and the lumber yard, so that they might be representative of the timber in actual use.

The tests cover all grades of the product, from clear, straight-grained sticks to inferior pieces containing such knots and other defects as are found in common and second-grade timbers. By this means it is possible to establish both the liability of the timbers to contain season checks, knots, windshakes and other similar defects, and the precise effect which these will have on the strength of the timbers. The knowledge thus obtained enables the engineer or architect to design timber structures with safety and economy, and, in addition, provides a reliable basis for the inspection and grading of the product of the mills.

A variety of factors enter into the precise determination of the strength of timbers. In dealing with full-sized structural timbers it is necessary to know the rate of growth of the specimen, its weight per cubic foot, and the stage of seasoning which it has reached, as expressed in moisture content. To check these determinations, tests are made on small, selected pieces, cut from straight-grained, large beams, free from defects, so the relation which these factors bear to the strength of the timbers may be analyzed and problems attacked simply and directly.

The red fir and the western hemlock have hitherto monopolized the tests. Red fir, whose merits have long been recognized in the West, stands without question first in importance among the structural timbers of the coast. Lightness, strength, and durability are its distinctive valuable qualities, and the fact that it can be obtained readily in sticks of exceptional size, without defects, greatly enlarges its utility. In recent years its introduction to the Eastern market has made rapid strides. The results of the tests confirm conclusively the exceptional merits of this timber.

Western hemlock has not readily been received in the market. Chief

among the obstacles with which it has had to cope is the similarity of its name to that of the eastern hemlock, whose poorer qualities it has unjustly been held to share. Though large quantities of the timbers are cut and sold, they are marketed under fictitious names, such as Washington pine, Alaska pine, and gray fir, for under its own name the western hemlock has even now no market standing. Yet the results of tests already show that, though it is not so strong or serviceable as red fir or long-leaf pine, its structural value compares favorably with that of loblolly or Virginia pine, and that it therefore deserves to be marketed on its merits. The effect of publishing reliable information in regard to the mechanical properties of this timber by the Forest Service will be to encourage its legitimate use and to remove existing prejudices against it.

During the Lewis and Clark Centennial Exposition at Portland, Or., a testing station was operated in connection with the forest exhibit of the Government, and tests of structural timbers of large sizes were made daily. At the close of the Exposition the machine was re-installed at Eugene, Or., where the University of Oregon has equipped a testing plant especially to co-operate with the Forest Service in this work, and special investigations to determine the effect of knots on the strength of red fir are being carried on. At Seattle, Wash., the State University has also completed a testing laboratory, which will be operated by the Forest Service in co-operation with the University. Here investigations of western hemlock will be conducted along lines followed with red fir at the University of Oregon.

About a year ago the Forest Service issued a circular, 'Progress Report on the Strength of Structural Timber,' which gave the partial results of the tests of Pacific Coast timbers, and which has been exhausted by the requests made for it—an indication of the practical interest of the studies. A revised edition is now in preparation.

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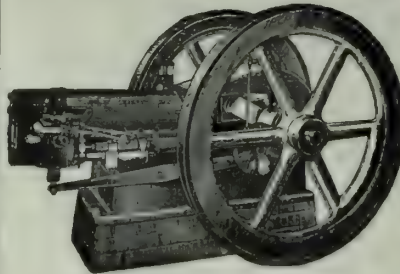
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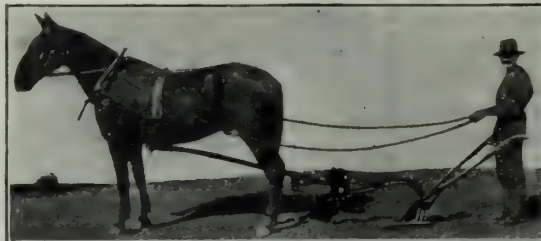
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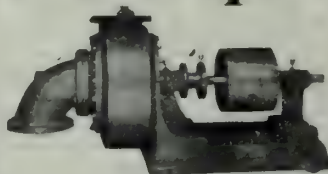
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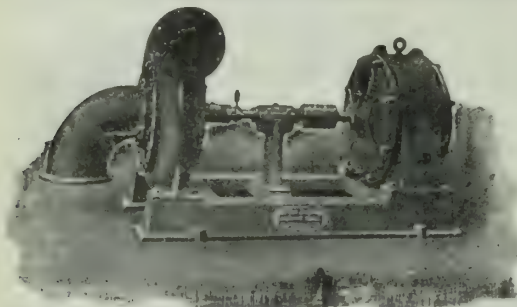
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AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 8.

SAN FRANCISCO, SATURDAY, FEBRUARY 24, 1906.

THIRTY-FIFTH YEAR.
OFFICE: 330 MARKET ST.

Equine Labor and the Fruit Industries.

We recently gave an illustration and comments upon the public service rendered by our fruit industries in affording opportunity for profitable human labor and the indirect advantage to the State in the multiplication of homes and prosperous and contented citizens. Another phase of the same general proposition is suggested by the view on this page, which shows the horse power and the arrangements

years ago under the pressure of bicycles, trolley cars, and more recently the fruit interest is helping the horses which have been chased out of popularity by the automobile. It was also rather a fortuitous circumstance that, when the breeding of race horses of all styles of goodness and badness collapsed, and the State was left with a multitude of light-weight angular steeds which were suited neither for city uses nor for war, the fruit industries were able to use even such a product for the quick, light draft of

working animals required by the fruit interest calls for much provender. The hay and feed grain markets of the State are largely held good by the demand in the fruit districts. We have no data for an estimate of the tonnage of grain and alfalfa hay and barley which is thus required; but it is very large, and in some of the interior irrigated districts the alfalfa acreage is in a measure sustained by the good local demand for hay which the proximate fruit areas create. Nor does the benefit stop at this point.



The Horse and Mule Power and Its Maintenance Upon a California Lemon Ranch.

for its housing upon the Limoneira lemon ranch near Santa Paula, in Ventura county. This fruit enterprise uses about 340 acres for its special product. Careless count of the horses and mules in the picture shows that there are not less than 34 animals employed, which would be one to ten acres. Manifestly the fruit industry calls for more horse power than other kinds of farming, for what pursuit out of the horticultural lines would require horses or mules at the rate of one to ten acres? It is clear then that our fruit industries are making a good market for the horse growers, and it was probably of considerable advantage to the State as a whole that this demand was increasing rapidly about the time that the bottom dropped out of the horse market a few

the orchard cultivators. Certain it is that, though common horses at that time were cheap in California, we do not remember that they became absolutely worthless, nor that horse canning was ever either done or proposed in this State, as it was in Oregon. In these ways the fruit industries may have proved a saving to the horse market. In the matter of mules, there was a similar service because there is probably nothing better for cultivation than a light, quick, handy mule, and with the mares then available for mule breeding the progeny was bound to be of this character.

But the service of the fruit industry to general agriculture does not end with making a price for the animal. The maintenance of the large census of

Rural blacksmiths and harness makers and local stores which carry all kinds of supplies which are required for horse work find a good share of their business in the fruit lines—far more than any other single line of agriculture would extend to them.

The buildings shown in the picture are not notable. They are average California horse-barns, sheds and corrals, or places where the animal is not a product but only incidental thereto. That such light-built structures are sufficient for the comfort of the animals and capable of holding themselves upright, is, of course, evidence of the mildness of the winter climate, the absence of snowfall, etc. The characteristic California background is also recognizable in the

(Continued on Next Page.)

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E. J. WICKSON, Horticultural Editor

SAN FRANCISCO, FEBRUARY 24, 1906.

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The Week.

Nothing could be better than the light, warm rains which have generously continued since our appreciative mention of their beginning a week ago. The ground is slowly filling up with water and it is now sure that crops will be grand if they do not miss the spring finish and there is no reason to worry about that.

The prevailing topic of the week is the marriage of the American princess, Alice, to a man from Ohio. We admire the lady for her choice of an American and we sympathize with her taste for an American with a neat, polished dome of thought and not for some bushy-topped scion of the European nobility. Mr. Longworth is also to be congratulated for his horticultural advancement, for he has plucked a peach from a high branch, while his ancestors were content with lowly grapes and strawberries. But the Longworths were always good judges of fruit and Californians will not forget that the Longworth Prolific strawberry from Ohio rose to prominence in California half a century ago and was popular in this State long after it disappeared from other parts of the country. Pomological records say that this berry "originated at Cincinnati, on the lands of Mr. Nicholas Longworth, in the Garden of Eden." Thus the achievements of the Ohio Longworths began early, and if the present Nicholas Longworth has ever had a doubt about the accuracy of his grandfather's location of the Garden of Eden upon the banks of the Ohio river, he will be sure of it when he brings his bride to the old home of his distinguished ancestor.

It seems that it is now a good time to agitate the establishment of a department of forestry science and practice in the University of California. The National Lumber Manufacturers' Association has an accumulation of funds which it is disposed to use in the promotion of forestry instruction, so that young men can be prepared to assist the timber owners in such handling of their property that it may not be destroyed by lumbering operations, but may be used so that regular crops can be gathered and growth upon such intelligently deforested areas may continue and furnish other crops at later periods. This is, of course, the end of rational forestry; to "use the forests and still have them" is their motto. This can only be reached by education in forest policy and methods. The association named above has a disposition to con-

tribute to this end, and the question seems to be, where can its money be invested to the best advantage? A present preference seems to exist in the committee of the association, to whom definite recommendation is entrusted, to add their contribution to the equipment of the Yale forestry school. While no one questions their right to do this nor the title of the Yale forestry school to such acquisition, Pacific coast people are disposed to urge that this money should be given to start forestry instruction where it does not now exist, and where the greatest demand for such instruction now is, viz., on the Pacific coast, where the greatest forests of the United States are. For this reason some very commendable agitation is arising, with a view of locating the gift of the National Lumber Manufacturers' Association's here, if possible; if not, to emphasize the fact that such instruction should be provided for in some other way. Mr. S. L. Everett, of San Francisco, who has called public attention to the matter, writes in this way:

To establish this school of forestry, endowed by the National Lumber Manufacturers' Association, at Yale University, would be to locate it thousands of miles from a forest, in an institution attended by young men who are not looking for the small salaries of forest experts, and necessitating a cost for railroad fare equivalent to the expense of half a semester at college if those from the forest regions desire to attend; on the other hand, the establishment of such a chair at the University of California, ten miles from San Francisco and but a few hours' trip from the greatest forests now being exploited in the world. The technical work could be given at the University, and a short trip would take the whole body of forestry students into the woods at little if any expense. There are hundreds of young men waiting the chance to take such a course, as they have been raised in the forest regions, and from love of the vastness of their old-time timber areas, would be content with the small salaries possible under the present governmental management of the Forestry Bureau.

Mr. Everett's position is certainly a strong one, and we trust that it may appeal cogently to the Association which contemplates doing this beneficent thing. It will be in order for all lovers of the forest and all also who desire to secure the greatest return and largest period of profit from their investments in timber lands to promote this measure with whatever influence they can command.

The pear blight war is going on vigorously in the Sacramento valley, not less than ten experts in treatment, including both those of the State and of the United States are still at work cutting out, or showing others how to cut, and they will continue until the blossoming period is over. As we have said before, the purpose is to remove and burn every particle of blighted bark that can be found above ground and below, so that bees and other visitors to the bloom may not carry germs, because no blighted gummy bark may be available for them to gather germs from. Some of our correspondents apparently do not quite understand what the experts are aiming at. It is not their expectation to extirpate the disease so that there shall be no more of it in the valley. Such a result is beyond all reasonable hope. They are simply trying to demonstrate that the disease can be arrested in its progress and pear trees continue to be profitable, by as perfect detection and cutting out as experts can do. If they are able to show this in the district they are able to cover then the method will be commended and all pear growers advised to learn and practice it. Some of our correspondents write as though there was a hope of stamping out the disease, and are disposed to complain because their districts are not included. If that were the hope such complaints would be just, because one cannot stamp out a disease without reaching it wherever it appears nearly simultaneously. But to demonstrate a method which can be afterward carried by orchard owners to all districts, the important point is not so much to cover all districts as to do the work thoroughly in one or more districts. This is the reason why the experts are obliged to concentrate their efforts within areas which they can thoroughly cover. If they succeed then the method will be open for all horticultural commissioners to push and all orchardists to apply.

Some people may get the idea that the present plan of warfare is new. It is not new in plan, but it

is unique and new in the scope in which it is being carried out. In this respect what is now being done in California was never attempted before. Testimony as to the age of the plan is ample. For instance, the late Rev. Henry Ward Beecher was in his youth an earnest student of horticulture, and he met the pear blight in southern Ohio, where he then lived. In December, 1844, he read an essay on 'The Blight of the Pear Tree,' in which these words occur:

Whenever blight has occurred, we knew of no remedy but free and early cutting. In some cases it will remove all diseased matter; but in bad blight there is neither in this, nor in anything else that we are aware of, any remedy.

That was long before the real cause of the disease was discovered, but it is still true of any desultory and incomplete cutting out. Whether it will still be true after the complete cutting out of branch, stem and root which is now being carried on, cannot be told until the experiment is complete.

There are others who talk just like Beecher today, and for the same reason. They do not know the scope and purpose of the present experiment. We heard the other day of a San Joaquin fruit grower who was speaking at a Farmers' Institute and expressed no confidence in the warfare against pear blight, because he had tried cutting out and failed. He was too previous in his remarks. There never was such cutting out in the San Joaquin valley as is now being done in the Sacramento valley. Even if the speaker did it thoroughly and well, his neighbors did not, and, of course, the bees could pack the disease back to his trees from diseased trees in his vicinity. No such experience should be cited as evidence against this experiment. It may come out in the same way, of course, and be a grand disappointment and failure, but no one is warranted in taking that view until the experiment is worked out.

Equine Labor and the Fruit Industries.

(Continued from Preceding Page.)

windbreak of slim eucalypts which rise between the barns and the lemon orchards which are apparently beyond.

The relation of horsepower to product may be roughly drawn from the facts that the ranch has 340 acres in lemons and the output is nearly one car to the acre, or about ten carloads to a horse or mule. We imagine that man power is about one man to each acre when picking and packing are brisk, but it might drop to something like a man to ten acres on the average for the season. This, however, is mere guess work, for we do not know the payroll of the ranch. Enough, however, has been said of the enterprise and shown of it in the pictures, which have appeared in our columns as opportunity offered during the last few months, to convince all that lemon growing is a great business in California and that we have some advantages in being the only commercial lemon-growing State in the Union. It seems likely, too, that though many fluctuations in profit have been encountered in California lemon growing as a whole, it has rewards for those who plant the fruit in the right place and handle it with intelligence and care. California growers and packers have at least demonstrated the fact that it is possible to have an American lemon for Americans.

QUERIES AND REPLIES.

Choosing Fertilizers.

TO THE EDITOR: What is the proper fertilizer for vineyard; for vegetable garden; for lawn? I speak of commercial fertilizers. Our hillsides here hardly allow of the application of manure, and, if they did, it is not obtainable as a business proposition. How is the fertilizer applied on steep hillsides?—FARMER, Placer county.

The fertilizers which you need for vineyard, vegetable garden and lawn are similar in character and should include nitrogen, phosphoric acid and potash. You should correspond with dealers advertising in the PACIFIC RURAL PRESS as to what they offer for special purposes. You will see that the different fertilizers have special brands or names. This indicates that the composition is made by the different manufacturers according to the best information they can get as to the requirements of the different plants, and this agrees very closely with the latest results

of scientific investigation; because fertilizer manufacturers, like other wide-awake merchants, endeavor to make their goods as satisfactory as possible to purchasers, in order to secure continuation of trade. On slopes such as you speak of, fertilizers should, as a rule, be plowed in with the spring plowing. It is not safe to apply early, as it may be on flat lands.

Walnut Planting.

TO THE EDITOR: I was interested in Luther Burbank's article on walnuts in the last PACIFIC RURAL PRESS; also your comments as to grafting in the nursery. What I wish to know is, will the Santa Rosa soft-shell do as well here with us in the Santa Clara Valley as in Sonoma county? Our summers are decidedly cool, possibly cooler than in the vicinity of Santa Rosa. Is it a more prolific bearer than the Franquette? How does it compare with the Mayette? My land is adobe ('Fresno gray adobe' according to the United States soil survey map), a large part of it overlaid with sediment. Would walnuts on the native black root do well here? Prunes, peaches and apricots do well on this land, without irrigation. Is 56 ft. each way too great a distance to plant the walnut? By planting at this distance I need not disturb the present orchard.—GROWER, San Jose.

There is every reason to believe that the Santa Rosa soft-shell will do in proper places in your valley. One of your most discriminating horticulturists is now planting it largely, after forming the best judgment he could of its suitability, and he has satisfied himself of its superiority to Franquette. Of course it is dangerous to prophesy on one's own responsibility, so we instance a man who is putting his money on his judgment, and he is a good all-around judge, too. We cannot make close comparisons yet with other popular varieties. Your land ought to take the black walnut root in good shape, and the success of the other fruits approves that conclusion. The distance you mention will do, although we should be disposed to put grafted trees closer if the ground were clear, even if we had to remove trees later.

Preserving the Oaks.

TO THE EDITOR: Your answer to my questions in the PACIFIC RURAL PRESS of February 10 was read by me with great interest and I shall immediately take up the coal tar treatment of oaks on my place. I should be greatly obliged if you would give me some information as to the best method of treating the oaks where dry rot has set in in cases where the branches have been cut off, or have fallen off years ago. In an article by Prof. Jepson which you published some months ago, I note that the place should be thoroughly cleaned out down to the live wood and cement inserted. Is it a fact that the cement will thoroughly fill the hole and that the wood will not separate from the cement, leaving interstices for the water to percolate in? Do these cement fillings have to be watched from time to time and is this method adopted because of its cheapness, or is there a better one which is more expensive? With me, the question is the preservation of the oaks and some additional expense would gladly be incurred if it would prolong their life.—SUBURBAN, Oakland.

The principles of cementing decayed places in oak trees resemble very closely the operations of the dentist. All the decaying parts of the cavity should be scraped out and hollowed a little around the edges so that the cement will be held in place by the surrounding wood. The cement should be brought out just to the edge of the bark and then the bark and new wood will begin to cover it. There has never been any trouble with the entering of the water between the cement and the wood, but the filling should be arranged so that the water would have a good chance to run off, by raising the cement a little in the center, if the wound is on the top of a limb, and where it is on the side there seems to be no difficulty in any way. No attention has to be paid to these fillings after they are once well in place. The cement hardens and does not shrink. You can find wounds treated that way in oaks of the University grounds at Berkeley 10 or 15 years ago, which are now quite largely enclosed by the growth of new wood and bark over them.

No Grass for Sod on Dry Land.

TO THE EDITOR: Wishing to seed a number of acres to grass, am directed to you for information relative to the grasses most likely to withstand our long dry season. The land consists of three or four different grades of adobe. Water in summer lies at a depth of about five feet; consequently, the surface is dry during the latter part of summer and early fall. We want a grass that will not die out. Irrigation is possible by the sinking of wells, but it is expensive.

Any grass that will stand our dry season 'without irrigation' and form a heavy grass sod is what we want.—NEWCOMER, Santa Clara.

We have been looking for the last 25 years for such a plant as you describe as desirable, and have not yet succeeded in finding it. There are many plants which will make a good winter growth on such land, but the soil becomes so dry during the long dry season that they cannot hold life in the roots until the fall rains begin. You cannot secure a heavy grass sod in this State without irrigation, except on low bottom land. You can, however, grow clover, rye grass and a number of other plants, providing you can give some irrigation in the summer time. Rye grass requires very little irrigation; just enough to keep it alive until it is started into new growth by the fall rains, and then it grows very vigorously all winter.

Woolly Aphis—Irrigating Trees.

TO THE EDITOR: I have the woolly aphis in my apple orchard. About four years ago there were only a few trees in the orchard, and now there are about 100 trees affected. I would like to kill the aphis, if you will tell me how to do it. The trees are 14 years old.

I plow two furrows in the spring and irrigate in them all summer down hill. How close to the trees do you think I should plow them?—FARMER, Tulare county.

About the best treatment of woolly aphis is to dig in about five gallons of fresh wood ashes close to the trunk of each tree. The rains leach out the lye from the ashes, and this kills the insects, which are collected on the large roots at the base of the tree. They can also be killed by digging in refuse tobacco. This insect goes from the roots to the branches, and if you can kill them in the ground their ascent to the tree will, of course, be prevented. Clusters of the insects which you do find upon the trees can be touched with a swab dipped in kerosene oil.

The depth of plowing orchard trees is determined by the depth at which the roots grow. It is not desirable to plow deep enough to injure the roots, nor is it necessary that the water should be very near the trees. It is the general practice with old trees to plow or cultivate all the ground, and then run the water down a deep furrow midway between the rows of trees, and not around the trunks.

Killing Bermuda Grass.

TO THE EDITOR: About a year ago I had correspondence with you about eradicating Bermuda grass. Am glad to say I have found out how to do it in light soils, as follows: Make soil very light and friable by plowing, etc. Gather up all the roots and stalks and remove them from the field. Plant a hoed crop. Dig up every Bermuda that shows its head, root and branch. This is hard work but succeeds.—J. R. C., Chico.

Don't whistle until you are sure you are out of the woods. Bermuda is lying low now. Wait until the ground warms up and then write us about it. We hope you will not find any.

Walnut Growing.

TO THE EDITOR: Many thanks for your kindness in explaining to me how to plant the California walnuts. The objection to getting a Santa Rosa soft-shell walnut tree from the nurserymen for future scions to graft the California walnuts would seem to be, that the scions from it would not come into bearing as soon as ones from trees already in bearing which had been grafted on to bearing trees.—ENQUIRER, Napa.

You are right, that scions from young seedlings would not mature as quickly as scions from old bearing trees, but in the case of nursery trees grafted to the Santa Rosa soft-shell, the scions used would probably be from the bearing tree, and, therefore, you would get earlier maturity and bearing than you would from the Santa Rosa soft-shell seedlings.

High Up Alfalfa.

TO THE EDITOR: I am interested in a ranch located near Fort Bidwell, Modoc county, Cal. Do you know whether it is practicable to attempt raising alfalfa there? The elevation is between 4,500 ft. and 5,500 ft. Water is easily obtained by artesian wells but it contains considerable sulphur. Could such water be used for irrigation purposes.—FARMER, Modoc county?

Alfalfa is successfully grown in Inyo county, and in parts of Nevada, which are probably about as high as the elevation which you speak of in Modoc county. Alfalfa is not injured by hard freezing but, of course, the growing season is short in the higher altitudes

because the plant is only active during the hot weather. Still, it is thought to be well worth growing in both localities which we have mentioned. As to whether the water which you describe will foster its growth, or not, you must determine by a small experiment.

Nematodes on Tomato Roots.

TO THE EDITOR: Will you please tell me through the PACIFIC RURAL PRESS how I would be able to tell if tomato vines were killed by nematodes? Are there any visible signs on the roots? Do they like tomato roots as well as peach roots?—SUBSCRIBER, Jelly.

Nematodes usually make a skittle-shaped enlargement of the smaller rootlets, but there is some irregularity in shapes. You cannot make determination on that basis alone. Send us suspected specimens when you find any. Nematodes affect the roots of many vegetables. We do not know which they prefer, because they are so easily pleased.

WEATHER AND CROPS.

Report of the U. S. Weather Service for Week Ending February 20, 1906.

ALEXANDER MCADIE, Forecast Official and Section Director.

Sacramento Valley.

The weather continued warm during the week, with rain nearly every day. The rainfall was heavy in the northern part of the valley on the 14th, but caused no damage. Although the seasonal precipitation is still considerably below normal, the outlook is very good for average crops of grain and hay. Early grain is in good condition and making rapid growth. Plowing and seeding continue. Pasturage is in better condition than at any time this season and stock are improving. Orchards and vineyards are in good condition and give promise of average crops. Almonds and peaches are in bloom in some sections, and other deciduous fruits are advancing rapidly.

Coast and Bay Sections.

Warm, cloudy and showery weather prevailed nearly all the week, with heavy rainfall in some sections Wednesday and Sunday. The rain retarded farm work to some extent, but otherwise was very beneficial. The soil is well saturated and the outlook is good for excellent crops of grain, hay and fruit. Grain and grass are looking well and making good growth, but would be improved by warmer, clear weather. Stock are doing well. On some of the high ranges green feed is still scarce, but there is an abundance elsewhere. Almond trees in the Santa Clara valley are in full bloom, and apricot blossoms are appearing. In some places all early deciduous fruits are in bloom. Prospects are good for excellent crops of fruit and grapes.

San Joaquin Valley.

Cloudy, warm weather, with frequent light showers, prevailed during the past week. These were excellent growing conditions, and grain and grass made good progress, and fruit buds developed rapidly. Almond and apricot trees are in bloom, and peach buds are showing color. Grain is in excellent condition and green feed is plentiful. Stock are healthy and rapidly gaining flesh. Pruning is progressing, but plowing and cultivating orchards and vineyards are delayed on account of the ground being too wet. Sugar beet planting is progressing, and alfalfa is making good growth. Large shipments of potatoes continue from Stockton to points in southern California and Arizona.

Southern California.

The weather during the first part of the week was warm, cloudy and rainy, with clear weather after Thursday. The rain was beneficial to crops and caused no damage. Grain is in excellent condition and growing rapidly, with prospects of an unusually large crop. The ranges are covered with an abundance of green feed and stock are doing well. Conditions have been very favorable for walnut trees. Orange picking and shipping were resumed after the rain. Orchards and vineyards are looking well, and give indications of excellent yields. Some of the early deciduous fruits are in bloom. The season has been favorable for the honey interests and large yields are expected.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, February 21, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.	Total Seasonal Rainfall to Date.	Total Seasonal Rainfall Same Year to Same Date.	Average Seasonal Rainfall to Date.	Maximum Temperature for the week.	Minimum Temperature for the week.
Eureka.....	1.79	20.06	23.07	30.34	68	44
Red Bluff.....	2.00	13.49	25.24	17.97	58	40
Sacramento.....	1.72	10.36	14.60	12.14	60	48
San Francisco.....	2.25	9.46	16.92	15.64	61	48
San Jose.....	.98	7.19	12.44		68	41
Fresno.....	.63	5.31	8.02	5.78	68	46
Independence.....	.04	3.67	1.70	2.71	68	34
San Luis Obispo.....	1.53	10.81	16.31	14.15	74	46
Los Angeles.....	.72	10.10	12.21	9.89	72	50
San Diego.....	.62	7.89	10.32	6.46	64	54
Yuma.....	.00	5.06	4.05	2.42	82	48

THE POULTRY YARD.

Practical Poultry in California.

By MRS. E. J. VOORHEIS, at the University Farmers' Institute, at Ripon.

As there are probably no poultry *fanciers* present, we will just touch on the practical side and perhaps get something helpful for the farmer or poultry raiser on a small scale.

In beginning, I will say there is no reason why people here in this beautiful California climate should not make a success of raising poultry, when we consider with how much less trouble and expense it can be done compared with that of Eastern States. And right here, this section of California seems to be as well adapted to poultry as any. There are some parties in this vicinity that are making a marked success in that line. It is not always the person who knows all about the business before he begins that makes a success, but for him who does not know much about it I would advise starting on a small scale, and it will not be long, if he likes the business and makes a study of it, till he will learn a great deal, and can then branch out and enlarge his plant. But above all things, do not embark in the poultry business unless you like the work, for no one makes a success of anything he does not like.

Before you start, have a definite plan as to what kind of bird you wish to raise, whether for eggs or the table, and the plan of your plant. Perhaps the most profitable and safest kind of plant to establish is the colony plan. As we all know, a small flock of chickens do better than a large flock all running together; hence the conclusion that a large flock separated into small flocks will do much better than running together. If the houses are entirely separate and disease breaks out, or vermin gets into one house, it cannot be so easily transmitted to the rest of the flock.

Have your houses built so they will be warm and free from drafts, as it is damp, drafty houses that cause so much roup and different diseases. The roosts must not be placed too high, especially if the larger breeds are kept, as flying down from high perches often causes bumble-foot. The houses must be kept clean with an occasional coat of whitewash, in which has been put a few spoonfuls of crude carbolic acid. The roosts should be sprayed or painted once a week with a solution of crude carbolic acid and kerosene to prevent mites and lice.

Having established your plant, it is time to get ready for hatching. As we all know, there are the two methods of hatching—with incubators or with hens. If you wish to get your chicks out early, say in March or April, so they will be ready to lay early in winter, perhaps the incubator is best, as few hens become broody so early. Others prefer hatching with hens, as they think it is less trouble. Whichever way is preferred, select eggs from the best birds, and if the kind you have do not suit you, and you wish something better, pay a little extra in price and get good eggs. Be sure to get eggs from mature birds—the chicks will be stronger and larger. Some people prefer crosses to pure bloods. They say they are better layers. That depends upon the stock and the number of crosses. Sometimes the introduction of new blood invigorates, but after the first cross degenerates. After your chicks are hatched, there comes the question of how many of these little feathered beauties you will raise. In the first place, whether raised with brooders or in the 'good old way,' with hens, have a comfortable dry coop, the bottom of which is covered with dry chaff or litter for them to scratch in, for if they get wet while small it gives them cold and bowel trouble, and almost invariably they will die.

Give them nothing to eat the first twenty-four hours after hatching, as the portion of the yolk of the egg which has been taken into the body just previous to hatching supplies food for the first day. A little water (not too cold) may be given to prepare them for the taking of food. The first three weeks they must be fed at least five times a day, not too much at a time, of dry—not sloppy—food; after that, three times a day will do. Stale bread, rolled or cracked oats, or corn bread made as follows: one part coarse corn meal, one part bran and one part middlings or shorts mixed with milk or water and baked is excellent. In order to have them grow and have plenty of strength for the feathering period, they should have chopped meat or curd made from sour milk once or twice a week. Also supply grit and green feed. Do not overfeed, but still give plenty, and you will see them grow 'like weeds.'

The next and probably the most important question of all is feeding for winter eggs. When eggs are high, then we are all anxious to see how many eggs we can get. In order to get winter eggs the first essential is to have the right kind of material to commence with. Your flock should consist mostly of early hatched pullets, as they lay so much better than older hens, and under no consideration keep hens for layers over two years old, for they have already spent their best strength in laying and are not very profitable.

Poultry, to be on a paying basis, must be given

care and attention, and fed regularly those foods which contain properties necessary for their welfare. During the summer months, when they have free range, but little work is required. They get the necessary food for the production of eggs, and there is no trouble in securing fresh eggs and plenty of them each day. But eggs are cheap then, and it is well to drop off feeding almost entirely during the latter part of summer and give your hens a rest, so they will commence with vigor during autumn.

On the approach of winter, your hens should be well housed, with plenty of fresh air, a variety of food, plenty of grit and exercise. The principal ingredients should be grain, animal food and green food. These can be varied according to your judgment. You must mix 'brains' with your chicken-food. Do not feed too much or too little, and do not feed all one thing. A hot mash once a day is good, and it does not matter much what time of the day it is fed, but it must not be fed sloppy, but mixed quite dry with skim milk or water. Sour milk is the best. I prefer to feed grain scattered in deep straw or litter the first thing in the morning, so as to give the hens exercise cold mornings, for if you feed them all the mash they will eat first, as soon as it is gone they will huddle up in a corner and stay there perhaps for an hour or two. They can be given just enough to create an appetite, after which some grain can be scattered in straw or litter where they will have to work for it. Some people prefer to give some poultry food mixture in the way of a tonic. If so, this can be added to the mash occasionally.

During the day give some mangel-wurzels or some green food of some sort, and at evening corn, wheat or oats, alternating the grains so as to give variety. When one grain alone is fed, I think by far the best results are obtained from feeding corn during the winter months, for it seems to supply heat. They need also plenty of grit, lime and oyster-shell before them; also a liberal feed of meat or green cut bone twice or three times a week, and if this cannot be had there is nothing can equal sour or clabbered milk, as it contains the necessary ingredients for the albumen of the egg.

Before closing, I must say a few words as to the profits of poultry. Until recent years the poultry business has been carried on principally as an auxiliary to the farm, with little care or attention. The hens perhaps were allowed to roost in trees during the cold, frosty nights, or in an open coop, which was never whitewashed or disinfected for disease and lice—cleaned out once or twice a year—and the hens thrown a little grain each day, and as a consequence very few eggs received. If one died it was thrown over the fence and left to decay and cause more disease, and then it was decided by most farmers that poultry didn't pay.

But with proper care and attention poultry can be made to pay, as many poultry raisers have demonstrated, especially in some portions of our beautiful State of California.

FLORIST AND GARDENER.

The Vines of Southern California.

By JANET HAY of California in *Floral Life*.

The vines of southern California make a large inroad on the supply of exclamation points of the tourist. The first sight of one of the gorgeous Bougainvillea literally swamping the whole side and roof of a bungalow with its brilliant, rosy, carmine flowers is enough to excite the most phlegmatic of tourists to a wild pitch of enthusiasm.

This climber grows as a native in the West Indies, but was probably brought into the semi-tropic climate of California from Australia, the native home of many of the most interesting plants seen here which will not endure frost. Even in and about Los Angeles the bougainvillea wants a snug, warm, sunny location to keep the night chill from its cherry flower clusters and bright green, small pointed leaves, almost hidden by the mass of bloom.

The flowers are peculiarly shaped, being apparently terminal leaves of a brilliant magenta, differing from the green ones only in that they are grouped about a yellow pistil. The effect of one of these vines from a distance is that of a vivid satiny drapery of magenta thrown over a roof or pergola. There is also a variety which bears flowers of rich brick red, also lovely, but not as common or free blooming as the magenta type.

One of the most persistent bloomers and with an adaptability to develop into either a climber or a bush as its owner and the pruning shears dictate, is the plumbago, of two varieties, one bearing clusters of verberna shaped white flowers and the other a delicate sky blue. The white flowering kind is just a mass of bloom the year through, and makes a delightful shade for the porch of the pretty bungalow. It is peculiarly fine for the climate of southern California where the long summer drought makes sad havoc with those unfortunates of the flower world that cannot be supplied with liberal dosing of the garden hose from June to November. The plumbago likes to display its bright blooms in the blazing sun, and will manage to pull through with only an occasional watering, though

it repays good care by an increased luxuriance of vine and flower.

Crowding close these two beauties, and perhaps excelling in gorgeousness during the winter when their bloom time is, are the Bignonias. Of these plants there is a large family, but the *Bignonia venusta* leads in beauty during December and January and sometimes well into the spring by its shower of elongated, trumpet-like bright orange flowers which hang like drops of molten gold literally painting the side of the house with its glow. The leaves, which are disguised by the flowers in blooming time, are somewhat wistaria shaped. A vigorous grower if properly located, the bignonia is slow in starting, but is hardy and satisfactory. A few varieties are summer bloomers, but most of them do their little stunt at the time when the winter tourist crop is ripe, when "back home" all vines have given up in despair and have donned their mantle of ice and snow.

A cousin of the bignonia is the *tecoma* one of which bears great clusters of silvery pink, lily-shaped flowers, against a wistaria shaped leaf of shiny green. Another member of the same family which flowers in the fall, has smaller green leaves and a flower much like the honeysuckle, bright scarlet in color, and still another has the unpleasant habit of denuding its lower intertwined vine stalks of all their attractive greenery, and presenting much the appearance of a gray, twisted clothes-line, supporting at the top the green branches and bunches of pretty tube shaped blooms, white with a delicate pink throat.

Still another pretty summer bloomer is the *mandevilla*, introduced into this country from South America in 1837. It has foliage shaped like the morning glory, and bears many lily-shaped white flowers of a most delicious odor. It is a rapid grower, and here does not shed its leaves, and is therefore a good vine for porches. One must not leave the subject of California climbers without mention of the *solanum*. This vine is related to the potato and egg plant of the garden, and the nightshade and bittersweet of the hedge-row, but the one most cultivated here bears large flat leaves, and clusters of big, lavender, bell-shaped flowers during the whole summer, and is a high climber. Aside from the tropical climbers the thing that delights the tourist most is the marvelous height that eastern flowers attain here. Fuchsias and heliotropes to the roof tops, climbing geraniums peeping into the second story windows, and roses, ah! there is neither time nor space to even mention the abandon of glory of the climbing roses in season and out of season, and the whole year through.

THE STOCK YARD.

Steer Feeding on Sorghum and Alfalfa Hay.

Last week we gave an outline of feeding experiments with feeds common in California, and we continue with another test made in Nebraska, also using materials which are available to California growers.

Bulletin 90, just issued by the Nebraska Experiment Station, gives the details of a feeding experiment with two-year-old range steers, the results of which show very clearly that the character of roughness supplied in connection with corn is a very important factor in the economical production of beef. Six lots of steers, with ten in each lot, were fed experimentally for a period of six months. The rations used were very similar to those fed yearling steers the winters of 1903-4, and the results verify in every particular the conclusions drawn from the earlier experiment.

Without entering into the details of the test with two-year-olds as reported, the conclusions are tersely stated in the bulletin as follows:

1. When the ration consisted of corn and prairie hay, the amount of grain required for each pound of gain was lessened 5% by adding oilmeal to the ration.

The cost of producing a pound of gain was not lessened by the addition of oilmeal, but a better finish was secured, which caused the cattle to sell for fifteen cents more per hundred, making a profit of \$1.09 per head where a loss of \$1.13 per head resulted from feeding corn and prairie hay only.

The cattle returned a value of \$35 per ton for the oilmeal fed, with corn worth 39c. per bushel.

2. Alfalfa is much superior to prairie hay when the grain consists of corn alone. It also proved to be a cheaper source of protein than oilmeal. The returns on the cattle fed on alfalfa hay, figured at \$11.14 per ton, would have been as great as the returns on prairie hay at \$6 per ton, with corn as the grain ration at the price named. In comparison with prairie hay at \$6 when oilmeal worth \$28 per ton was part of the grain ration, the alfalfa returned a value of \$8.28 per ton.

3. Bright, well-cured corn-stover fed with an equal weight of alfalfa, the grain consisting of corn alone, gave slightly larger gains than corn and alfalfa, and proved the most economical ration in the experiment. The addition of corn-stover may have improved to some extent the corn and alfalfa ration by furnishing greater variety and by its tendency to check scours sometimes caused by alfalfa. The stover, fed with alfalfa, returned a value of \$4.57 per ton in comparison with alfalfa at \$6 per ton as the sole roughness.

4. Sorghum hay returned a value of \$4.63 per ton in comparison with prairie hay at \$6, each being fed with corn 90% and oatmeal 10%.

5. The ration given Lot 1, corn and prairie hay,

with a nutritive ratio of 1:10.2, was too low in protein for large gains. However, the fact that corn, alfalfa and stover with a nutritive ratio of 1:8.4 gave a little larger gain for food consumed than corn and alfalfa (1:7.4), is additional proof of the correctness of the 'American idea' that the old and accepted German standards call for more protein than is needed for the best gains, and that a nutritive ratio of 1:8 may be just as satisfactory for fairly mature cattle as one more narrow. For Western conditions it is certainly more profitable.

6. The margin between cost and average selling price (net) for all steers in this experiment was a little less than \$1 per hundred. The profit on this small margin was due in part to the liberal use of roughness. While the profit was small, the steers returned a good price for the rough feeds at the market value quoted, viz., alfalfa hay \$6 per ton, prairie hay \$6, sorghum hay \$3.50 and corn-stover \$2.50—high enough to make them profitable crops to grow on the farm. Had the feeds been sold, these values for roughage would not have been secured on the average Nebraska farm, nor would the manure have been left to make the next crop larger. The results furnish a strong argument in favor of judicious feeding.

A matter of interest in connection with this experiment is the fact that the only lot of steers in the experiment that lost money was the lot fed corn and prairie hay. This is the only ration which would be considered an unbalanced one, yet it is a ration more commonly fed in Nebraska than any other. The loss per steer on corn and prairie hay was \$1.13. The average profit per steer in each of the other four lots was as follows: On corn 90%, oilmeal 10%, and prairie hay \$1.09; on corn and alfalfa, \$2.86; on corn, alfalfa and cured cornstalks, \$3.32; and on corn, oilmeal and sorghum hay, \$1.92.

In this experiment—the same four facts so strongly brought to light in the yearling test stand again in bold relief for the consideration of the farmer. They are:

(1) That with present prices for both corn and beef, greater consideration must be given to the character and quantity of roughness fed in connection with corn to fattening cattle.

(2) That alfalfa hay is pronouncedly superior to prairie hay for beef production, and that the more rapid extension of the area of land devoted to the production of alfalfa, supplanting the less valuable and lower yielding native hay, the more rapid will be the production of wealth from our soil.

(3) The native prairie hay, if for any reason it is most available for feeding purposes, should not be fed with corn alone, but rather with corn supplemented with a small quantity of some protein food, such as oilmeal, cottonseed-meal or gluten-meal, to give more nearly a balance of nutriment in keeping with animal requirements.

(4) That cornstalks cut immediately after the ears ripen possess a food value which cannot consistently be ignored by the farmer, and that existing land values warrant the larger utilization of this roughness by the adoption of methods of harvesting that will make such material more valuable for feeding purposes.

HORTICULTURE.

Small-Fruit Growing.

Some suggestions by Mr. E. C. Flint, of the State of Washington, in the Northwest *Horticulturist*, about strawberry growing will be interesting to California readers, although the varieties he uses are not the ones generally planted in this State:

Strawberry growing is like everything else, it never pays to half do it. If one is not prepared to give plants the best of care from start to finish, he had better never attempt to grow them. Some people tell me that it takes too much work to raise strawberries and there is no profit. I always answer that a little care never pays but a whole lot does. It does take a lot of work to make them pay a good profit, but I find the more labor I put on my berries the better they pay.

This year we are putting about twice the work on them that we usually do and to date we never had such fine prospects. We set the plants the early part of May, Clark's Seedling and Magoons mostly, with a few Marshall, Jucunda and Sharpless.

The soil is a mixture of clay, sand and loam; it was in potatoes last season and was well plowed and then harrowed till it was as fine as a flower bed. The rows were marked off 4 ft. apart and plants set 2 ft. apart in the row. The plants were good ones and both tops and roots were pruned, the roots being left about 1½ in. long. There were four of us planting; one man made the holes with a hoe, a boy dropped the plants and two men set them. In that way the plants were given no time to get dry, hence they were ready to grow the minute they were in the ground.

The setters put the plants in the hole and drew the fresh earth about the roots and then pressed it down with their whole weight and a little loose earth was drawn over the hard pressed soil. The plants were left so that the bud was slightly below the level, as the plant grows slightly out of the ground it should be placed a little below the level.

After the plants were set we started cultivation just as soon as possible and have kept it up ever since. We are aiming to get over them at least once a week, till the first of October. The runners have been kept off till August first, but after that

date they are allowed to grow to make plants for the market for next season's planting.

The plants are taken up as orders come for them. This work is done with a potato fork and care taken that the roots of the parent plants are not disturbed. In that way we get a good crop of fruit, as well as a crop of plants.

The cultivation is done with hoes—the hand hoe, wheel hoe and horse hoe. We have great faith in "the man with the hoe," but he must have brains as well as a hoe. We never have used fertilizers, except stable manure, and I think we will not use any more, for on our soil it gives great plants but very little fruit. In future I think we will use some potash, because this soil seems to be deficient in that necessary element.

To sum up—good plants well set, good hoes well used will bring good crops of good berries that will return good profits.

THE PHENOMENAL BERRY.—The Phenomenal is the result of a cross between the Improved California Dewberry and the Cultivated Raspberry. It takes the color and flavor of the latter and size and shape of the former, described by Mr. Burbank as the largest berry ever before known; bright, crimson, raspberry color; productive; most delicious for pies, canning, jelly or jams.

The berries grow in clusters of from 5 to 10 or more and individual berries, under favorable conditions, have measured 3 in. one way by 3½ to 4 in. the other way. The vines grow as trailers. In field cultivation there are two methods:

One is to set the plant 6 or 7 in. deep, 6 to 8 ft. apart in the rows, 8 ft. apart, let them grow one year but keep the ground well cultivated. Then set stakes 12 to 16 ft. apart and 3½ to 4 ft. high. Stretch a wire from top of stakes and staple down. Then gather up the vines and loosely twine or tie to the wire and continue cultivation. The other method is similar, only the plants are set 12 to 16 ft. apart in rows only 4 ft. apart. The fruit ripens early and the largest yields are obtained on moist, sandy, loam soils.

After the fruit is gathered, go through and cut out all the old vines and canes, as the new growth at the foot of the hill is the one to put up on the wire the following spring to bear fruit.

RASPBERRIES.—In the commercial raspberry fields of the Puyallup valley growers find by experience that it is a good plan to cut out all the old canes as soon as crop is gathered, especially where there is a heavy stand, for that affords a better chance to ripen the next season's canes by admitting more sunlight and a free circulation of air. One of the growers recently stated to the Puyallup Valley *Tribune* that if the berries were grown in hills, it is necessary to tip the canes about the time picking commences, or as soon as the canes have attained the required height. "This will give the arms ample time to make their growth and harden up before winter. If canes are tipped after August 1, the arms that are immediately thrown out will be weak and immature, and will probably be killed by the frosts."

"If canes have not already been tipped it will be best not to do so until spring. The difference between tipping in the spring and tipping in the summer is that berries tipped in the spring will ripen much later than those tipped in the summer. If it could be done it would be advisable to grow one-third of the crop without tipping, one-third to be tipped about July 1 and one-third to be tipped in the spring. This would cause the berries to ripen a little later in each part of the patch, instead of having all come together."

The growers are giving more attention to fertilizers. Some are sowing vetch, which adds nitrogen and humus to the soil. Others have applied lime, with the mistaken idea that it is a fertilizer. The lime may be beneficial in liberating plant food already in the soil but it will not take the place of the potash necessary to replace that which the annual crops take from the soil each year. This fact leading growers are finding out and those who cannot supply this element in the form of liquid manure are preparing to put on either the muriate or the double-manure salts of potash at the rate of 200 lbs. per acre during the dormant season.

All weeds and grass should be hoed out. In well kept patches they do not appear.

What to Do for Fruit Tree Fungi.

A well-informed writer in the Watsonville *Pajaronian* gives an instructive review of several fruit-tree diseases due to the fungi and the ways to cope with them. His suggestions will be widely helpful.

Fungous diseases were worse in orchards the past year than ever before and there was a severe loss from pear scab and apricot rot. Apple scab appeared in orchards where it was never known before. The pear scab and apricot rot bother orchardists to a more or less degree every year, but this year they took much money out of the pockets of those who failed to spray for them.

The worst feature with many orchardists is that they will not take the trouble to find out what to do to cure diseased trees or fruit, especially, as it will cost them no money and little or no trouble to do so. The State of California and the county of Santa Cruz have

both horticultural commissions and the members of them would only be pleased to give what information they can to the suffering orchardist and aid him in preventing a pecuniary loss to him in the future.

In case trees have been badly affected with pear or apple scab it is well to spray during the winter, as late as possible, with the lime, sulphur and salt wash. It should be remembered that the lime, sulphur and salt wash will clean up the trees for three years at least and make them healthy and the bark bright, it being injurious in no way whatever, however applied and this cannot be said of lye, crude petroleum, etc.

Two further sprayings with the bordeaux mixture will clean up all scab. The first application should be just as the buds on the trees begin to unfold or show signs of unfolding. The second application of the mixture should be made ten days after the blossoms drop.

A local instance is well worth mentioning. The Tate Bros. at Corralitos had an orchard badly infected with pear scab. They made the two sprayings with bordeaux mixture and as a result cleaned their orchard of the fungus and marketed several tons of fine clean pears at a high price, while some of their less progressive neighbors had a fine lot of hog feed as the result of raising scabby pears and not spraying. This is a positive instance of where it was demonstrated that spraying paid. And many more could be quoted.

Apricot rot injured more or less fruit all over the valley. In one orchard 50% of the fruit was ruined by the devastating fungus. Spraying with bordeaux mixture would have prevented the heavy loss to apricot growers.

To prevent loss from the apricot rot all affected fruit should be moved from the trees or under them, where it had fallen, and buried in the ground or burned. When the new fruit is the size of a marble the trees should be sprayed thoroughly with bordeaux mixture, especially the lower twigs that were affected the previous season, if they were not pruned and burned. A second spraying should be made three weeks before the time for picking the fruit.

As the bordeaux mixture would discolor the fruit and make it hard to market, the ammoniacal copper carbonate solution should be used instead as it leaves no discoloration. This solution is composed of six ounces of copper carbonate, about three pints of ammonia and 50 gal. of water. Just enough ammonia necessary to dissolve the copper carbonate should be used and no more. Then add the water. As copper carbonate is not always easily obtained, arrangements to get it should be made in time. Instructions as to its care should be obtained as it loses its strength if exposed for any length of time.

Shothole fungus is another troublesome member of the lower grade of plants. It attacks all stone fruits, especially the apricot and even the apple. It first appears on the leaves, making reddish-brown spots, and when mature these are blown away, leaving the leaves perforated. When the disease attacks the fruit it appears in small red pimples which are often mistaken for scale insects or insect bites. These pimples develop and burst. New spores escape and spread the disease. The old spot forms a scab, and the fruit is not marketable.

For this disease spray with lime, sulphur and salt wash in the winter and with the 5-6-50 bordeaux formula when the buds begin to swell. If the lime, sulphur and salt remedy is not used the stronger 8-10-50 bordeaux mixture should be applied as early in the season as possible.

Peach leaf curl is a fungous disease and should be treated the same as shothole fungus.

The bitter rot of the apple, another fungous money destroyer, is not very prevalent here, but probably several tons of apples are made culls by it and sent to the drier when spraying would save them. This is especially true of the Langford and the Newton varieties. As soon as it appears the apples should be sprayed with the ammoniacal copper carbonate solution. In bad cases two or three sprayings will be necessary.

Prune leaf rust and all rusts can be cured by spraying with bordeaux mixture just after the buds start and every two weeks after for three or four sprayings according to the severity of the attack of the disease.

As many orchardists also raise potatoes, tomatoes and the like, it might be well to state that potato blight, of which there was some in this valley this year, can be overcome by spraying with bordeaux mixture, 5-6-50 formula, as the growth just appears above the ground. Tomato rot may be checked by spraying with bordeaux mixture when the fruit begins to form.

Peas and Vetches.

Mr. E. L. Koethen, of Riverside, who is keeping watch of the several legumes being grown in orange orchards as a green manure, discusses this year's observations in the *Fruit World* as follows:

As the time for plowing under the cover crops has arrived, it is well to make a comparison of the relative value of the two plants that have been most generally used for that purpose this season while they are still in sight and open for comparison. We find that, while a few orchardists have grown a magnifi-

cent crop of vetch, the majority have only succeeded in securing a short growth and few tops. Peas have done better, but here, too, there is a marked variation in the crop obtained by different growers. What are the causes leading to this lack of uniformity of results?

Our first observation is that late-sown vetches have made but little growth. Considerable root growth, it is true, and even small plants have made enough growth to be of great value because of the large amount of root growth. But, when compared with the best, the results are so meager that we would urge very strongly early planting of vetches. Some few even sowed vetches as late as the middle of November. These have not made enough growth to pay for planting. As in all citrus orchards, they should be plowed under before March 1st, or earlier, or they will not be a paying proposition.

On the other hand, many crops have been retarded in growth by not giving them as much water as they require. It is poor economy to stint in the use of water. All cover crops respond freely to a good and constant supply of moisture. This is especially true of vetch.

Vetch germinates readily and is not as susceptible to unpropitious climatic changes as are the peas. In other words, it is easier to get a stand of vetch than of peas. But good care and judgment must be exercised to obtain a stand of either.

Peas grow more rapidly than the vetches and hence can be plowed under to advantage after a shorter period of growth. The roots of the vetch are more apparent in the soil bed. But the pea roots may be traced to greater depths, and, while to the superficial observer the vetch would seem to be giving the best results in root growth, investigation shows conclusively that most of the pea roots are found in the subsoil, and the nitrogen-gathering nodules are there also.

Vetch seems to stand the shade better than the pea. In part, vetch that was sowed early in September even, if planted in seedling orchards where the ground is nearly all shaded, has produced a creditable crop of vines, providing abundant water was furnished; but it is necessary to plant early in order to obtain such results. To sum up the relative value of peas and vetches, we would say:

Vetch is best in the shade.

Vetch requires a longer period of growth and more warmth.

Vetch is easier to germinate and control.

Peas give best results in depositing more humus and nitrogen in the subsoil.

Peas make a more rapid growth.

Peas are preferable to plant, if it is late in the season, before planting begins.

Peas can be plowed under earlier, with a maximum growth.

The amount of growth is about equal, other things being equal.

Both have their place, and we believe both have come to stay.

Early Pacific Coast Fruit History.

We have long had interest in the beginning of fruit growing on the Pacific coast and have done some writing along that line. New points are continually coming to light and the following we find in an essay read by Mr. George H. Himes at the meeting of the Oregon State Horticultural Society last month:

The first cherries I ate after coming to the Pacific coast were of the Blackheart variety, and the year was 1854. The story of the tree which produced them will be related here. It grew from a scion which was brought across the plains to Oregon in 1847 by Henderson Luelling, and first planted at Milwaukee in November of that year. In 1849 David J. Chambers, a Clackamas county pioneer of 1845, having removed to Thurston county, in the Puget Sound country, determined to plant a small orchard, and accordingly secured his stock of trees from Mr. Luelling. Among others was this Blackheart cherry, the only one to be had at that time, for which he paid \$5. From Milwaukee he traveled in a small steamer to the Cowlitz river, then up that stream in a canoe paddled by the Indians to the landing near 'Cowlitz Farms' of that day, several hundred acres being cultivated under the superintendency of Mr. George B. Roberts, in the interest of the Hudson's Bay Co. From that point the cherry tree was carried by Mr. Chambers on horseback along a trail to his 'claim' four miles east of Olympia, a distance of 70 miles, and there set out. It bore a few cherries in 1851, and from that year to the present it has borne a good crop regularly, and never a better yield than in the year 1905. In April last year, when it was in full bloom, I caused this tree to be photographed, and all who desire may see it. Three feet above the ground the tree is nine feet eight inches in circumference and the branches of the tree fifty-eight feet in diameter each way. This was the first cherry tree in the Puget Sound country, and I think the first north of the Columbia river.

SKETCH OF WILLIAM MEER.—It is fitting in this paper that mention be made of William Meer, who is entitled to divide honors with Henderson Luelling, to some extent, at least, in first introducing grafted

fruit in Oregon. Mr. Meer was born in Ohio, about 1817, it is believed. Not much is known of his early life, except that he removed to Iowa in an early day, and began the nursery business. In 1846 he visited Henderson Luelling in Salem, Iowa, and then first learned of the latter's plan for hauling fruit trees to Oregon the following year. The projected enterprise met his hearty approval, so much so that he, too, crossed the plains to Oregon in 1847, taking with him a small stock of grafted scions. He arrived at Oregon City on September 9, more than six weeks before Mr. Luelling, and pushed on at once up the valley and located in the forks of the Santiam, near the present town of Scio. Here he 'heeled' in his trees for the winter, during which he visited Mr. Luelling at his place about half a mile north of Milwaukee, and found all his trees properly set out. This visit convinced Mr. Meer that it would be best to transfer his small stock to the Luelling place, and this resulted in a partnership between the two men, which lasted until October 28, 1856. Mr. Meer continued on in business until 1859, when he sold out to J. H. Lambert, who is still among us. In the fall of 1848 Mr. Meer drove an ox team to the mines of California, and the party he was with made the first wagon tracks between the Willamette and Sacramento valleys. In 1859 Mr. Meer removed to California permanently, locating in Alameda county, and acquired 2,000 acres of land near San Lorenzo, upon which he successfully carried on general farming. He died about 1882, aged 65 years. The most of my information respecting Mr. Meer came from the late Alfred Luelling, son of Henderson Luelling, who as a boy of 16 years drove one of his father's wagons containing nursery stock across the plains. While he felt that to his father was due the first conception of the idea of taking a 'traveling nursery' to Oregon in 1847, yet he was anxious that Mr. Meer's part in it should not be overlooked.

HENDERSON LUELLING.—In this connection it is fitting that a brief sketch of Henderson Luelling's life be given. He was born in Greensboro, North Carolina, April 23, 1809, of Welsh ancestry, and removed to Henry county, Indiana, in the spring of 1831, and to Iowa in 1839. He began his career as a nurseryman in North Carolina, his father having been in the same business, and continued in it in Indiana and Iowa. Oregon was first brought to his attention soon after his removal to Indiana by reading the journals of Lewis and Clark, and his son told me that among the first things he could remember as a child was hearing his father talk about going to Oregon. Mr. Luelling left for California in 1854, and died on December 28, 1878.

EARLIEST GRAFTING IN OREGON REPORTED.—Since the foregoing was prepared I came across a letter written in 1847 by Captain Nathaniel Wyeth, an American from Boston, who came overland to Oregon in 1833, and settled on 'Wapato,' now known as Sauvie's island, giving an account of his efforts there up to 1835, when he left for the East. Among other things he says: "We grazed all the animals obtained from the Islands, California and the Indians, planted wheat, corn, potatoes, beans, peas, turnips, grafted and planted apples, and other fruits, built dwelling houses and shops for working wood and iron," etc. Thus it is shown that there was grafted fruit in Oregon 12 years before Luelling and Meer came.

The first seedling fruit in this country came from seeds planted at Vancouver in 1825 by James Bruce, the old Scotch gardener of Dr. John McLoughlin. In his garden were grown most successfully all the vegetables and small fruits of the temperate zone. From that garden a cutting of a grape was taken to British Columbia and the vine which grew from the cutting is still living.

THE FIELD.

The Agricultural Labor Supply.

Farm labor is scarce and high-priced in every section of the United States and Canada and the *Breeders' Gazette* makes running comments on recent claims and experiences. Various remedies have been proposed. Chief among them are the encouragement of immigration, as of Italians to the South and the admission of the Chinese to benefit the fruit growers and truck farmers, and the wholesale deportation of poor persons from the large cities to the rural regions. The importation of help seems impossible under the present temper of the people, but with regard to the second there is much to be said. That the subject of deporting—for it can be called little less—hundreds of thousands of laborers from the cities to the country is seriously claiming attention is proved by the articles lately appearing in the magazines and other public prints. Most recent of these discussions is an open letter to Secretary of Agriculture Wilson by the editor of the *National Advertiser*, proposing the beginning of a Government crusade to free the cities of a burden that has become intolerable and furnish the farmers with the desired labor. We quote from this open letter:

Robert Hunter says that at this time there are 10,000,000 people living in poverty in thirty cities of the

United States. If these people for whom the land is crying could be induced to locate in the rural districts your successor will be able to give an even more splendid report than that which was recently issued from your department. * * * Briefly I would most respectfully make this suggestion: That proofs as to the condition of agriculture in this country should be most widely disseminated. I would suggest that the Department of Agriculture establish in each of the large cities of the country offices which would give full information to inquirers who wish to know of the best places in any part of the United States in to take up their residences with a view to engaging in agricultural pursuits. * * * These offices should, I believe, co-operate with the associations and with individuals to draw away from the city such elements of the population as are not liable to meet with success there. This could be done through their co-operation with charitable associations, immigration officials, lecturers, the press, etc. The natural place for these offices would be in the overpopulated cities of the country and particularly those cities where the immigrants from other countries arrive.

Would the operation of this plan benefit the farmer? The element of which it is desired to rid the cities is that which dwells in the tenement—the semi-pauper aliens of many nationalities, criminals and those sailing all too close to the wind of crime, actual paupers and the hooligans who will not work. Do the farmers desire to have let loose upon them a horde of such undesirable elements of population? Would not the farmers turn and rend the Government official who aided in subjecting them to such a visitation? Is it not a fact that the Chinese would be in the main preferable to the cities' discards? It is not to be said that all of these tenement-house dwellers and barrel-house bums would prove useless for farm work, but the percentage that would develop into even fair farm hands is so ridiculously small as to merit no consideration. What would the farmers do with the remainder who do not know of their own knowledge that wool comes from a sheep's back, that milk comes from a cow or that bread is made from the products of plants growing on the ground?

One of the oldest saws is that the child is father to the man. Many experiments have been tried in sending to the farms of the golden West band of boys ranging in years from 10 to 16 or thereby, taken from the slums, the pauper institutions and reformatories. Of such experiments the writer has personally known two, and not 2% of the 200 boys included in these shipments ever amounted on the farm to anything more than they would have grown up to be left in their native lairs. Barring the few, these youths were a band of cantankerous, often criminal hoodlums, among whom honor was known only as among thieves, who did not want to work and who continually inveighed against having been 'shanghaied' from their metropolitan birthplaces. In every city the main principle of life among the tenement-dwelling semi-pauper element and the hooligans who will not work is congregation; on the farm there is segregation. If the off-spring of such parents, or to use a Milesian description 'of no parents at all' cannot be taught utility and decency on the farm, what would the farmers do with the breeders of such partially degenerate progeny?

And of Government interference in this problem of supplying such labor for the farm, what good would come? It is urged that National agencies should be established in the tenement quarters to let these gregarious people know that they may obtain work in the country. But this would only be a 'work of supererogation,' because the private labor agencies have already in their pigeon-holes thousands of orders for farm hands which they cannot fill, despite their efforts to bring these open situations to the notice of those who obviously need them most but will not consider segregation from the great mass of their like. Then of this element's adaptability to agriculture in any branch read the history of the 'Pigree potato patch.' This movement, begun by the almost socialistic mayor of Detroit and fraught with such great potentialities for aiding the poor, has died a natural death from inanition wherever it has not been engineered by benevolently inclined men and women of superior intelligence. Moreover, wherever the movement to make unused city lots productive of food supply has survived, the cultivation has been undertaken by a class of the population considerably higher than the semi-pauper aliens and the hooligans. What light does this condition shed on the anxiety of these latter to engage in agricultural labor?

Take a glance at the men who are furnished by the metropolitan employment agencies to railway, mining and other great construction companies. These men, all willing to work, are not of the sort that will work alone anywhere. They must flock with their kind and the proverbial brutality of the foremen who must drive them proves them utterly unsuited to agricultural labor. The shovel or pick is their implement; perched on the seat of a self-binder they would ride it to the junk pile in a jiffy. And yet these are the best of the cities' poorer elements included in the ten millions of people living in poverty in great American cities and clogging the wheels of municipal progress.

A mere scratch has been so far made on the surface of this subject. What might be said about the dissemination of disease, the incentive to crime in the unprotected rural districts, the cruelty to animals,

witting or unwitting, and the general lowering of the average moral tone that would inevitably result from the loosing on the farming community of hundreds of thousands of human beings of the tenement-house variety? And finally, in order to do the most good, admitting the sociological precept that the married man is the most anxious to work and do it well, and therefore offering him the first chance, what would or could be done with the wives and children?

Agricultural Review.

Butte.

MORE BARLEY PLANTED.—Gridley *Herald*: The acreage sown to barley this year will exceed that of any previous season in recent years. Nearly every farmer has planted more than his accustomed acreage to that cereal and there will be a consequent falling off in the amount of wheat grown. With the great demand that will be felt for feed for the animals employed on the railroads and other large enterprises in this section of the State, there is no doubt that the farmers have got on the right side of the market this time.

Napa.

ANGORA GOATS.—Napa *Register*, Feb. 16: Seven carloads of Angora goats arrived in Napa this morning from Imperial, southern California, for the California Angora Land Co. They were taken to the company's farm at Atlas Peak.

Nevada.

FOREST FIRE IN WINTER.—Marysville *Appeal*, Feb. 12: An unusual sight was witnessed at Gaston a few nights ago, when a furious forest fire was raging while the ground was covered with snow. It is seldom recorded that forest fires occur during the winter months, but in this instance it burned so rapidly that fifteen men from the Gaston mine had to work all night in order to keep the flames from communicating with the company's powder-house. The fire started in a peculiar manner. An old man in the woods had cut down a bee tree and started a fire to smoke the bees out. It got beyond his control, and soon the tall pines and thick underbrush were a seething mass. On the ground was a foot or so of snow, but it did not seem to check the progress of the fire. After the blaze had spread over quite an area and threatened to ignite the powder-house and do other damage a crew of men was sent out. They backfired, and after working the entire night the fury of the flames was checked, the damage being confined to the forest.

CANNING AND DRYING PLANT.—Wheatland *Four Corners*, Feb. 16: The Nevada County Cannery Association has decided to erect a \$10,000 fruit-canning and drying plant at Nevada City. One-half of the amount of money required has already been subscribed.

Orange.

BIG POULTRY CONTRACT.—Anaheim dispatch to Santa Ana *Blade*, Feb. 9: T. S. Armstrong has closed a contract to furnish all the poultry for Al. Levy's new Los Angeles cafe for \$1,200 a month. The contract calls for 3,000 birds a month. During the past week Mr. Armstrong shipped 700 birds to the wholesale dealers of Los Angeles. His new contract calls for 500 broilers, 10 doz. fryers (roast chicken), 50 turkeys and four dozen ducks, weekly.

Placer.

PEAR BLIGHT.—Newcastle special to Sacramento *Bee*, Feb. 8: Professors M. B. Waite, W. M. Scott and C. L. Shear of the United States Department of Agriculture, together with Professor Ralph E. Smith, of the University of California, and Dudley Moulton, entomologist, of San Jose, visited Newcastle Mon-

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day. Thirty pear orchardists of the representative class followed them and studied the lesson which all will have to study to secure information to save their orchards from the ravages of this infectious pest. It resulted in the calling of a meeting of the Newcastle Development Association, which adopted strong resolutions urging the Placer county board of supervisors to provide an increased force of horticultural inspectors. A committee was appointed to urge the matter, and as a result they visited the board of supervisors. The board failed to comprehend the importance of the work by a vote of three to two. Specimens of the blight were exhibited by Professor Waite. While the blight is not common in the orchards of Placer county, it does exist, and the owners of such orchards are determined to fight it and exterminate the evil. Horticultural Commissioners W. H. Tucksbury and W. J. McCann will take the field with such assistance as the present laws permit, and hope for good results.

Sacramento.

SMALL ASPARAGUS SHIPMENTS.—Isleton dispatch to Sacramento *Union*, Feb. 15: Small shipments of asparagus are being made this week. Prices range from 15 to 20c. per pound, according to quality. The heavy storm will set the grass back, as it does not grow much in damp, cold weather.

San Benito.

HAY SHIPMENTS.—Watsonville *Pajaronian*, Feb. 15: Last week closed the biggest hay shipments ever made in one week from Hollister. The Lathrop Hay Co. shipped 106 cars and the Storage Co. 29 cars. This made a total of 135 cars, with an average of nine tons to the car, making 1,215 tons altogether for the week. Most of the hay went to points outside of San Francisco.

San Bernardino.

PACKING BOXES.—San Bernardino *Sun*, Feb. 16: The southern California fruit exchanges are hot-foot after the horticultural commission to prevent the shipping of orange packing boxes from the north, which are feared to be the means of bringing in various scale pests which flourish in central California, but which the vigorous campaigns in the south have made scarce. The boxes are shipped back as 'empties' at a very cheap rate, and refilled with cull oranges at some of the packing houses, and these sent north for the San Francisco and Oakland markets, where they are sold in the streets by hucksters, at almost the prices of good fruit. The boxes, when sent back, are believed by some of the orange experts to be the means of contaminating local fruit. Secretary Pease says his observation is that scale in condition to travel will not live over 40 hours on dry wood, such as a box, and that a good fumigation will certainly clear the boxes. But Manager B. A. Woodford, of the exchange, is calling for an absolute quarantine against these boxes, and asking the horticultural commissions to enforce it.

SOIL SURVEY.—Chino Valley *Champion*, Feb. 9: Bulletins on 'Soil Survey of the San Bernardino Valley, California' have been received from the Department of Agriculture, Washington. Besides the descriptive part, the bulletin contains a large map showing the exact character of the soil of every part of this valley.

Santa Barbara.

FOR TREE PLANTING.—Santa Bar-

bara *Press*, Feb. 15: Carl Muzzall, assistant forester, who has been with George W. Peavy at the Lukens tree planting station near Pasadena, is arranging for the transportation of 30,000 seedling pines for reforestation work in this county, near Mono flats. The trees will be taken on pack animals over the trails leading across the mountains just north of the city. Mr. Peavy will arrive in a few days and will direct the work of transplanting. The varieties to be planted here are spruce, *attenuatus*, Coulter pine, cedar and Jeffrey pine, and are from the Lukens nursery.

Santa Cruz.

FARMERS BUSY.—Watsonville *Pajaronian*, Feb. 15: Salinas valley farmers are unusually busy at present finishing up their plowing and seeding. The ground is in fine condition. On the John Boysen farm the lessees of the land have been busy getting it in readiness for seeds. On the Ben Porter (Geo. Fiese) ranch of 500 acres, which has been leased by the Morse Seed Co., the land has been prepared, that on the bottom having been sown to seed, which is just germinating. Land for seeds, beets and grain is in big demand, and if the venture of the Morse Co. proves successful, much other land in the valley will next year be leased for the same purpose. Land that has produced grain continuously for the past 30 years is deteriorating and needs a rotation of crops. Seed-growing on the land in the vicinity of San Juan was tried last year with gratifying results, though there was no irrigation, and the experiment on unirrigated land around Salinas this year will be watched with interest.

Sonoma.

NEW VINEYARDS.—Santa Rosa *Press-Democrat*, Feb. 17: As the result of the offer of the Italian-Swiss Colony at Asti to furnish resistant grape cuttings to all who would set them out, there have been 100,000 cuttings disposed of around Ukiah and orders have been placed for 140,000 additional cuttings, which will be furnished in a short time. More than 400 acres of new vineyards will be set out this year in Mendocino county, and the Asti people are contracting to take all the product for 10 years at a minimum of \$15 a ton, with the benefit of a raise.

HOP INDUSTRY.—Santa Rosa *Press-Democrat*, Feb. 17: A well-known hop buyer stated yesterday that there are about 15,000 bales of hops yet unsold in California and 3,400 bales are in Sonoma county.

PRIZE POULTRY.—*Press-Democrat*, Feb. 14: John H. Gunn, of Healdsburg, has received from New York a pen of fine Barred Plymouth Rocks. They are prize winners from the Madison Square poultry show, and cost \$50 for five.

EGGS TO SHIP.—*Press-Democrat*, Feb. 16: The Santa Rosa Poultry Association will ship 150 thirty-dozen cases of eggs today to Reno, Nev. This is believed to be the record for one day's shipment by one firm from this city.

WILL BUILD A PACKING HOUSE.—*Press-Democrat*, Feb. 16: Work will soon commence on the foundation of the large packing house J. H. Brush and J. H. Gray are to build in the new town of Green Valley. As soon as the weather will permit work will commence. The building will be 60x160, and will be used for the drying and packing of apples, prunes and berries. This building and the big cannery erected will furnish the means for handling an immense quantity of fruit the coming season. The town has a cannery and winery and will have a packing house. Other buildings are in course of erection.

Stanislaus.

GIANT ALFALFA ROOT.—Stockton *Independent*: There is on exhibition in Modesto an alfalfa root which measures over seven feet, taken from the ranch of a man named Cushing, who owns land on the Delmas tract. The giant root is something of a novelty and is being viewed by those familiar with the product. This tract of alfalfa was planted in April of last year and has been irrigated but once during that time. The plant itself is unusually heavy and bushy, many of the sprouts being eight inches in length at this early date in the growth.

Sutter.

SACRIFICING GOOD ORCHARDS.—Sutter County *Farmer*, Feb. 16: To make room for the working of one of the gold dredges at South Thermalito, a strip of fine orchard 400 ft. wide is being cleared out. The land is planted to Muir peach trees, which are prolific bearers.

PACKING FIGS.—Sutter County

STEPPING-EMPIRE

STONES TO DAIRY SUCCESS

Dollar Making

Easily Cleaned

Easy Running

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Cow Owners

THIS IS ADDRESSED TO YOU.

You own cows, and care for their milk. Why? To make money. If you handle the milk the old fashioned way, you may make **some** dollars. If you have any kind of a cream separator, you will make **more** dollars.

If you want to make every dollar possible from your cows get an Easy-Running Empire Cream Separator.

Why an Empire? You want to know why, and we want to tell you why. Here are a few reasons:

The Empire will skim clean. Will turn easily. Is simple in construction. Is easily cleaned. Will make the most dollars for you.

Many separators have one or more of these qualifications. The only one that has them all is the Empire.

Let us prove our statements to you. Don't take our word for it. Investigate thoroughly before you decide. The more thorough your investigation, the more completely you will prove to yourself that the Empire is the cream separator you need.

Universal popularity is a sure sign of merit. The sales of Empire machines have increased 1/2 leaps and bounds; 1000 per cent in the past four years. That means something. It means a whole lot. With all this phenomenal success there is not one case where an Empire user has not become an enthusiastic friend of the little machine.

Write for our free booklets. Don't delay, delay means money lost.

EMPIRE CREAM SEPARATOR CO.,
BLOOMFIELD, N. J.
Pacific Coast Office, Portland, Oregon.

THE DEERE IMPLEMENT CO.,
Agents, San Francisco, Cal.

Farmer, Feb. 16: A large force has been employed this week at the Rosenberg Bros. packing house at this place packing figs on recent orders. Several carloads will be sent out, the figs being put up in fancy packages.

MARYSVILLE DAIRY COMPANY.—Sutter County *Farmer*, Feb. 16: The Marysville Dairy Co. has been incorporated with a capital stock of \$50,000, of which \$6,000 has been subscribed. There are 500 shares. The incorporators are W. F. Kelly, R. Pozzi and J. J. Allread. This company recently purchased the dairy business, equipment, stock and routes of H. R. Frohn, and Mr. Allread had previously purchased the Schimpf dairy.

Ventura.

BEETS AND BEANS.—Oxnard *Courier*, Feb. 16: Manager J. A. Driffl, of the sugar factory, informs the *Courier* that they already have contracts for the growing of 14,000 acres of sugar beets, with additional acreage in view to swell the total to 18,000 acres. There are over 6,000 acres now planted, 2,000 of which are practically ready for thinning. The farmers are plowing up every foot of available land and getting ready to plant it to something—either beets, beans or barley—and it is safe to say that fully 50,000 acres of land in this county will be planted to beans.

FRUIT GROWERS SUE.—Oxnard *Courier*, Feb. 16: The Santa Fe and Southern Pacific are gasping for breath at the Fruit Growers' Association, the latter having begun suit for damages to fruit in transit, amounting to \$500,000.

NEVADA.

TO TEST THE SHEEP GRAZING STATUTE.—Winnemucca special to Sacramento *Bee*, Feb. 10: The commissioners of Humboldt county have concluded to test the sheep-grazing statute, and have accordingly notified the district attorney to resist the suit begun by Elko county in the Ormsby district court for the collection of \$1,637.99, alleged to be due to Elko from Humboldt on account of sheep from the latter county grazing in Elko during part of the season. Heretofore the various counties against whom such claims have been presented have paid them reluctantly, but Humboldt will resist and get the case into the supreme court if possible. Humboldt has been a heavy sufferer from the grazing tax. Her officials claim that Humboldt stockmen have always registered their sheep when going into other counties, but they say that Elko stockmen graze thousands of stock in Humboldt and evade the grazing tax.

Horse Owners! Use

GOMBAULT'S

Caustic Balsam

A Safe, Speedy, and Positive Cure

The safest, Best **BLISTER** ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Blemishes from Horses and Cattle. **SUPERSEDES ALL CAUTERY OR FIRING.** Impossible to produce scar or blemish. Every bottle sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars.

THE LAWRENCE-WILLIAMS CO., Cleveland, O.

DON'T BUY GASOLINE ENGINES

all one-cylinder engines; revolutionizing gas power. Costs Less to Buy and Less to Run. Quickly, easily started. No vibration. Can be mounted on any wagon at small cost—portable, stationary or traction. Mention this paper. SEND FOR CATALOGUE. THE TEMPLE PUMP CO., Mrs. Megher & 15th Sts., Chicago. THIS IS OUR FIFTY-SECOND YEAR.

UNTIL YOU INVESTIGATE
"THE MASTER WORKMAN."
A two-cylinder gasoline engine superior to any wagon at small cost—portable, stationary or traction. Mention this paper. SEND FOR CATALOGUE. THIS IS OUR FIFTY-SECOND YEAR.

The Home Circle.

Washington's Birthday.

'Tis splendid to live so grandly,
That long after you are gone,
The things you did are remembered,
And recounted under the sun;
To live so bravely and purely,
That a nation stops on its way,
And once a year, with banner and drum,
Keeps its thoughts of your natal day.

—Margaret Sangster.

Keep the Bright Side Out.

The sun may have its troubles,
But it keeps the bright side out;
The lark may have misgivings,
But she hides away her doubt;
Poets praise the sun for shining
And the lark for never pining—
Man has joys from bird and planet,
Since they "keep the bright side out."

The orchard pink with blossoms
Gladly puts its bright side out;
The lilacs have no trouble
That they ever grieve about,
And the world is prone to treasure
Up in remembrances of pleasure
In the name of Him who ever tries to
"keep the bright side out."

—S. E. Kiser.

The Land of "Pretty Soon."

I know of a land where the streets are
paved
With the things we meant to achieve.
It is walled with the money we meant to
have saved
And the pleasures of which we grieve.

The kind words unspoken, the promises
broken,
And many a coveted boon
Are stowed away there in that land
somewhere—
The land of "Pretty Soon."

There are uncut jewels of possible fame
Lying about in the dust,
And many a noble and lofty name
Covered with mold and rust.

And, oh, this place, while it seems so near,
Is further away than the moon!
Though our purpose is fair, yet we never
get there—
The land of "Pretty Soon."

It is further at noon than it is at dawn,
Further at night than at noon;
Oh! let us beware of that land down
there—
The land of "Pretty Soon."

—The King's Own.

When Father Rode the Goat.

The house is full of arnica
And mystery profound;
We do not dare to run about
Or make the slightest sound;
We leave the big piano shut
And do not strike a note;
The doctor's been there seven times
Since father rode the goat.

He joined the lodge a week ago—
Got in at 4 a. m.—
And sixteen brethren brought him home.
Though he says he brought them.
His wrist was sprained, and one big rip
Had rent his Sunday coat—
There must have been a lively time
When father rode the goat.

He's resting on the couch today
And practicing the signs—
The hailing sign, the working grip,
And other monkeyshines;
He mutters passwords 'neath his breath
And other things he'll quote—
They surely had an evening's work
When father rode the goat.

He has a gorgeous uniform,
All gold and red and blue,
A hat with plumes and yellow braid,
And golden badges, too,
But, somehow, when we mention it,
He wears a look so grim,
We wonder if he rode the goat
Or if the goat rode him.

—Baltimore American.

They claim the bows the dear girls wear
Upon their shoes today
Are something new, and yet I'm sure
It's quite the other way.
For what coquette who ever lived,
Whose face was pretty—sweet—
Has not 'worn' beaux of divers kind—
And had them at her feet?

—Cincinnati Commercial Tribune.

A Modern Knight Errant.

He was not a hero of romance, nor had he ever read romances, for he was a very common young man indeed.

But when Kathleen refused him he resolved to spend the remaining years of his shattered life in relieving all sorrow and trouble. Since the one woman in the world was not for him, he would devote himself to the service of all womanhood.

He had not come to this resolve without a struggle. The despair of youth is so absolute. There is no shading in it and no perspective. The young dry-goods clerk in the week that followed his refusal fought harder battles than he might ever face in his life again.

Every morning he resolved that his trouble was conquered. Every morning the ghost of it, freshly laid, came forth in redoubled strength to begin again the conflict.

Sometimes, striding with his hat pulled over his eyes, past the shabby old boarding house that enshrined his heart's idol, he hated himself for speaking.

At least he had been privileged to see her and to spend an occasional evening with her in the stuffy little boarding-house parlor, that was like the kingdom of heaven to him. Now he must never think of her again.

Not think of her! Why every breath brought a vision of her! Life without her stretched ahead of him a barren waste, with nothing to be gained or hoped for.

Even his high and noble resolve was but cold comfort, for the other boys found it out and guyed him. Every fussy, disagreeable customer was turned over to him.

Worst of all, Susie Ammerson found it out and knew her opportunity. Her adroit demands for assistance contrived to keep him always by her side.

Nothing can be more miserable than to be compelled to dance attendance upon one young woman, with every nerve and impulse crying out for another. He was glad when he was sent to Somerset on business. For at least two days he would be free.

But no! Susie Ammerson came down to the train in a pale pink dress, with a white cloud-like shawl thrown over her head.

"Oh, Mr. Howard," she said, smiling to show her most effective dimple, "my aunt is to come from Somerset on the same train that you do. She is so timid about traveling. Won't you please tell her who you are, and see that she gets here safely?"

Would he? Not if he could help it. With deliberate intention he put off starting to the station until the very last second.

The engine was pulling in when Joe Howard, hurrying with all his might, ran plump into a stout, elderly woman, with an enormous satchel, lurching from side to side of the walk in a vain effort to make haste.

"Oh, I beg your pardon," he cried remorsefully, and then he became aware that this flushed, perspiring old woman, with bonnet over one ear and look altogether distracted, was also hurrying to catch his train.

What could he do, being a real knight errant, not a sham one, but take the great, clumsy satchel and do his best to help her?

The train was pulling out, but he got her on, somehow, and then—oh, horror of horrors!—the ancient satchel broke in his hand, scattering the platform with hair brushes, tooth powder, broken bottles of medicine, garments of various descriptions, and all the paraphernalia a woman feels it necessary to take for even the shortest journey. With a wild grab, he gathered them all up in his arms and jumped to the rear platform of the departing train amid a chorus of mortifying titters.

The stout woman was voluble in her thanks—too voluble altogether. "Susie's own aunt"—thought poor Joe. Worst of all, she had found out his name.

"I know all about you," she panted, in tones that rose above the rattle of the car. "My niece has written me about you. I'll give you the best of recommendations to her."

As soon as was possible Joe escaped to the smoking-car, but found no peace there, for Harry Daws, his erstwhile rival in Kathleen's regards, and the biggest joker in the country, had seen it all and was already detailing it with great enjoyment.

"I'll never hear the last of it," groaned poor Joe; "this finishes this kind of business for me. Hereafter I'll be a woman-hater."

Susie Ammerson was waiting at the station, but he eluded her, somehow, and dashed up to the store, where he exhib-

ited such undivided attention to business that his employer was delighted.

Next morning, of course, Susie Ammerson tripped into the store, but Joe, in the depths of despair, scarcely heard her words till he realized with a start what she was saying:

"Oh, Mr. Howard, I am so sorry my aunt did not come. We expect her surely tonight. Won't you come over and carry her satchel?"

"Susie," called an imperative voice, and Miss Ammerson, against her will, was obliged to go. Mechanically, Joe rolled up breadths of cloth in such a dazed condition that he did not heed when a lighter step approached his counter. Not until the sweetest voice in the world said:

"I would like two spools of white cotton thread, number 50, please,"—did he lift his eyes to find Kathleen's looking into his, with the frank and friendly glance that was hers alone. "I want to thank you," she said softly, "for being so good to my aunt yesterday. Auntie has sung your praises ever since and she wants very much to have you call. Won't you, please?"

Mortifying? Oh, what did Joe Howard care now if all the world had laughed? For, looking into Kathleen's eyes, he saw the gates of paradise had opened to him again.—*Ladies' World.*

Care of the Clothes.

For taking spots out of clothes it is best to have at hand the necessary materials, as it is much easier to remove spots when they are new than when they become old and dry. Benzine, gasoline and naphtha are all good. A little piece of plain white flannel or some very fast dye cloth is best to apply this with, or in the absence of this you might use an old sponge.

The care of gloves may be best subserved by the observance of a few simple rules. Keep them in tissue paper. Don't pull them out of shape. It is no test of quality and spoils their beauty.

Glove powder freely used is the price of a pair of gloves in many cases. A perspiring hand forced into a dry glove—often one or two sizes too small—will usually come out the least injured, and the blame will be as unfair as the treatment.

If you send your clothes out to be done up be sure that you select a hand laundry. Machine work and acids make short work of fine cloths. Shirts, collars and cuffs should be done up without gloss. Insist on the domestic finish. Have your poke and wing collars ironed flat, not curled.

All clothing should be carefully hung up, and if you will study your closet and use the modern appliances, which are easily procured, you can keep a great deal of clothing in good condition in a very small space. The cheap twisted-wire coat racks are good enough. On these put the waistcoat, and then over the waistcoat put the coat. There are also patent trouser hangers, which keep the trousers pressed in shape, but it is much easier to fold your trousers properly and lay them in the bottom of your closet or in a long drawer.

A piece of paper should be put between each pair of trousers, and it will not hurt them if they have to be folded once. In light-weight suitings, such as homespuns and flannels, it is much better to lay the trousers out flat in a drawer than to hang them up. All clothing should be carefully brushed and kept as free from dust as possible.

To Save Tempers and Collars.

"You button your collar the wrong way," said the salesman as he was selling neckwear to a customer.

"How is that?"

"You have buttoned the right side last. Now when you go to take it off you will have to tug at the end of the collar and crumple it, because you can't get proper hold of it, but if you had the left end on top you could get it off easily, then loosen the collar behind, and the right end could be easily detached. That's why men have so much trouble taking off well-laundered collars. Remember to fasten the right side first, and then the left, and you will save your collars and your temper."

"I never supposed there was a right and a wrong way of putting on collars."

"Try both ways and you will see."

The Sand-Bag.

One of the most convenient articles to be used in a sick-room is a sand-bag. Get some clean, fine sand, dry it thoroughly on the stove, make a bag eight inches square of flannel, fill it with dry sand, sew the opening carefully together and cover the bag with cotton or linen cloth. This

will prevent the sand from sifting out and will also enable you to heat the bag quickly by placing it in the oven or even on top of the stove.

After once using this you will never again attempt to warm the feet or hands of a sick person with a bottle of hot water or a brick. The sand holds the heat for a long time, and the bag can be tucked up to the back without hurting the invalid. It is a good plan to make two or three of the bags and keep them ready for use.

Chaff.

Three Germans were sitting at luncheon recently, and were overheard discussing a second marriage of a mutual friend, when one of them remarked: "I'll tell you what. A man what marries de second time don't deserve to have lost his first wife."

Tom—Why do you refer to her as your 'old flame'? You're still calling on her, aren't you?

Dick—Yes, and I'm still burning money on her.

"Some people say," remarked the talkative barber, "that barbers are too fond of conversation." "O! that's all wrong," replied the man in the chair; "it's soliloquy they're fond of."

Tramp—Lady, could you give me a job picking apples?

Lady—Why, our apples won't be ripe for two weeks yet.

Tramp—Well, I've ready ter stay here until dey is ripe, lady.

A man approached a stand upon which some questionable looking fowls were offered for sale. "What will you sell them for?" he asked of a shrewd, gray-bearded farmer. "I sell them for profits," answered that individual. "Is that so?" answered the customer in feigned surprise. "I'm glad to know they are prophets. I took them for patriarchs."

Parson Jackson—Does yo' tak dis man fo' better or wuss?

The Bride—Ah'll take him jest as he am. If he gets any better, I se 'fraid he'll die, and if he gets any wuss, I'll kill him myself.

A girl baby was brought to a Seattle clergyman to be baptized. He asked the name of the baby.

"Dinah M.," the father responded.

"But what does the M. stand for?" asked the minister.

"Well, I don't know yet. It depends upon how she turns out."

"Why, I do not understand you," said the minister.

"Oh, if she turns out nice and sweet and handy about the house, like her mother, I shall call her Dinah May. But if she has a fiery temper and a bombshell disposition like mine, I shall call her Dinah Might."

Homemade Hoarhound Candy.

Old-fashioned folks considered hoarhound a specific for coughs, colds and all bronchial affections. Children object bitterly to medicine, as medicine, but as candy, that's different. And it takes but a little while to make a cough candy that will please both the little ones and the grown-ups, too. Cover a good handful of the green leaves with boiling water, and put them on the stove to simmer until the liquid is dark brown. Then pour water off, through a tea strainer. There should be a little more than half a cup. Measure 1½ cup brown sugar into a deep granite saucepan. Pour the liquid over it, and stir until every lump is dissolved. Place over a quick fire, and stir constantly until it begins to boil. Just then add a generous tablespoon of vinegar and stop stirring. Watch it carefully to see that it does not boil over. If it shows symptoms of burning, draw to a cooler part of the stove, but keep boiling. Try, in cold water, until it strings from the spoon, in fine threads. It will take about 20 minutes. Pour in well-buttered tins, score in little squares, and set in a cool place to harden. The children will want you to do it again.

Avoiding Colds.

A writer in the *Lancet* says: "Since I began to study diet, I have been astonished at the number of cases of which I have heard, even of medical men, who, by eating less and not so often, have found that their susceptibility to colds has quite gone. Such facts as I have met with point to the conclusion that it is the system overcharged with the products of food which was not required, and can act only as a poison to every organ in the body, which is most susceptible to colds."

Hints to Housekeepers.

To pour drops from a bottle, moisten the edge.

When you wish to beat eggs, add a pinch of salt.

Coarse salt and vinegar will clean enameled wear that has been burned or discolored.

Articles scorched in the ironing should be laid in the bright sunshine. This will remove a scorch that is not very bad.

An ordinary headache may generally be cured by applying water as hot as it can be borne to the feet and back of the neck.

Two potatoes grated in a basin of warm water will give better results than soap in washing delicate flannel or woolen goods, ribbons, etc.

To keep the color of parsley, dip it for minute or two in boiling water, then shake off the water and chop fine for soup or sauce.

If you suffer from sleeplessness, get as much sunshine and fresh air as possible. Avoid drugs. Sunshine is the best soporific that one can use.

Shoes that have been wet and have become stiff and uncomfortable may be made soft and pliable by being thoroughly rubbed with vaseline.

A little thin, cold starch rubbed over windows and mirrors and then wiped off with a soft cloth is an easy way of producing most shining results.

To remove black from the bottom of kettles, pans, etc., apply common soda with a damp cloth. It will instantly clean them and keep them as bright as new.

Piano keys can be cleaned, as can any old ivory, by being rubbed with muslin dipped in alcohol. If very yellow, use a piece of flannel moistened with cologne water.

Rust and mildew may be removed from colored cloth by wetting the spot with lemon juice and holding it over the steam of a boiling kettle. The color is not in the least injured.

The possessor of very brittle nails should rub them at night with cold cream or vaseline, or, if they go to the other extreme, and are soft and tender, wax and alum will harden them.

A new idea in celery and apple salad is to grate the apples, which should be tart and firm, into the mayonnaise dressing. The celery, shredded and crisp, should be served on chilled lettuce leaves, with the apple mayonnaise poured over.

Cold drinks are not necessary to relieve thirst. Indeed, very cold drinks are apt to increase the thirst. It is well to avoid drinking any liquid below a temperature of 60°, and even a higher temperature is preferable. Hot drinks aid digestion.

If you want boiled meat to be tender don't allow it to boil after the first 10 minutes. After this it should be moved back and allowed to just simmer, which is a very different thing from boiling. Boiling hardens the meat and makes it tough.

When the hands chap badly in cold weather relief is often obtained by rubbing well with almond oil (or salad oil, if that is more convenient) before washing them with soap and warm water. This softens and heals the skin, without leaving a greasy after-effect.

Moist hands are ruinous to light-colored gloves. A good remedy for the trouble is to bathe them frequently with a mixture composed of two ounces of cologne and one-quarter ounce of tincture of belladonna. After this is rubbed well into the hands they may be sprinkled with talcum powder.

Superfluous hair, that most distressing of all blemishes to a woman, can be entirely removed by a piece of toilet pumice stone. It must be passed firmly but lightly over the skin, care being taken not to chafe it. It is better to do this at bedtime, afterward applying a little cream to the parts (without rubbing), which should be left on all night. This is a perfectly harmless remedy and I hope it will meet the eyes of many who may be tempted to try depilatories, which only promote the growth of hair and too often injure the skin.

With the Home Doctor.

A very young child's mouth should be washed out, after feeding, with a weak solution of boracic acid.

Hemorrhage of the lungs or stomach may be checked by small doses of salt and perfect quiet.

For sudden attacks of dysentery or colic, give equal parts of tincture of rhubarb, essence of peppermint and camphor. Dose: Ten or twenty drops in a wine-

glassful of sweetened water at intervals of 15 minutes.

Bathing the eyes in hot water—as hot as may be used—several times a day, will relieve tired or over-strained eyes. By bathing the eyes every morning in cool water—passing the water as many as 20 times over, them—they will be strengthened.

Nasal catarrh is not entirely a local disease. Its presence in a chronic state indicates impaired nutrition of the whole body. A pure diet, consisting of fruits, grains and nuts, vigorous out-of-door exercise, a cool morning bath followed by vigorous rubbing, are measures of greater importance in the treatment of nasal catarrh than any local remedy. Nevertheless great relief and palliation may be obtained by the use of local remedies, of which the best are the vapors of various volatile oils. An excellent means of applying these oils to the nasal cavity is the pocket vaporizer.

Domestic Hints.

GRAHAM GEMS.—Two cups graham flour, two teaspoons baking powder, one teaspoon sugar, one egg, one tablespoon melted butter, salt. Enough milk to make a batter about as stiff as for cake.

BROWN BREAD.—Two and one-half cups of meal, two of rye, two of sweet milk, one of boiling water, two and one-third of molasses, one teaspoonful soda, salt; steam three hours and bake five minutes.

OLD-FASHIONED SEED COOKIES.—One cup of butter or cottolene; two cups sugar; three cups flour; four eggs; one-half cup sweet milk; two teaspoons baking powder; one-fourth teaspoon salt; two tablespoons caraway seed.

TOMATO SOUP.—One quart of tomatoes, stew till soft. Add one teaspoonful of soda; allow it to effervesce. Add one quart of boiling milk, salt, butter and pepper to taste, with a little rolled biscuit. Boil a few minutes and serve.

CRESS SALAD.—Line a bowl with cress, then add a layer each of chopped olives, English walnut kernels and celery. Cover with four tablespoonfuls of olive oil, the juice of a lemon and a tablespoonful of vinegar, garnish with sliced lemon and serve.

SPOON CORN BREAD.—Take two well beaten eggs, add two cups of sweet milk, one cup of corn meal and one cup of boiled rice, also one tablespoon of butter, one teaspoon of baking powder and one of salt. Pour in pan and bake in moderately hot oven.

EGG BALLS.—Boil four eggs until hard, and, removing the shells, press through a potato ricer; take a cupful each of the egg and of boiled rice; mix together with a little pepper, salt and butter and form into balls. Dip into raw egg and then in cracker dust, and fry in hot lard.

MUFFINS.—Warm one pint of sweet milk and add to it a teaspoonful of salt and a half gill of yeast; then add one quart of flour and beat until light. Mix at night; in the morning drop the raised dough into well-buttered muffin rings and let them stand for about 20 minutes, then put in oven and bake.

CORN SOUFFLE.—Drain the water from a can of corn and stir in three tablespoonfuls of melted butter. Beat four eggs until very light and turn with a pint of rich milk into the corn. Season well, beat for several minutes and pour into a buttered pudding dish. Cover and bake 30 minutes. Remove the cover, brown the souffle and serve directly.

BOILED RAISIN PUDDING.—Put half a pound each of seeded raisins, flour and shredded beef suet into a basin, mix them, and add gradually one breakfast-cupful of milk and a couple of well-whipped eggs; place the mixture in a floured cloth, tie it up securely, or put it into a buttered basin, cover with a cloth, place it in a saucepan of boiling water, and boil from two and one-half to three hours, by which time the pudding should be done. Turn it out and serve.

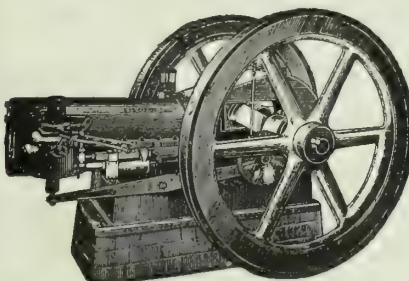
CREAM PUFFS.—One cup butter, one cup hot water; put into a sauce-pan over the fire and stir in one cup sifted flour, a pinch of salt and one of soda. Stir till it is a velvety mass and set aside to cool. When cool stir in three eggs separately, and when perfectly smooth drop from a spoon into well greased tins, leaving quite a space between. Bake one-half hour in a moderately hot oven. Cut a slit in the side of each and, with a small spoon, fill with the following custard: Put two cups sweet milk into a double boiler. Add one cup sugar, two eggs, a pinch of salt and flavor with vanilla. Stir till it boils, then set away to cool. Very nice for luncheon.



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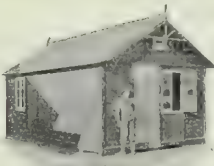
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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, Feb. 21, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday.....	\$3.50 @ \$5.00	\$4.00 @ \$5.00
Thursday.....	\$3.50 @ \$5.00	\$4.00 @ \$5.00
Friday.....	\$3.50 @ \$5.00	\$4.00 @ \$5.00
Saturday.....	\$3.50 @ \$5.00	\$4.00 @ \$5.00
Sunday.....	\$3.50 @ \$5.00	\$4.00 @ \$5.00
Monday.....	\$3.50 @ \$5.00	\$4.00 @ \$5.00
Tuesday.....	\$3.50 @ \$5.00	\$4.00 @ \$5.00

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday.....	43 1/2 @ 43 3/4	44 @ 43 3/4
Thursday.....	43 1/2 @ 43 3/4	44 @ 43 3/4
Friday.....	43 1/2 @ 43 3/4	44 @ 43 3/4
Saturday.....	43 1/2 @ 43 3/4	44 @ 43 3/4
Sunday.....	43 1/2 @ 43 3/4	44 @ 43 3/4
Monday.....	43 1/2 @ 43 3/4	44 @ 43 3/4
Tuesday.....	43 1/2 @ 43 3/4	44 @ 43 3/4

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	May, 1906.	Dec., 1906.
Wednesday.....	1 32 1/2 @	1 30 @ 1 28 1/2
Thursday.....	1 31 1/2 @	1 28 1/2 @ 1 28 1/2
Friday.....	1 32 @	1 28 1/2 @ 1 28 1/2
Saturday.....	1 30 @	1 27 1/2 @ 1 28 1/2
Sunday.....	1 30 @	1 27 1/2 @ 1 28 1/2
Monday.....	1 29 1/2 @	1 26 1/2 @ 1 26
Tuesday.....	1 29 1/2 @	1 26 1/2 @ 1 26

Wheat.

The wheat market here is moving slowly and very little new business has transpired during the past week. The export business for wheat seems to be over, and the total exports will not reach 200,000 centals, compared with 820,000 centals for the previous season. Millers are not buying very freely, and a great deal of attention is being paid to the growing crop. Crop advices from the grain belt say that the warm weather is very beneficial to the growing grain, which is now in excellent condition and making rapid growth. Plowing and seeding are in progress in many places, and it is said that the acreage will be larger than last season. Exporters are purchasing very sparingly, and prefer to wait and see what European demand will exist before laying in any fresh supplies. Most northern shippers have plenty of wheat on hand to load a number of vessels, and vessels arriving in at tidewater points suffer very little detention in way of loading. The foreign market is in a state of hesitancy, which might properly be described as nervousness. Australia is finding a European demand, which keeps prices fairly steady. Russia shows very little disposition to sell. So far as India is concerned, there seems no doubt that the outlook is very serious, so serious, in fact, that purchases of considerable quantities of Australian wheat have already been made for shipment to Calcutta. This may not, of course, mean that grain is likely to be so scarce that imports of breadstuffs will be necessary in order to provide the population with food; but it may be thought necessary to have another source of supply open in case the native dealers should raise prices to an extravagant extent. From the Argentine the news has been unpleasant to those who were looking forward to a large crop of excellent quality. The weather has been unfavorable, and threshing returns are said to be disappointing. In the local market Northern red is quoted at a decline from last week's quotation.

California Milling.....	\$1.37 1/2 @ 1.42 1/2
Cal. No. 1 shipping.....	1.35 @ 1.37 1/2
Northern Club.....	1.35 @ 1.37 1/2
Northern Bluestem.....	1.37 1/2 @ 1.42 1/2
Northern Red.....	1.30 @ 1.32 1/2

PRICES OF FUTURES.

Tuesday, at the forenoon session of Exchange May, 1906, wheat ranged from \$1.29 1/4 @ 1.39.

Flour.

During the last week the flour trade has not experienced any change in quotations. Millers, however, complain of a lack of orders. Northern millers, especially, have been affected by the depressed conditions of the export trade, and many of the mills there are not operating at present. A great many millers are of the opinion that there will be a change in the situation before the close of the month, and that operations in the various mills will be resumed. The few cabled bids received during the week have been very unsatisfactory. Owing to the small prices offered millers are compelled to turn them down. Japan is only purchasing when compelled to, and the large stocks held over there some time ago are dwindling away slowly. The demand from China shows very little improvement, and it is greatly doubted whether any great quantity of flour will be shipped to that country for some time to come.

Patents, California.....	\$4.45
Second Patents, California.....	@ 4.00
Straights.....	@ 4.25
Superfine No. 1.....	3.50 @ 3.75
Superfine No. 2.....	3.00 @ 3.40
Oregon Bakers.....	3.00 @ 3.25
Washington Bakers.....	4.00 @ 4.40
Eastern Patents.....	5.50 @

Barley.

The barley market is considered very quiet this week. There has been no material change in quotations, except that Chevalier is now marked up to \$1.35. Although the supply on hand is known to be limited, it is not expected that any very great advance will occur, as the price is already high. The low supply left in Oregon and Washington will probably be made to last by the importation of corn, which is still going on at a good rate. Besides this, the present indications are extremely favorable for the production of a large tonnage of barley.

Brewing.....	\$1.25 @ 1.27 1/2
Feed, No. 1.....	1.17 1/2 @ 1.20
Feed, fair to good.....	1.17 1/2 @ 1.20
Chevalier, No. 1 to choice.....	1.30 @ 1.35
Chevalier, common to fair.....	1.20 @ 1.25
December.....	94 1/2 @

Oats.

There has been a fair movement in oats with conditions generally favorable to sellers. The best grades are particularly firm, with only light supplies to draw from. Quotations are as heretofore.

White oats.....	\$1.50 @ 1.45
Black oats.....	1.35 @ 1.35
Red oats.....	1.45 @ 1.70

Corn.

The corn situation is unchanged, except for the fact that buying in the East for feed purposes has been checked by the growth of green feed and the consequent weakening in the prices of feed barley. Prices are as last week, with nearly all varieties in light supply.

Large White, good to choice.....	\$1.17 1/2 @ 1.22 1/2
Large Yellow.....	1.17 1/2 @ 1.22 1/2
Small Yellow.....	1.55 @ 1.60
Egyptian White.....	1.38 1/2 @ 1.40
Egyptian Brown.....	1.23 1/2 @ 1.30
Kafir.....	1.20 @

Rye.

Rye is now practically all out of first hands, and quotations are a little hard to fix, as each lot is sold largely at its own price. A good deal has changed hands this week, and the demand is still quite active.

Good to choice.....	\$1.50 @
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Buckwheat.

Stocks of buckwheat are practically exhausted, and there is very little demand for what is to be had. Prices are largely nominal, though they give a fair indication of values at the present time.

Good to choice.....	1.50 @ 1.65
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Beans.

Beans are moving at a moderate rate with slight fluctuations in quotations. The market is generally considered a little easier, but offerings are light and there is a noticeable lack of selling pressure. Limas are probably the weakest item in the list, being influenced by the lower prices prevailing in the south. Reds, on the other hand, are firmer, and are quoted at a slight advance.

Small White, good to choice.....	\$2.90 @ 3.25
Large White.....	2.25 @ 2.60
Pinks.....	1.90 @ 2.10
Pinks, damaged.....	1.00 @ 1.25
Bayos, good to choice.....	3.30 @ 3.60
Red Kidneys.....	8.50 @ 8.85
Reds.....	3.00 @ 3.25
Limas, good to choice.....	4.40 @ 4.75
Black-eye Beans.....	4.40 @ 4.50
Cranberry.....	3.30 @ 3.35
Carbanzas, small.....	3.10 @ 3.25
Carbanzas, large.....	3.50 @ 3.75
Horsebeans.....	1.75 @ 1.85

Dried Peas.

There has been nothing new in dried peas this week. Although stocks are light, the demand is not sufficient to affect prices or to cause any anticipation of a shortage.

Green Peas, California.....	\$2.15 @ 2.50
Niles.....	1.75 @ 2.00

Hops.

There has been no noticeable movement in hops this week and prices continue steady. It is known that some growers are holding their stocks in the Sacramento valley, and some may commence to let go as the time for taxes comes around. If so, some interest may be aroused, though probably at prices not above those now prevailing.

Medium to fair.....	6 @
Good brewing.....	8 @ 8 1/2
Prime.....	10 @
Prime to choice.....	10 @

Wool.

The wool market is in the same quiet condition that it has been for a long time, and prices remain stationary. Spring shearing will soon commence, and this is expected to put some life into the wool market.

Humboldt and Mendocino.....	15 @ 16 1/2
Northern, free.....	14 1/2 @ 16
Northern, defective.....	11 @ 13
Middle County, free.....	10 @ 14
Middle County, defective.....	10 @ 12
San Joaquin and Southern, free.....	5 @ 10
San Joaquin and Southern, defective.....	7 @ 10
Oregon, valley.....	23 @ 25
Eastern Oregon.....	15 @ 17
Nevada.....	15 @ 19

Hay and Straw.

The San Francisco hay market continues fairly heavy, notwithstanding substantial receipts during the week. The continuance of favorable crop conditions is naturally causing country holders to let go to a large extent, but notwithstanding this and the good growth of green feed the market continues in pretty good shape. Consumption seems to be large, not only in San Francisco, but at interior points. It has been supposed that there was a large surplus of some varieties, but the present conditions of the market in the face of good crop prospects do not seem to bear out this claim.

Wheat, choice.....	\$14.00 @ 16.00
Wheat, other grades.....	8.00 @ 13.50
Wheat and Oat.....	8.50 @ 12.00
Tame Oat, fair to choice.....	8.00 @ 12.00
Wild Oat.....	8.00 @ 9.50
Barley.....	7.00 @ 9.50
Alfalfa.....	9.00 @ 11.50
Stock hay.....	7.50 @ 8.50
Straw, 3/4 bale.....	30 @ 50

Millstuffs.

Millstuffs have remained quiet throughout the past week with some weakness in a few varieties. Rolled barley, cornmeal and cracked corn are all to be had at slightly lower figures than was the case a week ago. Bran, which advanced last week, remains steady at the advanced quotation, though no further advance is expected.

Alfalfa Meal, 3/4 ton.....	\$21.00 @ 22.00
Bran, 3/4 ton.....	20.50 @ 21.50
Middlings.....	27.50 @ 29.00
Shorts, Oregon.....	21.00 @ 22.00
Barley, Rolled, choice.....	25.50 @ 26.00
Cornmeal.....	27.50 @ 28.50
Cracked Corn.....	28.00 @ 29.00
Oilcake Meal.....	39.00 @ 40.00
Cocanut cake or meal.....	24.50 @ 25.50

Seeds.

Dealers in seeds report a moderate business with no fluctuations in prices. The demand for alfalfa seed is the only notable feature, and this gives some promise of increasing. Other varieties remain fairly steady with about the usual amount of trading. Stocks are not large, and even with a rather sluggish demand it is not expected that prices will ease off until the new crops begin to mature.

Alfalfa.....	\$13.00 @ 14.00
Flax.....	3.25 @ 3.50
Mustard, Yellow.....	3.75 @ 4.25
Mustard, Trieste.....	4.50 @ 4.75
Canary.....	8 @ 6 1/2
Rape.....	2 1/2 @ 3
Hemp.....	6 @
Timothy.....	5 1/2 @ 6

Honey.

Arrivals of honey have not been particularly heavy this week, and the market shows a little more firmness. There has not been a very large volume of business, however, and prices continue as heretofore. The predictions of lower prices, made by the San Francisco trade, do not seem to have been realized, though there is still time for weakness to develop.

Extracted, Water White.....	4 1/2 @ 5
Extracted, White.....	4 @ 4 1/2
Extracted, Light Amber.....	3 1/2 @ 4
Extracted, Amber.....	3 @ 3 1/2
Extracted, Dark Amber.....	2 1/2 @ 3
Extracted, Hawaiian.....	2 1/2 @
White Comb, 1-frames.....	10 @ 12 1/2
Amber Comb.....	9 @ 10

Beeswax.

Beeswax is stronger this week owing to light supplies in the best grades. Good quality wax in light colors is moving freely, and the stock in the hands of the San Francisco trade is not large. The old quotations prevail, but they are now more firmly adhered to.

Good to choice, light 3/4 lb.....	27 @ 28
Dark.....	25 @ 26

Live Stock and Meats.

The live stock market continues strong with a further rise in veal. Beef is in brisk demand at the advanced quotations of last week. Hogs are still scarce, the high prices having failed to bring into the market any great increase in the supply. It seems that farmers generally sold their stock when feed became high, and that the actual supply of hogs in the State is very low. Some hogs are being imported from the East, and a few of these are being packed for special trade, though no packing in the ordinary sense is possible at present prices. Milk hogs are expected to come in shortly, and these will have a tendency to ease the market.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net 3/4 lb.....	6 @ 6 1/2
Beef, 2nd quality.....	5 1/2 @ 6
Beef, 3rd quality.....	4 1/2 @ 5
Mutton—ewes, 8 @ 9; wethers.....	10 @ 10 1/2
Hogs, hard grain, 150 to 250 lbs.....	6 1/2 @ 6 3/4
Hogs, large, hard, over 250 pounds.....	5 1/2 @ 5 3/4
Hogs, small, fat, under 150 lbs.....	6 @ 6 1/2
Hogs, soft.....	5 @ 5 1/2
Veal, large, 3/4 lb.....	8 @ 8 1/2
Veal, small, 3/4 lb.....	8 @ 9
Lamb, spring, 3/4 lb.....	11 @ 12

Hides, Skins and Tallow.

The worst hides of the season are coming in now, but even these are taken at the present abnormal prices, being, in fact, sold ahead of the take-off, in most cases. Tanners have no desire to load up with winter hides, but even without any pressing demand everything in the shape of a hide seems to find a buyer.

Nothing but select hides, clean and trimmed, will bring full figures. Culls of all kinds either from grubs, cuts, hair slips side brands or murrain, are not always readily placed at the lower figures.

	Sound.	Culls.
Heavy Steers, over 56 lbs.....	12 @	12 @
Medium Steers, 48 to 56 lbs.....	12 @	11 @
Light Steers, under 48 lbs.....	11 1/2 @	10 1/2 @
Heavy Cow Hides, over 50 lbs.....	10 1/2 @	10 1/2 @
Light Cow Hides, under 50 lbs.....	11 1/2 @	10 1/2 @
Stags.....	7 @ 8	7 @
Wet Salted Kip.....	10 1/2 @	10 @
Wet Salted Veal.....	12 @	11 @
Wet Salted Calf.....	13 @	12 @
Dry Hides.....	19 @	19 @
Dry Kip and Veal, 11 to 16 lbs.....	17 @	15 @
Dry Calf, under 4 lbs.....	20 @ 21	19 @
Pelts, long wool, 3/4 skin.....	1.50 @ 2.00	90 @ 1.25
Pelts, medium, 3/4 skin.....	1.00 @ 1.25	60 @ 90
Pelts, short wool, 3/4 skin.....	1.00 @ 1.25	20 @ 50
Pelts, shearing, 3/4 skin.....	1.00 @ 1.25	3.00 @
Horse Hides, salted, large prime, each.....	3.00 @	3.75 @
Horse Hides, salted, medium.....	2.25 @	2.25 @
Horse Hides, salted, small.....	1.75 @	1.50 @
Horse Hides, dry, large.....	1.50 @	1.50 @
Horse Hides, dry, medium.....	1.00 @	1.00 @
Horse Hides, dry, small.....	1.00 @	1.00 @
Tallow, good quality.....	4 @ 4 1/2	4 @ 4 1/2
Tallow, poorer grades.....	3 1/2 @ 3 3/4	3 1/2 @ 3 3/4

Bags and Bagging.

Bags are steady at the old figures. The slight advances of the past few weeks seem to have been sufficient to check what little buying activity had developed, and under normal conditions not much movement is to be expected until farmers begin to plan for moving the new crops. Some interest is taken in future grain bags, though no large buys are reported.

Bean Bags.....	6 @
Fruit Sacks, cotton, No. 1, 8 @ 8 1/2; No. 2.....	7 1/2 @ 8
Fruit Sacks, jute, as to quality.....	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 22x36, spot.....	7 1/2 @ 7 3/4
Wool Sacks, 4-b.....	30 @ 37
Wool Sacks, 3 1/2-b.....	32 @ 34

Poultry.

Four cars of Eastern poultry arrived on the market the first of the week, but were quickly absorbed by the trade at the prevailing prices. Local receipts were rather light and prices are generally higher, with the exception of turkeys. Turkeys have experienced a decline this week and the demand is not strong except for fancy stock, which is very scarce. The receipt of turkeys has been heavier this week, and this is responsible for the decline.

Turkeys, dressed, 3/4 lb.....	15 @ 20
Turkeys, choice Young, 3/4 lb.....	14 @ 15
Turkeys, live gobblers, 3/4 lb.....	14 @ 15
Turkeys, live hens 3/4 lb.....	15 @ 18
Hens, small, 3/4 dozen.....	4.50 @ 5.50
Hens, large.....	6.00 @ 7.00
Roosters, old.....	5.00 @ 5.50
Roosters, young (full-grown).....	6.00 @ 7.50
Fryers.....	5.50 @ 6.50
Broilers, large.....	4.00 @ 5.00
Broilers, small to medium.....	3.00 @ 4.00
Ducks, old, 3/4 dozen.....	5.00 @ 6.00
Ducks, young, 3/4 dozen.....	6.00 @ 7.00
Geese, 3/4 pair.....	1.75 @ 2.00
Geese, 1/2 pair.....	2.50 @ 3.00
Pigeons, old, 3/4 dozen.....	1.00 @ 1.25
Pigeons, young.....	2.00 @ 2.50

Butter.

The decline in butter last week has been followed by a re-action this week, as was predicted by some. The early part of this week saw butter up to 30c. The advance is explained by a temporary shortage in the market and it is not generally expected that butter will remain at this figure very long. Fresh supplies of butter are expected to arrive soon, and the advance of spring weather will not fail to send greater quantities upon the market. California storage butter has disappeared and is no longer quoted.

Creamery, extras, 3/4 lb.....	30 @ 30 1/2
Creamery, firsts.....	26 @ 27 1/2
Creamery, seconds.....	24 @ 25
Dairy, select.....	24 @ 25
Dairy, firsts.....	23 @ 23 1/2
Dairy, seconds.....	23 @ 22 1/2
Mixed Store.....	18 @ 20

Cheese.

Cheese has remained steady this week, Young Americas being especially favored. The market is considered to be in a much more firm state than last week and the expectation last noted for a decline has been met with a stronger market at the prices quoted last week. It is expected that cheese will continue firm at the present quotations, especially in view of the advanced prices of butter.

California, fancy flat, new.....	13 1/2 @
California, good to choice.....	12 @
California, fair to good.....	11 @
California, "Young Americas".....	13 @ 13 1/2
Eastern, new.....	15 @ 16

Eggs.

The egg market has been much easier this week with large supplies arriving on the market. Shipping North still continues, and this has a tendency to maintain the current prices. It is not considered probable that eggs will drop much lower, on account of the increasing shipments made to the Northwest and the probability of cold storage commencing soon. The weather is generally believed

to be still too damp for storing, but some speculative interests have been tempted by the low prices to buy for storage, and the present weather conditions would appear favorable to the early commencing of storage operations.

California, select, large, white and fresh. 18 @—
California, select, irregular color & size. 17 @17½
California, good to choice store. 16½ @17
Eastern firsts. 17 @18
Eastern seconds. 15 @16

Potatoes.

The potato market has not moved from the poor condition into which it lapsed last week. The market is still filled with a large supply of low-grade stock which does not find many buyers at any price. The weather, which has continued warm and damp, has been particularly damaging to the potato interests this year, as these conditions have led to the sprouting of all varieties, making it hard for dealers to hold their stock for any length of time. Especially have receipts from the North arrived in bad condition. But while the general conditions of the market have been poor, this week has shown no material decline in quotations.

River Burbanks, 50 @ 75
Salinas Burbanks. 1 10 @ 1 40
Oregon Burbanks. 80 @ 1 10
Tomatoes. 90 @ 1 00
Sweet Potatoes, Merced. 1 25 @ 1 50
Sweet Potatoes, good to choice. — @ —
Early Rose, Oregon. 1 35 @ 1 50
Early Rose, California. 1 25 @ 1 35

Vegetables.

The vegetable market is at present the creature of the weather. Asparagus and artichokes have declined notably this week and larger supplies of each are appearing on the market. Rhubarb is considered weaker, and with the increased supplies which are arriving daily, an early decline in this vegetable is expected. Onions have suffered further demoralization this week, and no onions are worth above a cent a pound. A condition which is operating steadily to beat down the market in onions is the warm, damp growing weather, which causes them to sprout and grow rapidly. Had the weather been cold or dry, the large supplies would not have made their influence felt on the market as soon as they have.

Celery, 50 @ —
Radishes. 10 @ —
Lettuce. 20 @ —
Asparagus, 8 @ 12½
Rhubarb. 7 @ 9
Green Peppers, southern. 20 @ —
Cucumbers, household. 75 @ 1 00
Summer Squash, southern. 2 00 @ —
Turnips, yellow. 1 50 @ —
Turnips, white. 1 20 @ —
Cauliflower, 50 @ —
Beans, String. 20 @ —
Cabbage, choice garden, 100 lbs. 1 00 @ 1 25
Egg Plant, 10 @ 15
Garlic, 5½ @ 6½
Onions, Oregon, 80 @ 1 00
Onions, New Yellow Danvers, 75 @ 1 00
Onions, Australian Brown, 1 00 @ —
Peas, Green, 8 @ 10
Tomatoes, 1 00 @ 1 50
Artichokes, 40 @ 1 00
Carrots, 80 @ 90
Hubbard Squash, 25 @ —

NOTE.—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top, with hand holes in the ends, and weigh when filled from 50 to 60 lbs. gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 40 lbs. gross.

Fresh Fruits.

The apple market continues normal, with a moderate movement in supplying the usual demands of the retailers. There is no speculative interest in this commodity at present, and there is nothing in sight which will affect the current prices materially in the near future. However, a slight decline in common apples is noted this week.

Apples, choice to select, 50-lb box 1 25 @ 1 75
Apples, good to choice, 50-lb box 75 @ 1 00
Apples, common. 40 @ 50
Pears, Winter Nelis. 2 75 @ —

Dried Fruits.

Dried fruits are manifesting considerably more strength than is usual at this time of year. Apples are reported stronger and in good demand. Apricots have advanced a quarter of a cent and the market is very strong. Prunes continue to move freely and the stocks on hand are being reduced, so that it bids fair to see the new season start with an absence of old stock. The smaller varieties, from 50s-60s down, are in good demand at the present time.

EVAPORATED OR BLEACHED.

Apples, 50-lb boxes, rings, pressed, good to choice. 8½ @ 8½
Apples, extra choice to fancy. 50-lb boxes. 8½ @ 9
Apricots, Royal, good to choice, 1 lb. 8½ @ 9½
Apricots, Royal, fancy. 9½ @ 10
Figs, 10-lb box, 1-lb cartons. 55 @ 62½
Nectarines, White and Stanwick, 1 lb. 8 @ 8½
Nectarines, red, 1 lb. — @ 8
Peaches, unpeeled, good to choice. 8½ @ 9
Peaches, unpeeled, fancy to extra fancy. 9 @ 9½
Pears, standard, 1 lb. — @ 8½
Pears, choice to fancy. 10 @ 12
Plums, Black, pitted. 5½ @ 6½
Plums, Red, pitted. 7 @ 8
Plums, Yellow, pitted. 6 @ 8
Prunes, Silver, good to fancy. 5½ @ 8½
Prunes, in bags, 4 sizes, — @ — c; 40-50s, 5½ @ 5½ c;

WOOL SALE.

The Century Mercantile Company is conducting regular sales at its warehouse. This interests all growers. Full particulars by mail. Office, 14 Sansome St., San Francisco.

50-60s, 4½ @ 5c; 60-70s, 4¼ @ 4½ c; 70-80s, 3¾ @ 4c; 80-90s, 3¼ @ 3½ c; 90-100s, 3 @ 3¼ c; small, 2½ @ 3c.

COMMON SUN-DRIED.

Apples, sliced. 5 @ 5½
Apples, quartered. 4½ @ 5½
Figs, White, in bulk. 2½ @ 3
Figs, Black. 2½ @ 3

Raisins.

The week has witnessed no change in raisins. There have been very few transactions and the prices last quoted have experienced no change.

(Fresno delivery except otherwise specified.)

London Layers, 2-crown, 20-lb box. 1 50 @ —
London Layers, 3-crown, 20-lb box. 1 60 @ —
Fancy Clusters, 4-crown, 20-lb box. 1 75 @ —
Dehesas, 20-lb box. 2 00 @ —
Imperial, 20-lb box. 2 50 @ —
2-Crown Standard loose Muscatel. 5 @ — c
4-Crown Standard. 5½ @ — c
Seedless Thompsons, 50-lb boxes. 4½ @ — c
Seedless Sultanias. 4½ @ — c
Seedless Muscatels. — @ — c
Fancy, 16-oz. Seeded. 6½ @ — c
Choice, 16-oz. Seeded. 6¼ @ — c
Fancy, 12-oz. Seeded. 5¼ @ — c
Choice, 12-oz. Seeded. 5 @ — c
Fancy Seeded, bulk. 6¼ @ — c
Choice Seeded, bulk. 6 @ — c

Citrus Fruits.

The market in citrus fruits is considered to be much stronger this week, after the period of depression last week. The Eastern market has been more tempting to the southern growers during the last two weeks, and the diversion of oranges in that direction has given the trade an opportunity to dispose of the large supplies that were on hand a week ago. The effect has been to put holders at their ease, and an advance on all oranges is noted since last week. Limes continue strong under a limited supply.

Oranges, fancy. 2 25 @ 2 75
Oranges, choice. 1 75 @ 2 25
Oranges, standard. 1 25 @ 1 50
Oranges, Seedlings. 1 25 @ 1 50
Lemons, California, fancy, 10 box. 2 00 @ 2 25
Lemons, California, good to choice. 1 00 @ 1 50
Lemons, California, standards. 60 @ 75
Grape Fruit, 10 box, new. 1 00 @ 1 50
Grape Fruit, seedless. 2 00 @ 2 50
Limes, 10 box. 3 50 @ 6 00

Nuts.

The nut market has been dull this week and no new orders have been received from the East. Few transactions have been reported on the coast and it is not likely that the nut market will present anything of great interest in the near future. Some holders still predict a shortage before the new crops come in, but so far as known no considerable stocks are being held for speculative purposes.

Peanuts, fair to prime. 4½ @ 5½
Cal. Walnuts, No. 1 soft shell. — @ 13
Cal. Walnuts, No. 2 soft shell. — @ 9
Cal. Walnuts, No. 1 hard shell. — @ 12½
Cal. Walnuts, No. 2 hard shell. — @ 8½
Almonds, IXL, 1 lb. — @ 12
Almonds, Ne Plus Ultra, 1 lb. — @ 12½
Almonds, Nonpareil, 1 lb. — @ 12½
Almonds, Langue-de, 1 lb. — @ 8½
Almonds, Golden State, 1 lb. — @ 9½
Hard Shell, 1 lb. — @ 5

FORTUNE IN GRAPES.—Stockton Independent, Feb. 20: Six months ago Harry Hewlett, of Stockton, bought a half interest in a small vineyard near Woodbridge and paid \$500 an acre for the tract. He bought a 36 acre vineyard with E. Oppenheim, the fruit shipper, as a partner, and then placed his interest on sale at \$700 an acre but the option ran out a few weeks ago. While the option was on, he and his partner realized \$10,000 for the crop of Tokays raised on the place and his partner should have made something extra in handling the grapes as an Eastern shipper. But the crop brought Harry Hewlett about \$5,000 and he realized that he had a good thing. A few days ago he was asked if he would sell his interest at the upset price, \$700 an acre, and while he could not be held to the option he had given, he told the agents to go ahead and sell if they could. Yesterday they closed the deal and Mr. Hewlett got \$700 an acre for his half interest in the vineyard, clearing \$200 an acre, or \$3,600 on the land and improvements, besides the \$5,000 he realized from the grape crop. The vineyard is 15 years old and is a part of the famous Cowell place, near Woodbridge, and adjoins B. A. Towne's noted vineyard, which has been one of the best paying properties in the State.

MAIL ORDER HOUSES.

Do you get the price list of the IMPERIAL CASH STORE? If not, better send for it to-day. The best, cheapest and most reliable Mail Order House on the Pacific Coast. 531 Washington Street, San Francisco, California.

Chickens and Eggs

We have been handling Poultry in this market for the past thirty years, and with such a long experience can give you the best results. Full weight, full prices and prompt returns is our motto. Write us for information.

D. E. ALLISON & CO., Inc.
117-119 Washington St., San Francisco.

TUSOCK MOTH.—San Jose Herald, Feb. 15: The eggs of the tussock moth, or horned caterpillar, are beginning to hatch out in Pajaro valley—a month earlier than usual—and Horticultural Commissioner C. H. Rodgers advises orchardists to take steps at once to destroy the egg masses. It will be remembered that some time ago a parasite of the tussock moth was discovered and Mr. Rodgers advised that the egg masses be taken from the tree at that time and placed in boxes in the trees and left there until they began to hatch out, in order that the parasite of the moth, which develops into a moth egg, might have a chance to hatch out and prey upon future generations of the dread tussock moth. The moths have begun to crawl about the trees and unless the egg masses are destroyed without delay great damage to fruit will result again this season. Those who took the precaution to place the egg masses in boxes in the orchards, as well as those who did not, are warned to burn the egg masses as quickly as possible. The tussock moth is one of the worst pests with which orchardists have to deal. When it once bites a young apple the scar will not disappear, but remains to detract from the looks of the fruit and to injure its chances of sale. It is believed that the hatching of tussock moth eggs at this season of the year is due to the recent warm weather, which has caused sap to flow in the fruit trees and buds to burst.

WONDERFUL HATCHER.

You can almost count your chickens before they hatch if you use the

"Sure Hatch Incubator."

For every hatchable egg will give you a healthy chick, just as sure as you're born. The certainty of the "SURE HATCH" is what gave this famous incubator its name. You can take off 85 per cent hatches and better every 30 days with a "SURE HATCH."

And there's money in chicken raising when you get it down to a certainty. When you can figure up a profit of \$12.00 to \$15.00 per month on each machine you operate.

We sell our 1906 "SURE HATCHES" on 60 days' trial, freight prepaid by us. Take off two trial hatches. Count your chicks. You will find a chick for every egg except those not hatchable. No other incubator on the market will show results like that—comparative tests prove it. Write for free catalogue.

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BUFF ORPINGTONS.

Lay like Leghorns. Larger than Plymouth Rocks.

World's Fair winners, and grandest show record on the coast—write for it. Eggs \$3 and \$5 per set.

W. SULLIVAN, Agnews, Cal.

State V.-Pres. Nat. S. C. B. O. Club.
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If you raise it right. Let us help you "get right" with a new 1906-pattern Standard Cyphers Incubator. Guaranteed to hatch more and larger chicks than any other. Easy to operate. Complete Catalog and Poultry Guide, 228 pages (8x11) free if you mention this paper and send names of 2 neighbors who keep poultry. Write nearest office. **CYPHERS INCUBATOR CO.**, Buffalo, Boston, Chicago, New York, Kansas City or San Francisco.

\$12.80 For 200 Egg INCUBATOR
Perfect in construction and action. Hatches every fertile egg. Write for catalog to-day.
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PRACTICAL INCUBATORS positively the best. Hatches more and stronger chicks. **10 YEARS' GUARANTEE**
Cat. free. **PRACTICAL INC. CO.**, 720 S. 11th St., San Jose, Cal.

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Manufactured at Petaluma, Cal., the chicken center of the world.

We hatch and prepare little chicks—White Leghorns—for shipment, to all points within sixty hours travel from Petaluma. Now is the time to place your order. When the chicks come high, they are the most profitable. We also supply White Leghorn eggs for hatching. Prices for chicks and eggs on application.

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HOLSTEINS—Winners at State Fairs of every butter contest since 1885 in Calif. Stock near S. F. F. H. Burke, 30 Montgomery St., S. F.

"HOWARD" SHORTHORNS—Quinto Herd, 77 premiums California State Fairs 1902-3-4. Registered cattle of beef and milking families for sale. Write us what you want. Howard Cattle Co., 206 Sansome St., San Francisco.

BULLS AND COWS FOR SALE—Short Horned Durhams. Address E. S. Driver, Antelope, Cal.

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SINGLE COMB WHITE LEGHORNS.

Thoroughbred Stock. Eggs for setting, \$1.50 for 15, \$2.50 for 30, \$3.50 for 45, \$5 per 100.

INDIAN RUNNER DUCKS. Eggs, \$1.50 for 12, \$7.50 per 100. Send for illustrated catalogue.

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AGRICULTURAL SCIENCE

Increasing the Yield of Hops.

TO THE EDITOR: With such crops as hops—perennial ones—there is a constant outgo of soil fertility. The hop is a heavy feeder, removing from the soil large quantities of mineral matter. An average crop will remove from an acre of ground 23 pounds of phosphoric acid, 84 pounds of nitrogen and 53 pounds of potash. While the rich, virgin soils of the Pacific coast may stand this heavy draught for a number of years, without evident falling off in the yield, yet exhausted fertility is bound to be the final result. Even on the poorer soils of the East it requires from 8 to 30 years to deplete a virgin soil.

In its food requirements the hop is a peculiar plant, because a too liberal allowance of phosphoric acid and nitrogen results in striking sacrifice of quality for quantity—a condition always to be avoided.

On the Pacific coast the fertilizer requirements of the crop will doubtless vary considerably in Oregon and Washington from those of California. In the former States, I do not believe much benefit will accrue from the use of phosphoric acid, except in limited quantities, but I should expect moderate amounts of nitrogen and liberal applications of potash, preferably in the form of muriate, to produce good results.

In California the conditions are somewhat different. Generally speaking, the soils of the latter State are not so well supplied with either phosphoric acid or nitrogen, but in many cases somewhat rich in potash. Still the analyses of a number of samples of hops by the California Experiment Station have shown that one of the weak points in the hop soils of California is on the side of potash. In discussing the subject, the report says: "They (the analyses) indicate to the hop producer the great necessity of the employment of complete fertilizer."

Compared with the grain of wheat which takes away about the same quantity of phosphoric acid and nitrogen, hop cones and vines each carry about three times more potash. None of the important orchard fruits or nuts begin to make as heavy demands on potash and nitrogen as hops. Most of them take away about one-fifth as much potash.

It is likely that a fertilizer carrying something like

Nitrogen.....	8 percent.
Potash.....	8 percent.
Phosphoric acid.....	10 percent.

will produce good results generally on the California hop soils. The nitrogen can be obtained either in the shape of animal product or nitrate of soda, the phosphoric acid from bone, superphosphate, or from basic slags, while the potash would be obtained from muriate of potash.

These materials in the proper proportions should be applied in the winter, and well worked into the soil, with the exception of about one-half of the nitrate of soda, which should be added to the growing crop. If Thomas slag be used as the source of phosphoric acid, great care should be taken to work it very deeply into the soil; it is best plowed in.

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WANTED.

A Bright Man With Team
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Steady work and good wages to the right man.
References required. For particulars, address:

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MEN WANTED TO LEARN BARBER TRADE.

FIRST-CLASS PROFESSION.
Trade taught in eight weeks. Positions secured. Write for particulars. MOLER BARBER COLLEGE, 642 Clay St., San Francisco.

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When well cared for and well fed, is because they need waking up to start egg production. This comes naturally in the spring—the natural mating season. In winter you have to give something to stimulate them. Without this they are stupid, lazy and dull. Mix SECURITY POULTRY FOOD in their rations. It will give them life and activity and shortly your hens will be laying. Don't wonder why they don't lay, but get Security Poultry Food from our dealer in your town and feed it.

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SECURITY STOCK FOOD CO.,
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Seeds, Plants, Etc.

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Apricots, Plums and Prunes on Myrobolan Root.

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SMYRNA FIG.

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We are selling good stock trees at \$15.00 per 100; Capris at the same price.

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W. HERBERT SAMSON, Prop.

GUM TREES

IN VARIETY,

including RUDIS, ROSTRATA, VIMINALIS.

MONTEREY CYPRESS,

MONTEREY PINES,

All Transplanted in Boxes.

Write for prices, stating quantity wanted.

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CITRUS TREES.

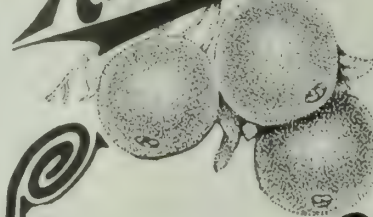
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TREES!

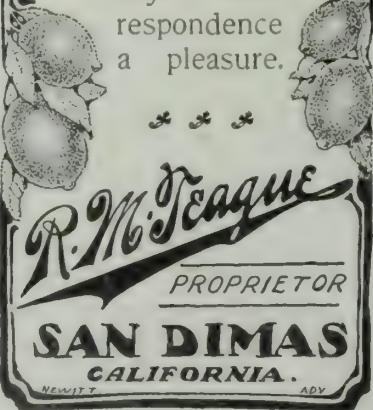
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Extra well rooted. Clean. Grafted on whole roots and free from all pests. Also an extra fine stock of Prunes, Pears, Plums and Walnuts.

Write for price list. A. F. SCHEIDECKER,
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Citrus
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of Citrus
Culture

are fully explained in our booklet on orange and lemon growing; it also has something to say regarding the kind of trees we grow, and the care and precaution we take to produce a tree that will yield fine fruit and bountiful crops. Being the largest producers of citrus trees in the world, it stands to reason that we are in a position to offer superior orange and lemon trees, and that we can give you better service than any other similar establishment. If you will write us your wants, these facts will soon be demonstrated. May we hear from you to-day? Correspondence a pleasure.



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"ROBS," a rust-proof, prolific, hardy, and very strong flour variety, bred by the Australian Government Expert; guaranteed pure and true to name; \$1.25 a Bushel f. o. b. Sydney.

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TREES



True to
Name.

It is of the utmost importance that young trees, shrubs and vines for planting be true to name. They must also be well rooted and properly prepared for shipping and planting.

We have four separate nurseries, comprising over eleven hundred acres, in different sections of the country, each having its peculiar soil best suited to the special requirements of different trees, shrubs and vines for their perfect development. It is a costly method for us to pursue, but it enables us to grow the very best on the market.

Calimyrna Figs.

Over fourteen years of careful experimenting with the growth of the Smyrna fig, or fig of commerce, in this country were required before we could say that we had been entirely successful in propagating this valuable fig, and for the past five years we have been growing this fig in its perfection, drying, packing and marketing it.

There are several varieties of the Smyrna fig, but with our varied experience in this line we feel warranted in recommending one, the Calimyrna, as the most profitable and best for all commercial purposes. We are able to supply almost any desired quantity of these superior trees.

We protect the Calimyrna fig with a seal, which is attached to each bundle of trees.

We have this season a superior stock of

Peaches, Plums,

Prunes, Pears,

Apples, Apricots,

Cherries, Olives,

Nectarines, etc.

These trees are all grown in our nursery plant No. 3, which has a rich river bottom soil permitting the most perfect rooting. Our

Oranges,

Lemons,

Pomelos,

Limes,

Citron,

and all of our citrus fruit trees are grown in our nursery at Exeter, which has a deep, rich loam and is particularly suited to citrus trees. All of the standard varieties will be found in our stock.

Grape Vines.

As we are the largest growers on the coast of the best varieties of raisin, wine and table grapes, and also make a specialty of vines grafted on phylloxera resistant roots, we are in a position to fill your orders most satisfactorily.

CATALOGUE FREE.

Our catalogue, in either English or Spanish, is profusely illustrated and gives a good idea of the immensity of our stock. We mail it free to any address on receipt of 5c. postage. Price list mailed on application.

BOOK YOUR ORDERS NOW.

If you are contemplating doing any planting, it would be well for you to place your order as early as possible. We will book your order now and ship your stock when it is desired.

Paid-Up Capital, \$200,000.00.

Fancher Creek
Nurseries,

(INCORPORATED).

GEO. C. ROEDING, President and Manager,

Box 18, Fresno, Cal.

FORESTRY.

Grazing on the Forest Reserves.

Forest Superintendent D. B. Sheller reached Nevada City recently and will remain until the officer who is to be in charge of the office shall arrive and until this official shall become acquainted with his duties.

Mr. Sheller gives a local correspondent some interesting facts about grazing on the reserves. It is not generally understood that residents of the reserves must obtain grazing permits for their herds just as well as others, when their stock runs at large. Owners of even a few head of milch cows or farm horses should therefore correspond with the authorities.

In regard to grazing, those who have been in the habit of ranging cattle in the reserve districts heretofore are given the first privilege. The charges are 12½c. a head for anything under 50, and 25c. for all over that number. The applicant must specify the sections over which he wishes to graze. Campers are not charged and are allowed a team and a cow if they desire. No privileges are granted to other than American citizens.

FOR MUTUAL PROTECTION.—Mr. Sheller says that after the matter is understood stockmen realize that the situation is better than before. It is a sort of mutual protection affair. Each stockman looks after his own range, guarding against fire, and in so doing all are helping each other.

MUST KNOW THE RULES.—It is evident that it is most important to the people living in this large section to know the rules of the forest reserves, for the law assumes that every resident of a reserve shall know the regulations, and ignorance of them is no bar to punishment for infringement.

For example, it is unlawful to cut timber on one mining claim to be used on another, unless both are owned by the same people. To remove more timber from an unpatented claim than is absolutely necessary is forbidden under penalties, and the following actions constitute trespass:

Driving stock across a reserve without a permit; placing a fence or enclosure upon a forest reserve without a permit; settlement or squatting on land within a reserve; building roads, trails, railways, and constructing ditches, dams, canals, pipe-lines, flumes, tunnels or reservoirs without a permit; erecting hotels, telephone or telegraph lines, stores, sawmills, power plants, except according to law; tearing down or defacing forestry notices; damaging property belonging to the United States Forestry Service; wilfully setting fire to brush, timber or grass within a reserve, or suffering a fire to burn unattended near timber or other inflammable material.

In calculating the number of cattle for which permit will be required, and the amount to be paid for the privilege of grazing cattle and horses, all animals six months old and over at the time of entering are counted, but no charge is made for calves and colts under six months of age at the time of entering, or for those born during the year for which the permit is granted. The intent is that the calves and colts raised during any calendar year shall be charged for during the following year.

The fact that young stock require less feed than old stock is taken into consideration in fixing the rate, and in all cases the charge is reasonable in comparison with the advantages of the reserve.

Public Interest in Forest Preservation.

The steadily increasing value of water power as a source of energy for industrial purposes, says *Iron Age*, has begun to play its part in the movement for the preservation of the forests. The lumbermen have long been prodigal in their operations, aiming solely at getting out the timber at the minimum of cost, which meant razing the forests almost to the last sapling. Forest growth has been wasted, which, if permitted to stand, would have afforded a covering almost sufficient to serve as a safeguard of the waters, or at any rate to bridge over until new growth filled the intermediate spaces of bared ground. When the forests seemed inexhaustible such devastation was but natural. Today thought is directed to the future—of the water supply from the standpoint of the user of the source of power and of the woodlands from the standpoint of the lumberman, who now sees that if he is to make a profit in the future he must take out the fittest of the

trees and leave the rest to grow up under the better conditions secured by the removal of more powerful neighbors.

The public has an interest in this work measured by the rapidly increasing cost of lumber for all purposes. In the West the timber of the Pacific coast is taking a place in competition with native woods, for the increasing scarcity of the latter has brought an advance in prices to offset the cost of freight from the Western seaboard. But from the East the Oregon and other timbers of the Pacific slope are excluded by the cost of freight, and the dealers in lumber predict that this exclusion will continue, excepting in the case of woods for certain limited purposes, until the isthmian canal is opened. This but emphasizes the necessity of a careful preservation of the Eastern forests. The reservations established by the Government embracing great ideas of forest lands controlled and protected at Government expense will assist to some extent in the preservation of the water power of the rivers. Without the forests at the sources of rivers and their tributaries the flow must become more intermittent, with alternate floods and droughts rather than the natural, even flow necessary for a steady supply of power for manufacturing operations.

But the Government cannot do it all. By far the greater area of forest lands must be utilized for commercial purposes. Their timber must be cut off to supply the lumber trade and to furnish the pulp which enters in the manufacture of paper. The remedy lies largely with the private owners, who have an example in the excellent work in re-foresting that has been done on the Biltmore estate in North Carolina. The French Broad river with its tributaries above Asheville, N. C., drains the Biltmore estate and the fact that, as statistics show, the French Broad varies less than any other stream in the South Atlantic States is attributed to the protection the river receives from intelligent reforesting.

Perhaps it may be necessary at some time to enact forestry laws similar to those of Europe, which for the common weal prohibit the cutting of any tree on private land without permission of the Government Forester. But it is more likely that the movement already started by some owners on timberlands, to cull trees with discrimination, leaving standing wherever possible everything which is not required and to plant seedlings in place of matured trees as the latter are removed, will solve the great problem. The agitation which has been going on for some years, and which is growing, backed by the Forest Service of the Agricultural Department at Washington, is proving an efficient campaign of education.

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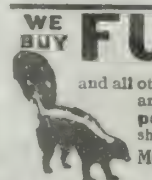
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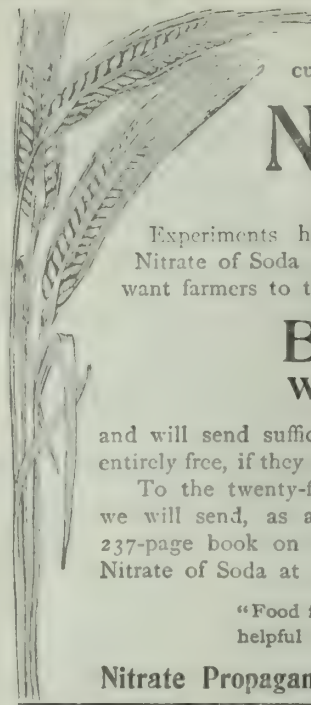
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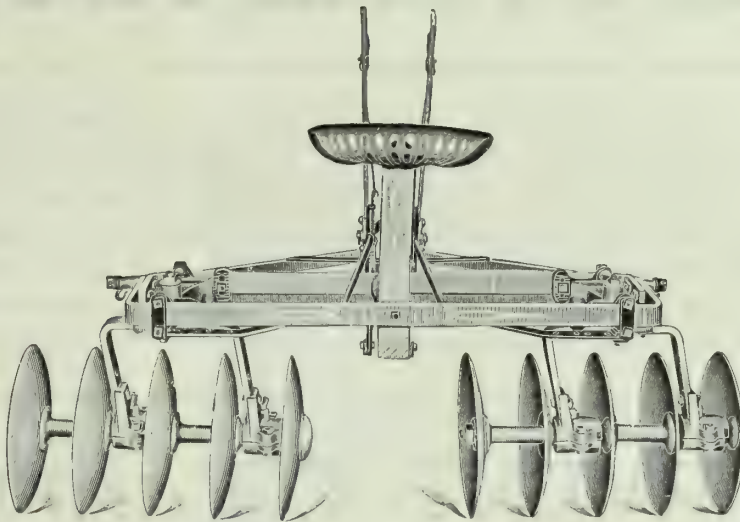
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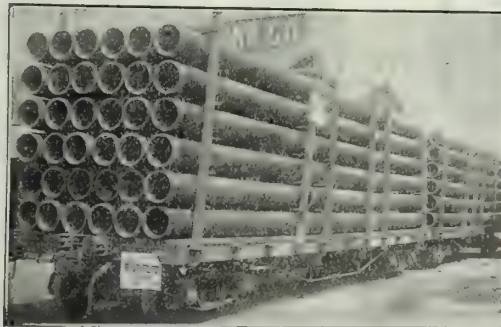
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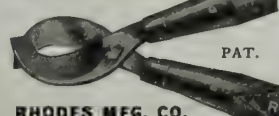
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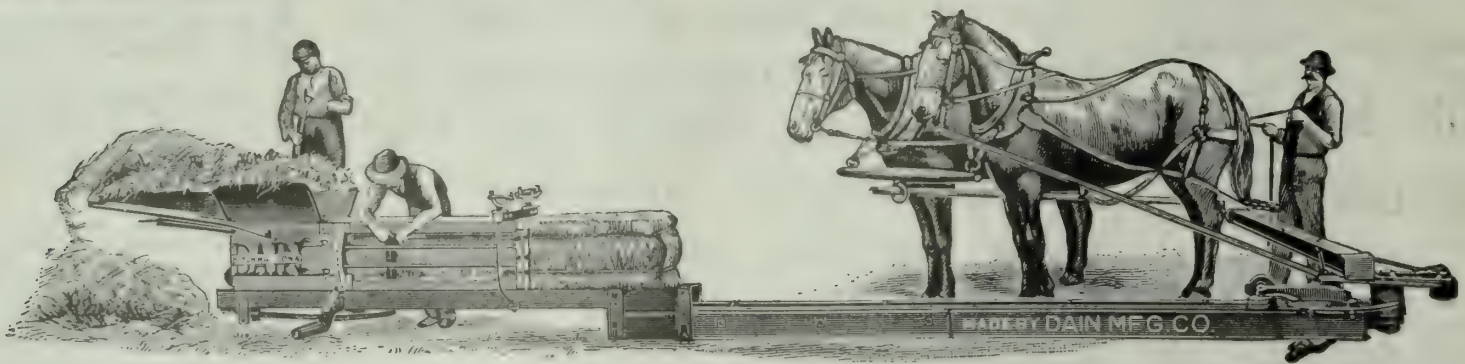
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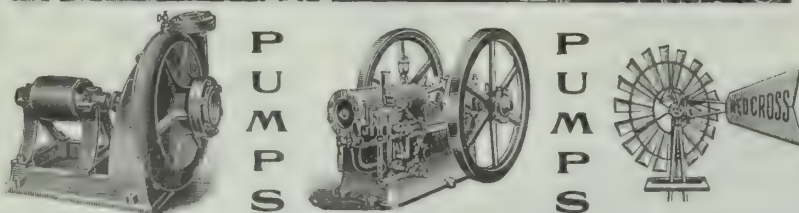


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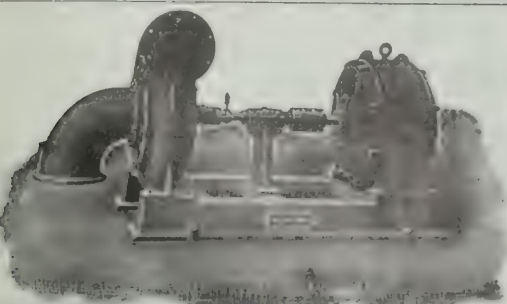
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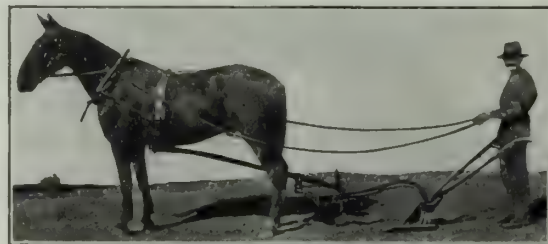
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Vol. LXXI. No. 9.

SAN FRANCISCO, SATURDAY, MARCH 3, 1906.

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On Other Sides of the World.

Just for a change this week we look away from the world's foreground—California—to the more remote regions where nature is also picturesque and where also people lead strenuous lives. California comes rather close to the two localities which are suggested by the pictures on this page—first, because they are both important mining regions in which Californians have figured quite prominently at times; second, because both are also agricultural regions in which Californians have also borne leading parts, because both have climates somewhat similar to our own, and have not been unwilling to learn from us some of the arts of fruit growing which have made us famous. Of course, the pictures only remotely suggest this, for they are particularly of the mining districts of their countries, but they are interesting because everywhere the glint of gold holds the gaze of the beholder and the stories of gold enrapture the ear. South Africa and Australia are therefore parts of the world which can claim interest in California for both special and general reasons.

The Transvaal in South Africa is advancing in agriculture, and well-known California experts are helping the movement. But the greatest thing in the Transvaal is Johannesburg, and that is, of course, in the mining line. The picture shows mines in the foreground and the city more



View of the Rand—Johannesburg in the Left Middle Ground.

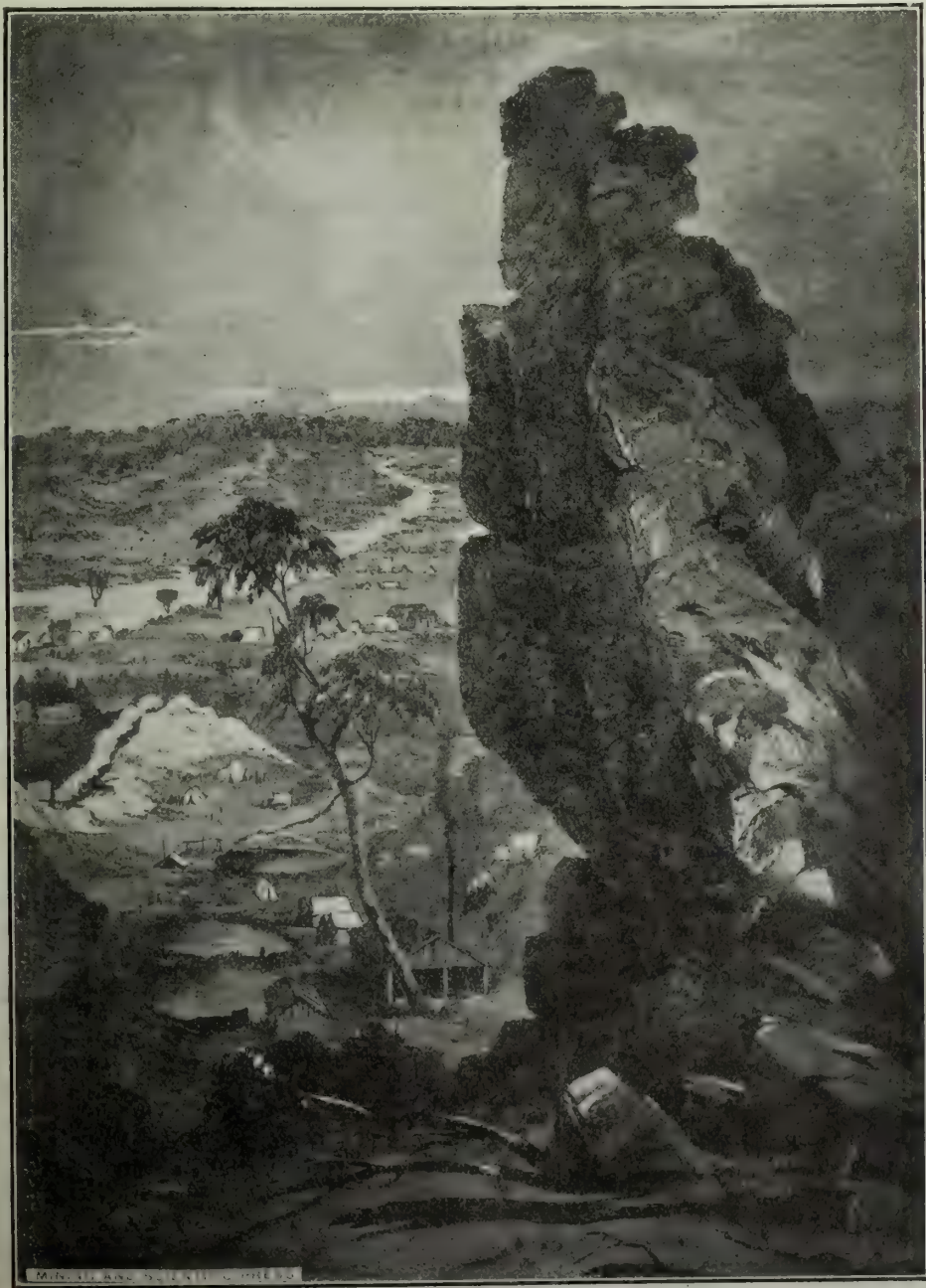
remotely. The town is like others of quick growth collecting people from all the world. Skyscrapers are joined onto common things in corrugated iron; commercial palaces descend into unpaved or ill-paved pathways. The fine shops are lavishly equipped with modern finery, and here and there exhibit lines of genuine beauty. But symmetry in height and plan is completely wanting; the streets are a law to themselves. Farther out live the dependents, Asiatic or European, Indian hawkers and traders, Portuguese market gardeners, Malay or Jewish cabmen, while more distant locations are being built for the Kaffirs. The talk and tone of the city are thoroughly cosmopolitan. Inscriptions in Yiddish or Chinese are to be seen in the windows of many of the smaller shops on the outskirts.

The city has many of the characteristics of the mining camp and is largely a community of bachelors, living well but cheerlessly in boarding houses. Men are as three to five of the residents, and, if you take the population over 16, two to one are males. The Postmaster-General says that not five per cent of his clerks were married men. The women are pretty, rather delicate, in air. They dress with refinement, and many have the spoiled, petted expression of carefully tended and much-admired beings. Living is abominably dear. Food prices are tolerable, but rent in itself is almost prohibitive of living on the European scale of salaries and wages, and greatly hinders marriage. Within the town \$40 a month have to be given for lodging barely sufficient to house an artisan family of five, and the living cost of such a family is said to be nearly \$1,500 a year. Wages and salaries partially rise to meet this expenditure. The skilled miner may make from \$200 to \$500 per month on his monthly contract. Skilled workmen earn from \$5 to \$6 per day.

Thrift does not prevail in unsettled societies. Money in Johannesburg goes as lightly as it comes, and wages and profits are easily diverted to the Kaffir market, for all classes join the gamble in its shares and speak its jargon. The tone is secular; the earth-spirit demands a man's all, and usually gets it. Most of the constituents of the strangely mixed community—black, white and yellow—are pleasure loving, and Sunday is a day of amusement, with cricket and tennis in full swing, and gaily dressed parties everywhere.

The mixture of races, the gaudy coloring in the shawls and head-dresses of the native women, the louping run of the bedizened Kaffir 'rickshaw bearers, the rattling of the mule teams and trolleys used in the service of the mines, and the exuberance of their black drivers, make up a picturesque jumble such as more settled and homogeneous city life does not know.

The larger picture on the page is in a picturesque part of New South Wales, with a bold rock standing as sentinel above a valley which has been famous for half a century in the mining line.



Bendigo, in Victoria, in the Early Days.

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The Week.

For a year which began with such dry anticipations and forebodings, this one is proving pretty wet. The continuations of rain noted in our last issue have not yet been wholly arrested, although there have been alternations of bright days, which have helped light soils to free themselves from surface moisture and the grain to a brighter color. Heavy soils are, however, waterlogged in places, and there is likely to be some injury thereby. During the week we have traversed several hundred miles of the lighter loams of the interior valley and enjoyed the stretches of beautiful verdure which give them a lawn-like aspect. Nothing could be more delightful or promising, but they have now ample moisture for two weeks or more, and generally fair weather for the later sowing, where it is feasible, and for other field work, would be widely appreciated. There is much alfalfa still to be sown. We saw much good starting from February sowing, and much more land in preparation. A stretch of good weather now will be of great value in many ways.

A case involving a very interesting agricultural question has cropped out in Sacramento. It seems that a land-owner is suing a hop-grower who has a five years' lease of the land because two years ago the tenant, in order to secure good supports for his wires, planted 600 live willow posts on the land in rectangles, 40x30 ft., and the posts took root and are now growing into trees. It is alleged that the trees are hardy and vigorous; that they send out shoots and branches very fast, and that if permitted to grow until 1909, the date of the termination of the lease, they will have taken the land, and that it will have been worth nothing for the cultivation of hops or anything else except willow trees, and that to grub the land and clear it would cost more than the land is worth. The plaintiffs pray for damages in the sum of \$5,000, and for a writ of injunction to compel the lessees to remove the willows from the land. This seems a rational proposition on the part of the land-owner. On the part of the tenant it is perhaps desirable to have posts which cannot blow over, at a low cost. But we cannot understand how a hop-grower can pay rent with the crop he can grow while the willow trees are rooting under his hops and extending branches over them. The answer of the defendant may be very interesting agriculturally.

Apparently the Supreme Court of the United

States has struck a hard blow at the fruit shipping industry by handing down a decision that the railway and not the shipper can choose the route along which the car of fruit shall go after reaching the eastern end of a distinctively overland line. The court holds that the initial carrier may agree upon joint through rates with one or several connecting carriers, who between each other might be regarded as competing roads. It also holds it undoubted that the common carrier need not contract to carry beyond its own lines, but may there deliver to the next succeeding carrier, and thus end its responsibility and charge its local rate for the transportation. If it agrees to transport beyond its own line it may do so by such lines as it chooses. As the carrier is not bound to make a through contract it can do so upon such terms as it may agree upon, at least so long as they are reasonable and do not otherwise violate the law. In this case the initial carrier guarantees the through rate, but only on condition that it has the routing. This may be all right as a statement of general principles. It is, however, not in accord with the special conditions which prevail in the shipping of fruit, and which were properly recognized in the opposite decision by the circuit judge for the southern district of California in support of the action by the Interstate Commerce Commission. Will not some one send the United States Supreme Court a box of oranges? They evidently need something sprightly to wake them up to present day conditions.

It is very proper for the Sonoma county superintendent of schools, Miss Minnie Coulter, to designate Luther Burbank's birthday, March 7, as 'Burbank Day,' to be observed as Arbor Day in Sonoma county. It is not usual to make memorial days while the recipient of the honor still lives and has, according to usual calculations, very many years still to live and in which to win new honors. It may, however, be strongly argued that it is better to honor a man while he can still sit up and take notice. In Mr. Burbank's case it is particularly appropriate that Sonoma county should do it. It is something in the way of amends for the disregard which most people of his neighborhood, who did not personally know him, displayed during the years of Mr. Burbank's struggles. He was largely a prophet without honor in his own county until others declared him great. The rising generation should be taught better, and Miss Coulter's plan is a good one.

The Cloverdale Citrus Fair last week was one of the best of a long series, and therefore justifies the enterprising work which the citizens undertake to secure its success. Both pomologically and socially the Cloverdale Citrus Fair is a credit to the community and an example worthy of emulation. It is continually winning interest to citrus planting, and though the commercial opportunities in that line in the district may be limited, the stimulation of planting for home delights and for the adornment of the country with this beautiful form of vegetation, is certainly most desirable. Socially, too, it is a great thing for a community to arouse itself and welcome many guests from afar. In this way even our smaller places may assume a cosmopolitan air and be in the world. We are glad the Cloverdale enterprises in this direction are so successful, and the community as a whole are certainly indebted to the enterprising group of citizens who lead in the effort.

Speaking of oranges there is a consular note from Seville, Spain, to the effect that exports from that port to European markets are dwindling. According to the *Revista Comercial*, a disease which has raged among the orangeries of the region is responsible for the retrogressive movement in the exportation of this fruit. In the season 1900-1901, 200,000 boxes of oranges were shipped from Seville by water route, every year thereafter showing a greater decrease, the exportation in the present year amounting to only 88,000 boxes. Small as this quantity appears, it would not have even reached this figure were it not for the recurrence to neighboring provinces where the trees continue in a sound state. We are sorry to hear that the old, historic orangeries are going to the bad. It is possible that something a little more strenuous than Spanish horticulture is needed to cope with such trouble. It would have been easy enough to allow the California citrus interest to drift out of sight; in fact it would be easy

enough for it to take that course now if our growers were not constantly watching and working. As fighters against trouble in fruit lines the California people have no superiors.

We recently alluded to California products in Germany and the little likelihood of their being excluded by agrarian agitation because Germany could not produce them. There is another reason why Germany is not likely to go too far in opposition to American products of all kinds. It seems that the United States purchased nearly \$15,000,000 more merchandise from the Empire last year than in 1904. The sum total of \$125,000,000 sales of German goods to the United States consists mainly of manufactured articles. On the other hand, the sales of American manufactured goods to Germany did not equal \$15,000,000 (not including lard and petroleum, which were \$26,000,000 additional.) The German merchants are not disposed to allow things to be done which will tend to lose to their trade so good a customer as Uncle Sam.

QUERIES AND REPLIES.

Not Rust, and Not Serious.

TO THE EDITOR: I send a sample of barley plants afflicted with some kind of a disease, pronounced by some of our farmers to be rust. Will you kindly examine the same thoroughly and give your opinion as to whether it is rust or merely a common disease of the leaf? After last year's experience in the line of rust, everybody seems to be alarmed, fearing a recurrence of the same disease, and the opinion of scientists would greatly relieve or confirm our fears. —GROWER, Madera.

The barley sample is not affected by rust, but shows on some of the leaves a disease which is incident to the excessive moisture now prevailing, but is not likely to be troublesome when we get more heat, and the grain starts in to more active growth. Rust usually appears later, when there is a combination of heat and moisture. Last year was a bad year for rust in parts of the State where this disease seldom gives any trouble, and that was due to the peculiar character of the season. It is not likely that it will occur again to such an extent, and there is nothing that you can do to prevent the occurrence of rust when conditions are right for it, as we hope they will not be for many years to come.

Broom and Egyptian Corn.

TO THE EDITOR: I would like to know if broom corn will grow and do well where Egyptian corn does well. Will it grow and mature during the same season as Egyptian? I would like full information as regards soil and climate, time of planting, method of curing ready for market, and culture of broom corn. —ENQUIRER, Burbank.

Broom corn is not of any account unless a good strong and long growth of the brush can be secured. This requires more moisture than is needed to make an ordinary seed or fodder crop of Egyptian corn. Short and scraggly broom corn is worth nothing, whereas an imperfect growth of Egyptian corn may have considerable value under certain circumstances. For this reason the broom corn product is made on low moist land, while Egyptian corn is carried out upon the plains where the high heat and drought are more intense. The growing season is practically the same. The method of curing and harvesting broom corn is quite a difficult operation and has to be largely learned by experience. It is too complicated to discuss in this connection.

Clover for Wet Land.

TO THE EDITOR: I have about 200 acres of land in a small valley in Shasta county. We have tried alfalfa, but water seems too near surface. Timothy and red top seem to do very well, but I have thought as our ground was not very rich perhaps if I could get a stand of clover, I might plow it under and improve the soil. Could you give me information in regard to Early Amber sugar cane and vetches or tares, as regard to culture, climate and soil required for successful cropping for winter feed? —FARMER, Shasta county.

For the situation which you describe, with water near the surface, there is probably no leguminous plant which would give you better results than the common Eastern red clover. It has a fibrous root and not a tap root like the alfalfa, and consequently can make surface growth without deep penetration and injury by coming in contact with water.

There are very few places where timothy does well in California and its success makes us prescribe Eastern red clover more confidently. We would certainly advise you to try it. The Early Amber cane and other sorghums would probably make you a good summer growth. They are sensitive to frost and have to be handled like Indian corn by late planting and summer growth. Vetches make a good winter growth in some parts of your county and it would be well for you to try them, sowing as soon as the ground becomes moist enough in the fall.

Grafting the English Walnut in the Nursery.

TO THE EDITOR: I am trying to grow the English walnut on the native walnut root, but I find it almost impossible to get it grafted or budded to a success. I have 600 or 700 seedlings that I grafted, a few of them last spring, and only about 25% grew; and in the summer I budded all that did not take in the graft, about six times, but got but a very few to take the bud. I find after the bud had been set about two weeks it would look fresh, but come to take off the string I found a whitish maggot working under the bud. Was that the cause of its not growing, and if so, how can I remedy that? Will dipping the bud in any kind of an insecticide kill the maggot life and allow the bud to adhere to the tree? If so, what will do good work?—AMATEUR, Los Angeles.

The best way to graft the English walnut on the native walnut root in the nursery is to cut off the top just below the surface of the ground, and put in a side graft carefully without splitting the stock, using a pretty long scion; a tip scion, if well matured, being preferred to one having a cut at the top. Budding the walnut by the ordinary method is very seldom successful, and we doubt whether you would have secured a very large percentage even if the worms did not appear. The best way to bud is to use the plate bud, taking a square of the bark from the English walnut, removing a square of similar size from the stock, planting the bud squarely in the new place and tying closely with the wax band, which will cover all the exposed edges. Even in budding in this way there will be a large percentage of failure, until one learns the knack of it by experience, and the right kind of grafting is more likely to succeed.

Actual Farm Experience as a Preparation for Agricultural Studies.

TO THE EDITOR: My son is in school preparing for a course in agriculture in the University. Would it be desirable for him to try to get a chance to spend his long vacation at one of the experiment stations of the University or to take agricultural subjects at the University summer school, to become better fitted for the agricultural course?—PARENT, San Francisco.

There are no arrangements at present for sending young men to these stations. There is no place for their accommodations, nor are the local foremen ready to accept such responsibilities. It would be better, if possible, for the young man to spend the summer on an actual farm devoted to fruit or stock. It matters not which, particularly, but it is very desirable that he should as soon as possible get to realize the actualities of farm life and experience. This will be a better preparation for work in the University than attending summer courses or doing anything else that is academic. The University instructors in agriculture can always do more with a pupil if he has had a certain amount of farm-life observation and experience. Again, it is desirable, also, from the point of view of developing the strength of a young man, that he change his environment entirely during vacations and get as far from the school method of doing and looking at things, as possible. If he has a natural taste for farming this will assure him of its possession; if he has a natural dislike for it, it may also be desirable to get some intimation of that.

Bermuda Grass.

TO THE EDITOR: Will you kindly give the nature, habits and relative value of Bermuda grass? Will it live on land which is subject to overflows of two months' duration? Does it furnish as much pasture and is it as good as herds-grass, rye grass or blue-grass? Is it true also that it will grow best of any known grass on very dry land?—ENQUIRER, Alameda county.

Bermuda grass will endure overflow for some time. It does not furnish as much pasturage as rye grass, but it will grow in heat and drought, which would de-

stroy both herds-grass and blue-grass—in fact, the last two grasses cannot be grown at all in California valleys without irrigation. Bermuda grass will probably grow on lands too dry for other grasses and will also endure an amount of alkali which will kill other grasses. The objection to Bermuda grass is that, if you get it established once in a place which suits it, you will probably never succeed in getting rid of it unless the climate should change enough to freeze the ground hard during the winter.

Almond Growing.

TO THE EDITOR: Will planting and growing an almond orchard be an expedient and profitable venture? Owing to my limited means, I would not want to enter into this proposition as an experiment. Should you consider the almond planting favorably, kindly advise me of the fact, giving full particulars about the species of tree or trees, which varieties are best, and the age of trees I might use to advantage.—PLANTER, Santa Clara valley.

One ought not to have any opinion about the success of almonds in a particular locality. It is not a question of opinion, it is a question of fact. Are there already almonds planted in the region which you speak of, and are they doing well at about the same elevation and on the same soil on which you expect to plant them? If this has not been demonstrated, it is a very hazardous experiment to undertake, because probably in nine places out of ten where almonds have been planted in California they have been unprofitable. You should not take anything older than a yearling almond tree, and the variety to plant depends upon the locality also. Here, again, you will have to find out which have done well in the place and plant them. Your question is one of the most difficult that you could ask. We can only give you what we trust you may find to be a suggestive answer.

Growing Esparto Grass.

TO THE EDITOR: You answered a question some weeks ago about growing Esparto grass for the use of the fiber it contains. We have obtained from France a quantity of seed for experimental purposes. We believe you have experimented with this and we would be grateful if you can give us some information which will guide us in planting and rearing this plant.—EXPERIMENTER, San Francisco.

In order to get a start with Esparto grass in an experimental way, sow seed in rather shallow drills, just as you would lettuce seed, for instance, in the garden, making the rows two feet apart, so that you can cultivate a little between and keep track of the plants. The grass soon makes a large clump, and by planting at this distance will soon cover the ground. You can then make a larger area, either by saving the seeds or dividing the roots, or by both methods, if the growth of the plant suits you. It is not at all difficult to raise and no doubt you will succeed very well, even in the first experiment, if the seed is good.

Lime as Fungicide or Conveyer.

TO THE EDITOR: I would like to be informed if the use of air-slaked lime, mixed with any of the fungicides in the dust form, is a fungicide also, or is its use only as a conveyer and a preventive of the packing of sulphur? Some of the manufacturers of machines for the application of sulphur to vines and poisons for insects strongly urge the mixing of air-slaked lime with the fungicides and insecticides in their machines and I am desirous of knowing the virtues of lime.—ENQUIRER, Fresno county.

Air-slaked lime has a certain fungicidal power, but the longer it is in contact with the air the more thoroughly it becomes carbonated and inert. For this reason, although the lime does have some power to kill fungus germs, it is chiefly as a conveyer that it is employed in connection with the application of sulphur. The sulphur vapor set free by the action of the sun heat on the sulphur which falls upon the foliage is really the active fungicidal agency, and the influence of the lime toward the same end is relatively very small.

Burbanks New Timber Walnut.

TO THE EDITOR: Can you tell me where I can procure the Burbank rapid growing walnut—either trees, nuts or grafting wood?—READER, Contra Costa county.

No; we do not know. Mr. Burbank does not deal in his new varieties at retail. Whenever a seedsman or nurseryman gets one of them he advertises the fact—if he is wise.

Grapes for Cold Storage.

TO THE EDITOR: Please tell me through your columns what kind of table grapes will be best for cold storage? Does the Catawba do well on the warm foothills of Santa Cruz county?—READER.

We do not know about grapes for cold storage. Who can answer? The Catawba will do well in certain situations on the hills you mention, but you will have to eat up most of those you grow. The California markets take very few of the Eastern grape varieties.

WEATHER AND CROPS.

Report of the U. S. Weather Service for Week Ending February 26, 1906.

ALEXANDER MCADIE, Forecast Official and Section Director.

Sacramento Valley.

Light rain fell nearly every day and the temperature was slightly lower than during the preceding week. Farm work was considerably retarded by the rain and crops made rather slow growth, but the cooler weather was beneficial in checking too rapid advance of deciduous fruits. Grain and grass are in good condition, but would be improved by warm weather and sunshine. The outlook continues good for excellent crops of grain and hay. Pasturage is plentiful in all sections and stock are doing well. Almonds, peaches, plums and strawberries are in bloom and give promise of good crops. It is probable that early fruits in blossom were slightly injured by the continuous rains. Strawberries will be very early if favorable weather prevails. Vineyards are in good condition.

Coast and Bay Sections.

The weather continued warm and cloudy most of the week, with frequent showers in all sections. Crop growth was rather slow and farm work was somewhat retarded by the rain, but no serious damage resulted. Grain is in good condition and making fair progress, but would be improved by warmer, clear weather. Prospects are good for at least average crops of wheat, barley and oats. The hills are green with new growth and green feed is plentiful. Stock are in fair condition and improving. Apricots, plums and some other early varieties of deciduous fruits are in bloom and the outlook is good for average crops. Vineyards are looking well.

San Joaquin Valley.

Cloudy, warm weather, with generous showers, prevailed during the past week, causing a rapid growth of grass and grain and the development of fruit buds. Green feed is plentiful and stock are healthy and in good condition. Grain is in excellent condition and a good crop is anticipated. Almonds and apricots are in full bloom and other varieties of fruit buds are swelling. Alfalfa is making rapid growth. Work in the orchards and fields is retarded owing to the wet condition of the ground. Heavy snow fell in the mountains and a good supply of water for summer irrigation seems assured.

Southern California.

Warm and clear weather prevailed most of the week, but with slight showers in the coast districts and heavy rain in the foothills and mountains Wednesday and Thursday. As much grain is grown in the foothills the heavy rain was especially beneficial to that section, and the showers improved orchards and growing crops in the valleys. Grain and grass continue in excellent condition and are making rapid growth. The yield of wheat, oats and barley will probably be the largest for several years. Green feed is abundant and stock are in prime condition. The rain retarded orange picking to some extent, but carloads of oranges, lemons and grape fruit are being shipped daily. Deciduous fruits are in good condition.

EUREKA SUMMARY.—Warm, rainy weather throughout the week caused some fruit trees to bloom. Grain is in excellent condition and growing rapidly. Grass is also making satisfactory growth. Present prospects are good for abundant crops.

LOS ANGELES SUMMARY.—All crops are in good condition and the outlook was never better. Range grass is growing rapidly. The hay crop is assured with a few later showers. Orange picking has been resumed since the rain. Deciduous and citrus trees are in general bloom.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, February 28, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.....	Total Seasonal Rainfall to Date.....	Total Seasonal Rainfall to Same Date Last Year.....	Average Seasonal Rainfall to Date.....	Maximum Temperature for the week.....	Minimum Temperature for the week.....
Eureka.....	2.92	24.04	23.17	32.16	58	38
Red Bluff.....	2.22	16.33	25.24	18.87	60	40
Sacramento.....	.40	11.40	14.60	13.91	82	40
San Francisco.....	1.01	11.17	16.92	16.54	66	46
San Jose.....	.97	8.68	12.44	.....	66	42
Fresno.....	.14	5.45	8.02	6.14	68	44
Independence.....	.03	3.70	1.70	2.87	72	30
San Luis Obispo.....	1.36	12.17	16.81	15.10	72	40
Los Angeles.....	.47	10.57	12.21	10.54	70	46
San Diego.....	.21	8.10	10.32	7.00	64	48
Yuma.....	.00	5.06	5.25	2.54	84	44

THE POULTRY YARD.

Poultry Raising in California.

By MRS. N. F. MORSE, of Fullerton, at the University Farmers' Institute.

About the first remark in regard to poultry made by every visitor we have had from the East has been, "I hear poultry does not do very well in California. What is the reason?" Personally, I think this the ideal country for poultry. It is also the ideal country for vermin, and just so long as people coming here persist in housing poultry as they do in the Eastern and Central States, just that long will they be obliged to figure on a large percentage of loss from vermin and disease. In the Eastern States it is perfectly correct for fowls to roost indoors during the severe part of the winter, but how ridiculous it seems to house fowls in California at any season of the year. Let them roost out of doors with the sky for a cover. Nature will provide them with an extra heavy coat of feathers, and there will be little or no vermin to prey on them, taking their strength by night. On the other hand, if housed, they will become too warm, their coat becomes thin, making them subject to colds and roup, they will be obliged to breathe impure air, and to give more or less of their vitality to vermin when it would otherwise be given to the production of eggs. Nature, you know, has also provided us with a very good thatch, but if we keep it covered much of the time, she concludes we do not need it all, and removes a part of it. In the winter if you wish to house your poultry, leave the entire western side of the shed open, with no other opening, not even a quarter-inch crack, for drafts are great mischief makers. Of course it would not be wise to make any change at this time if your fowls are roosting indoors, but during the warm summer months they may be taught to roost out of doors.

VERMIN A RULING FACTOR.—The question of vermin may seem to some a matter of small importance. In my opinion it is of the greatest importance, and I believe it is responsible for the idea among Easterners that poultry is not profitable here. Vermin not only interferes with the egg production of the hen, but lowers the vitality generally, making her subject to disease. After a varied experience of several years with lice killers, I have obtained the best results from the use of crude carbolic acid. It may be obtained at any drug store for a dollar a gallon, I think. I use it full strength, in a hand spray, and a quart will spray very large roosting places and a number of nests. I spray the roosts, supports and the ground under the roosts thoroughly. If you have poultry houses, the sides should also be sprayed. If used on out-door roosts, it may be used just before roosting time, but an enclosed coop should be sprayed in the morning. This crude carbolic acid will kill every mite that it touches, also the tiny eggs or nits of the mites; the fumes will penetrate the plumage of the fowls, causing the lice to drop, and if the ground has previously been sprayed, that is of course the finish of the lice. It is also an excellent disinfectant, thus serving a double purpose. It should be used sparingly about little chicks, as the fumes are too strong for them; also about fowls that you intend to market soon, as the odor is so penetrating it is noticeable in the flesh. By spraying with this acid every week for three weeks, spring and fall, I am sure you will be delighted with the results.

Avoid, if possible, the use of straw in making nests. Its tubular form offers an excellent breeding place for mites. Pieces of sod, turned upside down in a box, make about the best nests. Of course the roosting place must be kept clean.

INCUBATORS.—You have all probably heard and read so much about the use of incubators, I fear that I can tell you nothing that is new. Very clear instructions are furnished with incubators of the best make, so that even inexperienced persons can operate them successfully. In the first place, select eggs of medium size from vigorous healthy stock. A weakly germinated egg will not hatch as well in an incubator as under the hen, for the reason that the magnetism and peculiar acid perspiration of the hen cannot be duplicated.

Incubators are often placed in damp cellars because of the moisture. I doubt if this is a good plan. It is absolutely necessary that the embryos have pure air, and everyone knows that the air is seldom pure where there is a constant dampness. Give the eggs all the pure air possible without a draft. I believe that the lack of oxygen is the chief cause of many poor hatches and weak chicks.

For profitable broilers hatches may be started in February. You will get the highest percentage of chickens from eggs hatched in April. In May, however, unless the weather is unusually cool, eggs do not hatch so well, nor are the chicks so strong.

Follow the directions carefully in regard to turning the eggs, ventilating, the use of moisture, etc., and intersperse with a little common sense. For instance, at the second testing of the eggs, if the air chamber has enlarged to a third, or nearly so, this indicates that it is drying down too fast from too

much ventilation. Partly close the ventilator and supply a little moisture. If it is necessary it does no harm to sprinkle the eggs thoroughly with warm water the nineteenth and twentieth days. In rainy weather, the air chamber may not be sufficiently large by the nineteenth day to enable the chick to turn and pip the shell. In that case, the ventilator should be kept wide open and no moisture supplied until hatching time. You may even be obliged to use artificial heat in drying the atmosphere of the room. Never neglect the turning of the eggs as directed. If you do, the result will be a number of cripples.

Duck and turkey eggs require about the same treatment, except that the length of incubation is 26 and 28 days, and much more moisture is required, especially for duck eggs. When duck eggs are just beginning to pip, it is a good plan to float them a few seconds in a pan of water at a temperature of 103°, replacing them quickly in the incubator. Ducklings may be helped from the shell without injury to them, but not so with chicks and poults.

The temperature at hatching should never exceed 104°. If a temperature of 106° or higher is maintained at hatching time, there will be that mysterious, baffling bowel trouble to contend with. Let me explain. Just before the chick issues from the shell, the yolk of the egg is drawn up into the cavity of the chick, and this is supposed to sustain it for the first 48 hours. A high temperature will make the outside of the yolk about like thin rubber, in fact, partly cooks it. It is, of course, indigestible in that state, and, after it is drawn into the chick, it simply lies there until blood poisoning sets in, as evidenced by the early bowel trouble, which is, of course, incurable.

THE CHICKS.—The instruction with most incubators is "leave the incubator closed until the hatch is completed." If a large incubator is used, however, the chicks should be removed when the hatch is about half completed, as the fluffy little fellows absorb the moisture about as fast as you can put it in, thus depriving those hatching and to be hatched. When the chicks are removed from the incubator, they should be placed, without chilling, in a brooder previously warmed to 100°. After 36 hours they may be given a little warm water to drink and some fine grit to pick at. The litter and chaff in the brooder should be about two inches deep, and a few handfuls of tiny grains thrown into it. They will scratch for them. Do not expect to succeed with any poultry, especially the Leghorns, unless you give them plenty of exercise. At night give them a feed of bran and sweet milk, mixed to a dry crumb. Give them enough to fill their crops full and remove what is left. Do not give them corn in any form until they are nearly grown, unless you wish to fatten for market.

GRANDMOTHER'S WAY.—We hear a lot of talk at present about the mistaken methods of our grandmothers in the poultry business. The fact remains, however, that they had not the fearful, discouraging mortality among chicks that we hear of today. They raised all the chickens they cared to raise, and no particular fuss was made about it. They fed soft foods, allowing the chicks to rustle for the hard grains, seeds, green stuff, grit, etc.

We are told now that the chick was given a gizzard with a very tough lining for the accommodation of hard grains, and that hard grains they must have. Did you ever examine the gizzard of a tiny chick under three weeks of age? The first opportunity you have, please do so. You will find the lining as thin as tissue paper, and much more easily torn. The hard grain ration, fed in hoppers, is the popular method of feeding at present. This method is easy, and an indifferent person may have fair success with it, while careful management is necessary in feeding the soft foods. The difference in the chicks will more than repay you for the extra trouble. It might be well to remember in connection with this, that the market is pretty well stocked with prepared foods, mostly dry grains, that must be disposed of, and it would be quite impossible to place wet foods on the market. I have used the soft foods with the best of results.

Last summer during the hottest weather, a White Leghorn hen came from a stolen nest with seven chicks. At the same time a brood of turkeys were hatched. I fed these two broods the same food exactly—bran and sweet milk mixed to a dry crumb, with an occasional feed of curd and black pepper, plenty of grit, charcoal and fresh water, with occasionally a lime water in the drinking water. They ranged on alfalfa, and when a month old were taught to eat a little rolled barley at night. Chicks could not possibly have thrived better, and all of course were raised to maturity.

To those of you who contemplate the incubation of chicks I would say, think it over seriously, study the fowls thoroughly, and do not be the means of bringing a lot of little chickens into the world simply because you "are the biggest," but first be prepared to care for them as they should be cared for. And to those who may be thinking of incubating turkey eggs, I would say, don't. You may have excellent hatches, but unless you are prepared to put the poults with hens, you will lose them through improper brooding. It is quite difficult to regulate the heat properly for brooding, and when once stunted they fail to mature

well. Show me a brood of turkeys, and I can tell you whether they were hatched in an incubator or not.

When the chicks are about two months old, the Leghorn varieties will be fairly well feathered and the heat may be gradually taken from them. The heavier breeds that are slow to feather should have the heat a little longer. When ready to be taught to roost they may be placed, by hand, on the roost in a large enclosed coop for a few nights. They must be placed closely side by side, for if they cannot feel their neighbor, they will very promptly jump down and huddle in a corner. They will try your patience severely for a few evenings, but when all other schemes and plans have failed, I think you will find this the most satisfactory method of breaking them. After they have thoroughly learned the science of roosting, they may be driven, some warm summer's evening, to roost out of doors with the older fowls.

FEEDING.—Those who breed for utility will be interested in knowing the balanced ration that is said to produce the most eggs and keep the fowl in healthy condition. The hen will balance her own ration if given a fairly large range and corn on the cob, or wheat. The latter is said to be productive of more eggs, but corn furnishes a very good ration for the active varieties, such as the Leghorns, games, etc.

Some poultrymen who have but a limited range for their fowls, keep boxes of corn, oats and meat scraps before them at all times. Often hens thus fed do quite as well as those fed in a scientific manner. The truly balanced ration for fowls that must be penned consists of equal parts of cracked corn, wheat and oats, with 10% beef scraps, and 10 to 25% finely cut green food. I would certainly prefer the milk to the beef scrap, and if the latter is used it would be advisable to scald it. Much mischief may be caused by overfeeding on beef scrap and ground bone. I believe if the animal food was left out of the concentrated mash foods now on the market and the foods mixed with sweet milk instead of water, there would be no disturbance of the digestive organs of the fowl, as is often the case now. In order to lay well a fowl must have grain and animal foods. Do not expect her to perform miracles.

GRIT.—We are told that the hen must have grit to grind her food. She must have grit to furnish the mineral matter for the bones, eggs and feathers. In a healthy fowl, one whose digestive organs are in good order, the grit will be entirely consumed, or digested, or dissolved, by the lactic acid of the gizzard. The muscular action of the gizzard and the lactic acid have more to do with the digestion of the grains than the grit. You may take two lots of fowls and place them in two separate pens. To one lot all the grit given may be ground as fine as flour. The other lot may be furnished grit in the ordinary form. At the end of a year the first lot will be found in as good condition, or better, than the second.

That this lactic acid of the gizzard is unusually strong is evidenced by the fact that in very serious and stubborn cases of stomach trouble of the human family, the physician may send you to the drug store for ground gizzard linings, but you don't know it by that name.

A word of caution in regard to feeding growing turkeys. Do not overfeed! More deaths are caused by overfeeding and vermin, than any other thing. The first feed should be given them 48 hours after hatching, and should consist of dry curd, a little black pepper, and finely crushed egg shell mixed. Feed bran and milk three times a day the first few days, then twice a day, allowing the poults to run with the hen. Feed only what they will eat up clean. It will not be necessary to feed them onions, eggs, bread-crumbs, etc. They, and the hen also, should be dusted with good insect powder every week for three or four weeks.

DISEASES.—An entire book might well be written about poultry diseases, their cure, etc. Use all your intelligence to prevent disease, but should a serious illness affect a few fowls, do not spend three dollars' worth of time and medicine on a one dollar bird. While you are putting around with one, the infection is liable to spread, and you will soon have to start a hospital. Of course, in case of slight accident, the fowl should be attended to, or if a valuable bird becomes crop-bound, for instance, the crop may be opened, the obstruction removed with tweezers, bread and milk substituted, and the crop and skin sewed up with white silk thread. This operation only requires about 20 minutes of one person's time, and the bird will recover without further attention, other than the feeding of soft food for a few days.

THE FIELD.

Drainage of Swamp Lands.

The drainage of swamp lands by means of drilled wells has received the attention of Robert E. Horton, of the United States Geological Survey. The manner in which these wells should be constructed is set forth in a paper included in Water-Supply and Irrigation Paper No. 145, the annual publication entitled "Contributions to the Hydrology of the Eastern United States."

In the drift-covered areas of the northern United

States are numerous basin-shaped depressions or 'kettle holes' without natural outlets, many of which are occupied by swamps or ponds. If drained, the rich, mucky soil which covers the bottom of the depression would often make the finest kind of land for a truck garden and, on the other hand, drainage of the spot would break up the carnivals of malaria-laden mosquitoes domiciled there. Ordinary surface drainage is often inadequate for the removal of these unsightly, unhealthy swamps, but many of them have been successfully drained in deep-drilled wells.

To drill such wells an ordinary well-driller's outfit is necessary. The average cost of a 3-in. well, including casing, should not exceed \$1 per foot.

The mouth of the well should be in an excavation below the bottom of the pond. If the well is provided with a bell mouth, its capacity is nearly doubled. The inflow of water is reduced if a screen is placed over the mouth of the well to prevent the entrance of sticks. A large brick catch basin with ample screen-covered openings should be built around the mouth, so that the full capacity of the well may be utilized.

The effectiveness of these wells depends (1) upon the penetration of an open fissure or a porous stratum of sand and gravel and (2) upon the underground waters rising only to a height below the bottom of the pond. If these conditions are right the water enters the well mouth and passes down the pipe and out into the porous beds at the bottom.

All who may be interested in this novel method of draining swamp lands may obtain from the Director of the United States Geological Survey at Washington, D. C., copies of the paper which contains Mr. Horton's recommendations.

A Few Notes on Stock Carrots.

TO THE EDITOR: Having conducted experiments with quite a number of varieties of carrots for stock feeding for several years past, I here give a few of the most interesting results.

The two varieties of best merit are Mastodon and Lemon-colored Stump-rooted, both varieties of rather recent introduction. The Mastodon is a white carrot, similar to that of Half-long White, but is heavier in the shoulder and shorter, and is more easily pulled up than even the stump-rooted varieties, as it has a good top. It is of extra good quality and a good keeper.

The Lemon-colored Stump-rooted is also very desirable and when better known will become one of the standard varieties. At any rate, it will if seed of the true type only is placed on the market. I regret to say that the second lot of seed of the above variety I purchased was of such poor quality that it was a miserable excuse for any reliable seedsman to send out. The above carrot is what its name implies, and is of first quality and keeps extra late in the spring, and it is also a heavy cropper. If one buys their carrot seed, according to my experience they never can be right sure of what they have until the crop is harvested. As it is not at all difficult to grow first class carrot seed, if one will but observe a few simple points, one can be more sure of his stock of seed if he grows it himself. The most important point of all is to not try to overdo the matter by selecting the very finest specimens available. The old story of "occasionally getting an amazingly fine pig from an old slab-sided sow" is very applicable here in the selection of carrots for seed. Too often have these extra fine specimens proved themselves cross-bred, and in one case all evidence went to show that one of these extras was nothing less than a hybrid with a wild carrot, the progeny clearly indicating half wild stock. When they are simply crossed with other varieties, the progeny are of all shapes and colors.

The proper way in selecting stock for seed is to leave well enough alone, and simply take good average specimens that show the normal characters of the variety; plant on just moderate soil, and the resulting seed will be of a very good standard of the variety. Unless you are a practical plant breeder, and wish to develop a new variety, the less you undertake to do with over-developed freaks the better the quality of seed you will grow. It is, nevertheless, a fact that now and then you will find one of these very nice specimens that will reproduce itself true to type, but where you find one that will there are dozens of them that will not do so.

For the benefit of people desirous of testing either of the two varieties of carrot mentioned, allow me to say that according to Bulletin No. 21, Bureau of Plant Industry of the United States Department of Agriculture, only Maule, of Philadelphia, and Vaughn, of Chicago, listed Lemon-colored Stump-rooted carrot, and only about a dozen seedsmen listed Mastodon carrot, Vaughn, of Chicago, and Cox, of San Francisco, being among the number listing it for sale. I recommend all who grow carrots for stock to give these varieties a trial, and if they get a good strain of the seed they will recognize the varieties as possessed of fine merit and worthy of superseding some of the older varieties.

Everyone who keeps a horse, and having land at all suitable for carrot growing, ought to grow a supply of carrots for his horses, as nothing so promotes

the health, condition and strength of a horse as a moderate supply of carrots. Their system requires something of the sort, and with them they assimilate their hay and grain so much better that at a less cost for feed they will do more work. I have even seen them get fat while doing pretty hard work.

ALBERT F. ETTER.

Ettersburg, Humboldt Co., Cal., Feb. 12.

Is It Canada Thistle?

TO THE EDITOR: In your last issue of February 17 I see an answer to 'Dairyman, Lathrop,' stating that you never saw the Canada thistle in California. Humboldt county is in California, a little out of the way, perhaps, as there is no overland railroad there, but it's the first on our list when it comes to Canada thistles. If anyone will go there in the fall when a wind is blowing he will think he is in a snowstorm, such an amount of seed is blown through the air. The thistle seed, I understand, was shipped in direct from Canada something like 20 or 25 years ago, by a big lumber firm, who imported a lot of oats for feed, and the plant has spread all over the county since then. I lived there a good many years and will give what information I have about eradicating the Canada thistle. Do not pull up thistle, but cut it when in full bloom; let it wilt for one-half to one day, and feed to dairy stock. "It is superior to red clover in milk producing qualities and in giving flavor to butter," says an old dairyman who used it. Keep land seeded to grass or alfalfa, pasture it all you can, and in a few years the thistle will make itself scarce. Pulling up thistles will only cause them to spread, unless persisted in. Constant cultivation will also kill it out.

If a small piece or plot only is affected, pile old hay or straw about a foot deep all over such place, which will usually kill it out in one season. If any comes through do not pull up, just bend it over, cover more straw on it, when all will be killed. A few plants may also be killed by digging a hole a foot deep, put in a few handfuls of salt and a little coal oil, cover up at once, when it will kill single plants.

Cattle seem to like the Canada thistle when it is a little wilted after cutting with a mower, but they will not touch it in a green state. A READER.

Healdsburg.

We still wish to see what you call the Canada thistle. The above account comes nearer to satisfying us than any we have seen, but we have seen so many plants in this State which were not that we still want specimens for a demonstration.

Growing Chile Peppers for Market.

J. B. Neff, of Anaheim, who has had much experience and observation on the growing and marketing the chile pepper crop which centers in his district of Orange county, has the following interesting points in the California *Cultivator*:

There are several varieties of chile peppers, but only two are grown commercially in California. One of these, the bright red, called 'The Long Red,' having pods from 6 to 10 in. long and pointed, is the best known, while the very dark, cone-shaped chile pepper, usually known as the Mexican chile, is not so commonly grown.

Chiles are most successfully grown in rich, sandy loam which does not form a crust after water has been run over it, but it is not best to grow chiles more than two years in succession even on the best of soils without fertilizing or plowing in a cover crop. The chile roots are shallow feeders and draw heavily on the plant food near the surface.

Great care should be taken in selecting seed so as to have as few non-producing plants as possible, as well as to have the most profitable plants.

The seed should be taken from that part of the field producing the best and earliest ripening plants.

The best location for seed beds is on sandy ground, as it warms earlier in the spring and there is less liability of 'damping off' of the plants if there should be an excess of moisture. The seed may be sown in the last week in February in beds that can be protected from frost, as the chile plant is very sensitive to cold. Seed enough may be put on so as to have about four seeds to the square inch, rake in lightly and then cover with about $\frac{1}{2}$ in. of damp sand, which should be kept damp until the plants are well up. After that it is best to put on enough water only to keep the plants in a thrifty condition until they are about 2½ in. high, when they may be transplanted to the field.

If 'damping off' should begin to show in the seed bed, all the infected plants, as well as those within an inch of them, should be carefully taken out with a trowel and thrown away. It is best to select a new location for the seed bed each year.

Plow the ground deeply where the chiles are to be planted and harrow down well. Then have a common sled marker, which will mark three rows at a time 4½ ft. apart. Plant 3 ft. apart in the rows, making the earth firm around the young plants. If the ground

is not thoroughly wet it is best to irrigate before planting.

Planting should be done as soon as the danger of frost is past.

The cultivation should be with a view to make a ridge of earth, having the chile plants in the center. This makes a convenient furrow for irrigation and keeps the water from standing around the plants, as standing water injures them.

Chiles, being shallow rooted, require water at frequent intervals after they begin to bloom, and it is often necessary to run a small stream down the rows every 10 days. Some kind of cultivating should be done after each irrigation until the plants are too large to allow a cultivator to pass between the rows. Chiles grow best when there are clear, warm days and warm nights.

If the chiles are intended for drying, the picking is not done until the chile is all red—any green spots will be white when dried. If the chiles are wanted for canning, they are picked while of a dark-green color. The usual manner of drying is by running a twine through the stems and hanging in the air on a scaffold, but in damp districts the chiles have to be dried in specially made evaporators.

As much as 2,400 lb. of chiles have been grown per acre, but 1,000 lb. per acre is nearer the average crop. It will take about 7 lb. of red chiles to make 1 lb. of the dried product.

The consumption of dried chiles seems to be on the increase and there is an increasing demand for green chiles from the canners. Chiles can be grown for about 7½c. per dried pound on good land where water is not expensive.

HORTICULTURE.

Experiments With the Walnut Blight.

By MR. E. G. WARE, of Garden Grove, at the University Farmers' Institute at Fullerton.

We have been working on walnut bacteria for the past four years. In 1902 we commenced spraying with Bordeaux mixture, according to instructions from Prof. Pierce. We sprayed just before the trees put out; also after they were in full leaf, and the nuts well set. The result was 4½ lb. of nuts per tree as the benefit of spray.

In 1903 we sprayed once just before the trees put out, and got five pounds of nuts per tree as the benefit of the spray.

In 1904 we used 125 tons of slacker tailings, refuse lime from the beet factory, in connection with spray.

The plots that we both limed and sprayed we obtained an average of 18.9 lb. of nuts per tree as the result of lime and spray. We did not spray any of the plots but once.

In 1905 we used some 400 tons of pressed cake refuse lime from the beet factory; also purchased two carloads of cow manure. These we used in connection with spray in our experiments of this year. I will give the result on one 20-acre plot in detail. The trees on this plot run as near alike as to size and condition as any 20 acres that could be selected. This piece was divided into four plots of five acres each; one was left untreated, one was limed only, one was limed and sprayed once and the other was limed and sprayed, and in addition we put on two carloads of cow manure, 46 tons.

The five acres untreated produced 49½ lb. of nuts per tree. The five acres limed only produced 54½ lb. of nuts per tree, showing the benefit of lime to be five pounds of nuts per tree. The five acres limed, sprayed and manured produced 62½ lb. of nuts per tree, showing the benefit of lime, spray and manure in this case to be 13 lb. of nuts per tree. The five acres limed and sprayed only produced 63½ lb. of nuts per tree, showing in this case the benefit of lime and spray only to be 14 lb. of nuts per tree. Next year we will probably get the benefit of the manure, as a fertilizer is not supposed to act as an agent to help control walnut blight.

The refuse lime from the beet factory is called slacker tailings and press cake. Slacker tailings is the unslacked lime thrown out of the sieves and not used, and is mostly lime carbonate. Press cake is the unslacked portion of the lime used by the factory and carries, in addition to lime carbonate, some 41 lb. of phosphoric acid, five pounds of nitrogen and one pound of potash to the ton. The press cake is undoubtedly the most soluble and will give quickest results. We put this refuse lime on the orchard at the rate of five tons per acre. It costs at the factory 50c. per ton, 35c. to load it on the cars, 61c. freight to Anaheim and 75c. per ton to haul it from the depot and spread it on the orchard at a distance of three miles.

The spray we used was Bordeaux mixture, 10 lb. bluestone, 10 lb. quicklime to 100 gal. The past year we have been putting it on at the rate of 15 gal. per tree on good sized trees at a cost of 21c. per tree for material and labor, using a power sprayer and spraying the trees but once just before the leaves put out.

Asked if he was going to spray again this year he

answered: "Yes. We find it profitable. In 1905 we spent \$1,200 and found it profitable." He said further that there was no question but what they were going to get rid of the disease, that while it was going to be a hard matter to come up to the 90% mark required, that they had good reason to hope for a fair degree of success.

In experimenting he said they had young trees that would not take the disease, but that further tests would be made when the trees came into bearing.

In speaking of the nut he stated that the shape of the nut had much to do with the amount of meat it contained. The ordinary soft shell this year has carried seven ounces of meat to the pound and hard shells six ounces to the pound. The long nuts carry eight ounces to the pound or one ounce more than the chunky short nuts. These conclusions are the result of experiments this year.

Apples in Southern California.

By MR. FREDERICK MASKEW at the meeting of the Southern California Apple Growers' Association.

This being the season for the planting of trees, a few brief remarks pertaining to why more apple trees should be planted in this vicinity may be of value, even if only for the purpose of promoting discussion. My grounds for advocating the extension of the apple industry in Los Angeles county may be summed up as follows:

- 1st. The local demand for the fruit.
- 2d. The adaptability of certain desirable varieties to our local condition of soil and climate.
- 3d. The better understanding and practice by the growers of the fundamental principles underlying successful apple orcharding. The extent of the local demand for apples is emphasized by the amount of this fruit imported annually into the city of Los Angeles, and its presence in our markets at all times is patent to any one who cares to visit the fruit stores and look at the apples offered for sale. During the year 1904, approximately 460,000 boxes of apples were imported into the city of Los Angeles for distribution and sale in the immediate vicinity, and while I have not the statistics at hand, I feel confident that the amount brought in during the year 1905 was equal if not greater than this.

That this imported fruit finds ready sale at prices that amply remunerate those who handle it at this end of the line, in addition to freight charges that of themselves often represent a fair basis of profit to the local growers of apples, still further emphasizes this all-important question of local demand. The people are coming here and settling down for good a hundred-fold faster than the apple trees are being planted out, and they are bringing with them an appetite for good apples that must be satisfied either by yourselves or by the importers. Another important factor in this inducement to plant more apple trees and incidentally speaking to take better care of those already planted, is the proximity of the market that attempts to supply this ever-increasing demand in the local market for apples. The orchards of most of you here present this morning, and also that of large areas of land that could be transformed into profitable apple orchards, is within easy hauling distance of this market, no farther away, in fact, from the final consumer—who generally pays the price—than are some orchards of other varieties of fruit from the initial point of handling, the packing-house. Thus the question of transportation charges

—that nightmare that often racks the very souls of the citrus growers—is forever eliminated from the proposition of the local production of apples. The second reason that I assigned as a cause why more apples should be planted was the adaptability of certain varieties to the locality. The locality in this instance is intended to comprise the moist bottom lands of Downey, Florence, Compton and Cerritos, of the conditions of which I have an especial knowledge.

It has been stated, and the accuracy of the statement is now generally recognized, that variety is very largely an expression of the environment to which it is subjected. In this matter of environment we are exceptionally fortunate, the sandy loams of the region mentioned, underlaid with cool clay subsoils, with the water-table well within the reach and influence of capillary attraction and supplemented with the moisture-laden winds and fogs from the ocean have proved admirably adapted to varieties of apples that possess in a marked degree all the characteristics of quality, quantity and profits, the trinity of success in fruit-growing. Compare these conditions with those of other less favored sections of the United States, for instance, the immense territory where conditions prevail that compel apple-growers to adhere in general to such varieties as Ben Davis and its several descendants.

The final and principal reason that induced me to talk to you this morning is the all-apparent improvement in the appearance and management of the young apple orchards. It may be safely stated that we are entering into a period of renaissance in apple orcharding that promises much for the ultimate success of the local industry. We have passed through the experimental stage in which the apple orchard was simply an incident and contained practically every variety that had been known to produce apples elsewhere, and when its care and management was apparently considered one of the manifold duties of the housewife.

APPLE ORCHARDS IN DOWNEY.—As an illustration of what I have just stated, let any one, for instance, drive down College avenue in Downey and look at the young apple orchards growing in lands that for many years past have been devoted to the production of salt grass. To the trained eye can be seen on every hand evidence of the application of principles laid down by Profs. Wickson and Bailey put into practice perhaps all unconsciously of its source by the owners of these same orchards, but nevertheless silently and surely achieving the purpose and results intended. To me personally this evidence of better methods is a source of great pleasure, and as a member of this organization I rejoice in the fact that but little of this appearance of progress antedated the forming of this association, and the true source of its dissemination can be traced to the practical discussions that have taken place between the members at our regular meetings. The 'permanent improvement of the apple industry,' to which we all pledge ourselves, could not be accomplished at one bound nor by attendance at a single meeting. To make this improvement permanent it was necessary to grasp the fundamental principles underlying success. That in a measure we have succeeded in doing this, the young apple orchards, not only the ones I have called attention to, but throughout the district generally, are our warrant. It is to be hoped that with this measure of partial success before us we will diligently study and practice the advice of G. Harold Powell in relation to the picking, packing and storing the fruit. Upon the methods employed in this operation depends almost entirely the financial success of the enterprise.

But I am digressing from the point. In conclusion, gentlemen, let me say: This local demand that

we have been talking about this morning is no myth; it is not something that has to be created; on the contrary, it is a tangible, positive, well-established fact. This market is ours, it is legitimately ours, but to enable us to regain control of it, and I use the word regain advisedly, for in a measure it has slipped away from us, and I say that to enable us to regain control of it, we must not only plant more apple trees, but we must adopt some of the methods of the invaders in relation to the fruit we already have. It is not alone sufficient that our best local apples possess a superlative excellence of quality and flavor, peculiarly and particularly their own, but to satisfactorily demonstrate this, we must enlist the sympathy and assistance of the vision, in order to reach the palates and pockets of the consumers. This is the custom of the period, the policy of good business methods and the practice of every producer who is making a success. To these well-recognized rules we must conform and meet our competitors in the open market with systematically graded and attractively packed apples.

APPLES BEST SUITED FOR THE LOCATION.—The question of varieties best suited to the conditions existing in the bottom lands of Downey, Compton and vicinity, and also to the demands of the local consumers, was ably handled by Mr. John Simmons of Downey. The *Rural Californian* says that his deductions, drawn from the experience of twenty-five years of growing and selling apples in this locality, were accepted by those present with that confidence to which they were entitled.

The selection of varieties for planting was considered from the standpoint of the ultimate disposition of the fruit, the subject being separated and discussed in three different phases of apple orcharding. The strictly commercial orchard of a few varieties, where quantity and uniformity of size is a desideratum to be considered in combination with flavor and keeping qualities, and where the fruit is to be sold to dealers as a whole; the orchard where the fruit is destined for the local market, and where a supply of desirable apples is needed through as long a period as possible; and finally, the family orchard where quality and excellence of flavor take precedence of quantity.

As a result of the discussion which followed Mr. Simmons' address, his selections were practically indorsed as a whole, and it was the consensus of opinion of those present that the following varieties in their several places would be found practical and profitable.

For the commercial orchard, choice of two lists—either one desirable:

White Winter Pearmain, Yellow Bellefleur, Fall Pippin, Arkansas Beauty. The other: White Winter Pearmain, Yellow Bellefleur, Missouri Pippin.

For the commercial orchard, fruit to be delivered to consumers throughout the season:

Red Astrakhan, Yellow Transparent, Maiden Blush, Fall Pippin, Fameuse (snow apple), Yellow Bellefleur, White Winter Pearmain, Arkansas Beauty, Missouri Pippin.

For the family orchard:

Red Astrakhan, Early Harvest, Maiden Blush, Fall Pippin, Fameuse, Gravenstein, Hubbardston (none such), Yellow Bellefleur, White Winter Pearmain, Arkansas Beauty.

The subject of crab apples was also discussed at length, the demand for this fruit being out of all proportions to the present local supply:

Yellow Transcendant, Montreal, Martha.

The above varieties having been tried in this locality and found not only profitable, but far superior to the old Siberian varieties, were recommended for planting.

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Agricultural Review.

Alameda.

TREES RECEIVED.—Alameda *Argus*, Feb. 16: The rapid-growing black walnuts donated by Luther Burbank to the A. A. A. for the use of the schools arrived yesterday, and are being planted today, under the orders of Superintendent Moore.

Butte.

TWENTY-FIVE TONS PER ACRE.—Gridley *Herald*, Feb. 16: "What is a good, fair average yield of a peach orchard to the acre?" This question was put to Mr. Monnet of Hunt Bros., the big fruit canners, in San Francisco recently. "Oh, six to eight tons," said Mr. Monnet. "What can a peach orchard be made to produce?" "Anywhere from 10 to 25 tons," "Twenty-five tons! Isn't that a little steep?" "No. You see it depends on the man. Given good deep rich soil, like land around Gridley, and plenty of water for irrigation and a man of intelligence back of it all and 25 tons to the acre is not out of the ordinary. We bought the crop of a small orchard in the Sacramento valley this year that yielded 26½ tons to the acre. And that wasn't an exceptional locality either. We bought the crop of a near-by orchard, just the same age, and it yielded exactly eight tons to the acre. Land just as good but there was a different man behind the gun. You see, it's the man as much as the orchard."

PROFIT IN ORANGES.—Chico *Enterprise*, Feb. 16: The buyers of the crop of the season of 1905 of a little orange orchard of 3½ acres near Gridley, owned by A. W. Campbell, cleared up exactly \$1,037.94 after paying freight, etc. Some of it netted \$1.45 a box.

Contra Costa.

RE-OPENING SUGAR REFINERY.—Crockett dispatch to Oakland *Enquirer*, Feb. 22: The ship Archer is at the wharf alongside the sugar refinery with a cargo of 25,000 sacks of raw sugar. This means the re-opening and continuous operation of the big sugar mill, which for three years past has been closed.

Fresno.

THE PEACH IS KING.—Fresno *Tribune*, Feb. 16: It is a foregone conclusion that the peach is king this spring, as it was last, and it is also a fact that the drying varieties hold preference. Of these the Muirs, Lovells and Elbertas are the most extensively planted, and of the canning varieties, for which there is also a great demand, the most popular are the Phillips, Tuscan and Orange clings. To appreciate the enormous extent of peach tree planting, it must be learned that ere the season is ended the nurseries in this city alone will have disposed of about 800,000 trees, two-thirds of these being peaches, while the rest include apricots, for which there is a fair demand, and other fruit and deciduous trees. Reckoned in acres, the total area set out to trees this spring in this valley alone will be about 7,500 acres.

MODEL GARDENS.—Fresno *Republican*, Feb. 17: Johannes Reimers spoke to the teachers of Fresno, and outsiders, on the subject of home gardening. The schools have been working on plans for the improvement of school and home grounds worked out by the pupils, and Mr. Reimers' address was in the line of this work.

RAISIN GROWERS DISBAND.—Fresno *Republican*, Feb. 20: After eight years of organized effort, the raisin growers yesterday decided almost unanimously to disband. The growers who signed the three-year contract a year ago voted to be relieved of all its obligations and authorized the distribution of the half a cent per pound that it automatically put into a packing-house fund. The organization as a legal fact still exists, its corporate life being for 50 years. It is desirable that it be not legally disorganized for two reasons. One is that the corporation still has some business details to settle, and the other is that it may yet serve as a rallying point for the growers. It will have no funds, no stockholders—except purely nominal ones—no members, no contractors, nor salaried officers.

Glenn.

STOCKMEN OPPOSE RESERVE.—Willows special dispatch to Sacramento *Bee*, Feb. 21: The stockmen of Glenn county will hold a big mass meeting at Newville next Saturday to make a protest against the Stony Creek forest reserve. About two years ago the Government withdrew from entry 170,400 acres for the purpose of establishing the Stony Creek reserve. At that time the stockmen banded together and protested against the proposal. At present there are 6,000 cattle, 85,500 sheep and 12,215 goats, valued at \$315,430, pastured on these lands. If the

reserve is made permanent there will be no room for them, and the stock growing industry will be impaired. All these facts will be laid before the proper officials, and it is believed will cause them to again throw open the lands to entry.

PRIZE CATTLE SALE.—Willows special dispatch to Sacramento *Bee*, Feb. 21: The celebrated herd of Jersey cattle which formerly belonged to Alexander Chisholm, now deceased, will be sold at auction next Saturday. These Jerseys, to the number of 46, are prize winners, some of them having taken prizes at every stock exhibition held in this part of the State. At the last State Fair the herd took all the prizes. There is to be an effort made to keep them within the county, as the Jacinto Creamery will open on the first of April.

Sacramento.

GOVERNOR WILL PLANT A TREE.—Sacramento *Bee*, Feb. 20: The Women's Council will observe Arbor Day tomorrow by planting trees from B to H streets, Twenty-first to Twenty-third. The trees to be set out are the choice varieties presented to the Women's Council of this city by the Government Commissioners of Washington, D. C. Governor Pardee, who has officiated on former Arbor Days, will again take up the spade and assist in planting the trees. Mayor Beard, members of the city trustees and of the city board of education have also been asked to be present to assist in making the day a success.

OBEYING THE LAW.—Sacramento *Bee*, Feb. 19: P. C. Krog, inspector for the State Dairy Bureau, who a week ago made an official inspection of the various dairies in this section and with one or two exceptions sweepingly denounced them as unsanitary and filthy, has returned to the city in company with William H. Saylor, secretary of the State Dairy Bureau, and will make another inspection. Krog states he has learned that several of the dairymen have already begun to comply with the provisions of the law and are cleaning up their premises in good shape, although in many instances conditions are far below the standard. The main requirements of the State law are that the cattle must have pure feed and water; the stables and yards must be kept free from mud, dust and manure, and milk pails and other utensils used must be sterilized with scalding water or steam. The inspector says if these provisions are complied with no prosecution will follow.

SALE OF LAND NEAR GALT.—Sacramento *Union*, Feb. 16: Some time ago W. Mitchell, of Galt, entered into a contract with the Sacramento Valley Vineyard Co. to sell 2,980 acres of his land near Galt for the sum of \$69,600. Yesterday the contract was filed with County Recorder Cohn, together with a deed from the Sacramento Valley Vineyard Co. to the Sacramento Valley Improvement Co., of St. Louis, the consideration being \$84,690. Under the contract with Mr. Mitchell the land was rated 500 acres at \$40 an acre, 500 at \$20 an acre, and the remainder at a less figure.

San Bernardino.

EXAMINES GROVE.—San Bernardino *Sun*, Feb. 17: Horticultural Commissioner Pease was called to Highland to investigate an orange orchard in which the leaves at first began to fall, and finally the fruit, and now all through the orchard



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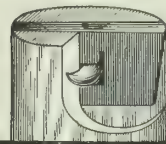
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the trees are being denuded of foliage, while the fruit is dropping. The fruit itself does not seem as yet to be affected. Mr. Pease is inclined to attribute the freak to some soil condition in the orchard, for orchards just across the road are in perfect condition. He has written experts in several parts of the country, in addition to the University at Berkeley and the Agricultural Department at Washington, for an explanation.

San Diego.

MINIATURE ORANGE BOX.—San Diego *News*, Feb. 15: The Redlands Orange Producers' Association is making a hit with their miniature orange box—an exact re-production of the big box—holding but one dozen oranges. This box has a wire handle, which falls into place, out of the way, when packed in a car.

Sonoma.

GRAVEYARD FOR GARDEN.—Chico *Enterprise*, Feb. 16: At Santa Rosa the Masons will sell three and one-fourth acres of their cemetery land to Luther Burbank that he may enlarge his experimental gardens at Santa Rosa. They have more land than they want and it joins that of Mr. Burbank.

SOME CHICKENS.—Petaluma *Argus*: The Must Hatch Incubator Co. of this city has now on its books bona fide orders for 376,000 chickens. This army of the feathered tribe must all be hatched and delivered by April 15, 1906. The orders are from poultrymen up and down the coast and range from two dozen of large lots. The hatchery of the Must Hatch Incubator Co. is the largest in the world. Its capacity is 50,000 chicks per month. The capacity of the company's hatchery is not nearly sufficient to supply the orders for 376,000 chickens, consequently the company has contracted with ranchers who have enough incubators to hatch 20,000 eggs at one time to help supply their customers. Even with the aid of the ranchers the company will have to 'go some' to fill their orders.

EGGS FOR ALASKA.—Petaluma *Argus*, Feb. 17: Will D. Ayers on Friday shipped 125 cases of choice Petaluma eggs to White Horse, Alaska. He also made a heavy shipment of eggs to Nevada.

Stanislaus.

PEACH TREES HARD TO GET.—Modesto *Herald*, Feb. 15: An orchardist planting in this country draws atten-

tion to the fact that the more popular varieties of peaches are very scarce. Those expecting to put out this fruit that does so well in this section should place their orders without delay. There will be a great demand for peach and other trees in the next few years. Adequate provision should be made for the coming requirements, and a big, up-to-date nursery in Modesto will be an absolute necessity.

Tehama.

TO GROW SUGAR BEETS.—Special dispatch to Sacramento *Bee*, Feb. 19: Over 300 acres will be planted to sugar beets in this vicinity this winter. A test of a few hundred acres planted here a few years ago proved that the percentage of sugar produced by beets grown in this section was above that in most of the other sections of the State. This attracted the attention of beet sugar men to the northern portion of California. The beets will be harvested here and shipped by water to the new Hamilton sugar factory.

Tulare.

TICK FEVER.—San Luis Obispo *Tribune*: The Texas tick fever has broken out in cattle in eastern Tulare county. They have been placed in quarantine by County Veterinarian Hunter. State Veterinarian Keene has made an investigation and found that the cattle were moved through various sections of the county while infected, making the spread of the disease probable.

Yolo.

VISITS DAIRIES.—Yolo *Mail*, Feb. 20: State Inspector of Dairies P. C. Krog visited a number of the dairies in this vicinity during the week. Mr. Krog had the following to say regarding his inspections. "On the whole the dairy and creamery men of this section are to be heartily commended on the energy they have shown in the past, and I look for them to make rapid strides in this industry in the future."

Yuba.

IRRIGATION FOR HAMILTON.—Chico *Record*: Among the several extensive improvements to be made at Hamilton in the way of preparation for the growing of sugar beets and the manufacture of beet sugar, that which will afford the means of irrigating the large tract will attract interest. This irrigation is to be accomplished by a large flume made of lumber.

The Home Circle.

The Point of View.

They sat before the kitchen range,
The corn was bobbing in the pan,
She was a sweet and loving lass,
He was a brave but bashful man.

For full a year on her he'd called
And looked the love he bore the maid,
But still it seemed he never would
Declare himself without her aid.

So weary of the long delay,
A hint resolved to give to him.
She said, "Look at the frisky corn!
I do declare it's poppin', Jim!"

"It's poppin', poppin', Jim! Dear me!
What is it tellin', don't you know?"
He blushed and rose. "I guess," said he,
"It's tellin' me it's time to go!"

—Woman's Home Companion.

Sense and Nonsense.

What kind of food is a watchman's beat?
Does the old hen sing her lay?
Did you ever see a poem trip with its feet?
What kind of notes does the banker play?
Is Father Time a thief if he steals the hours away?
Did you ever see a tinker mend the break of day?
Does a ship have eyes when it goes to sea?
When does a river lose its head?
Does the 'jolly tar' ooze from a tree?
Are there any springs to the ocean's bed?
Will a blacksmith's vise make him lose his soul?
Who can shingle a water-shed?
To whom does the church bell pay its toll?
Can a book be black and white and read?
Can a haul of fish for a fish ball be hired?
Is a mountain climb like May?
Will a foreign clime make anyone tired?
Can a donkey be fed on a brae?

—E. A. M.

Zigeunerlied.

The rain is gone, but the leaves are wet,
The long spathe swells where the buds are set;
Summer shall wear what the springtide weaves
In her green, green bower of leaves.

Dim are the stars, though the moon rose bright;
My chamber is full of the sweet spring night.
The dark spring night and its scented gloom—
Blue dusk and the lilac-bloom.

The heart of youth and the House of Dream,
They are here once more while the spring stars gleam;
The palace towers of the Eastern tale
Fell not till the dawn grew pale.

See how their casement, amber bright,
Hangs in the wall of the dark spring night;
The gypsy halts by the lighted pane
And then—to the road again.

—The Athenaeum.

The Case of Flora.

Willibert Frarey was already spoken of as 'an old bachelor' when he first went to board with Mrs. Albrecht. He was 28 then, a man of somewhat particular habits, none of them very sociable. What he wanted was a quiet, comfortable place to board, as homelike as possible and free from any annoyance from other boarders. He offered Mrs. Albrecht unimpeachable references and demanded the like of her, caution being his strong point. Even then he would only take the room for a week, having his doubts of Flora Albrecht, a miss of 14. He feared she might be noisy, and he wanted to try the place before he definitely settled down.

At the end of the week, however, he sent for his trunks, congratulating himself upon the circumstance of having at last found something that suited him. Mrs. Albrecht was a quiet, neat, self-contained little woman who did not bother him with attempts at conversation, kept his room in perfect order and gave him a good breakfast and dinner. What more could he want? As for Flora, the lanky daughter with the usually tousled mane of light hair, Frarey saw scarcely anything of her and heard less.

On his part, Frarey was a model

boarder, quiet, regular and prompt in his settlements. He paid monthly now. The experimental stage had passed and as far as he knew he was willing to spend the rest of his days with the Albrechts. He went down to the wholesale grocery house, where he had an excellent position, every morning at 8 o'clock and returned at 6:30—in time for dinner. Sometimes he spent the evening in his room, reading an improving book; sometimes he went out to hear an improving lecture.

Frarey was totally indifferent to the budding charms of Flora, who was really as hearty and wholesome a girl as need be. It was a year or two before she began to bud at all—two years at least before Frarey took any notice of the fact. She wore her first pompadour for three evenings before he observed even that. A year later, or thereabouts, Frarey, meeting her in the hall, saw that she was wearing an uncommonly attractive white dress, and mentally remarked that she had beautiful white teeth that showed to advantage when she smiled.

Then Flora went away somewhere to take a course of the higher education. Perhaps Frarey missed her, but he hardly knew. It is certain that in a general way, and without any reference to anybody in particular, he had occasional thoughts of settling down in a home of his own. It would be nice to have some one to read the improving books to and to take to the improving lectures. That was all it amounted to—just hazy general thoughts.

But when Flora returned a year later with charms that now began to blossom from the bud his reflections became more definite.

"I'd best go slow about this," he said to himself. "A man needs something more than pearly teeth and a rosy complexion to make him comfortable."

So he did not encourage her, though when she went away the following June for her second year he bought her 'The Stones of Venice' and the North American Review to read on the train, for which she was very grateful.

Time passed and Flora came back. On the evening of her arrival what he called her improvement almost took his breath away. Her former prettiness had become actual beauty, and her conversation, which Mrs. Albrecht no longer attempted to restrain, was bright.

The next morning Frarey met Flora on the stairs, and as he stood aside to let her pass she, too, stopped.

"Mr. Frarey," she said, with a charming air of embarrassment, "mother tells me that some of your things need mending. There are—er—some socks that need darning and other things. You know, mother never had much time for such things, but I have, and—I wonder if you would let me try my hand at them."

What would you have thought in such a case?

At first the mending and darning were done rather roughly and unskillfully, but Frarey didn't care for that—not a cent. He would have had to throw the socks away in any event. But the improvement was rapid, and in a short time an incredible neatness was in the darns. Within a week, Frarey, commenting on the excellence of the bread at table, was informed that Flora had made it.

Still Frarey hesitated, not from any misgiving now, but from sheer diffidence. He brought books often now and candy once or twice. Gradually he tried to accustom himself to the idea of an engagement and matrimony. He had long reveries in the solitude of his room.

One evening he was indulging his fancy in this way when he thought he heard voices on the steps, below his window. His room was now on the second floor. Yes, one of the voices was Flora's. It was her laugh.

A chill of apprehension came over Frarey. He approached his window stealthily, noiselessly raised it and listened. He was just in time.

"No, dear," Flora was saying "I won't consider anything but housekeeping, and, Dick, you have no idea how domestic I am getting. I can do lots of things—cook, make bread, mend, darn socks—I've been practicing on Mr. Frarey's, poor man. But he was very sweet over my early failures. I used to think him such an awful crank, but lately he's got to be just the dearest old thing—"

Frarey shut the window hastily.—Chicago Daily News.

Four Log School Houses in Indiana.

Four log school houses are still in use in Indiana, according to the annual report of F. A. Cotton, State Superintendent of Public Instruction, made public lately. Years ago, nearly all the school houses were built of logs, but the number

has gradually decreased until there remain only four log buildings in use. Most of Indiana's school houses are now built of stone or brick. There are 112 of stone and 4,876 of brick. Of frame school houses there are 4,821.

Fashion Notes.

As regards the practical everyday suit, the present trend of fashion is to make it a rather smart little affair, somewhat youthful in outline, but in reality suited to young and old. It is said that the pleated skirt will remain among the accepted models. It is graceful and practicable and will probably resolve itself into one of the circular varieties which have been revived.

The princess gown is the gown of the hour. In the heavy materials the skirts are cut plain, while the softer materials are pleated or shirred about the hips or waist. In either case the trimming is extremely lavish. The short bolero, elaborately trimmed, is to play the jacket role to the princess skirt. Many of the young misses' gowns are made without lining and in the princess style.

It is probable that gray will take the spring lead. This does not mean that gray is to be any one decided tone or shade, but rather an indefinite color, the result of the blending of vari-toned worsted contributing to the fashionable fabric. For early spring wear white and black will be much affected, also suits in light pastel shades. The trimmed skirt is now decided on, the plain skirt relegated to the tailor-made. Skirts are worn short.

The mild winter season has again brought shirt waists to the fore. White is predominant, and the waists are so dainty and give such a youthful appearance that we wonder colors were ever worn. They are mostly buttoned in the back, with attached collar and half-sleeves, while those with long sleeves have a deep cuff. White embroidered linen waists, with heavy embroidery in colors, are the latest. They are of medium or light weight linen.

This is a linen season. The daintiest of the lingerie frocks are of linen. We also find hats of linen, and even dancing slippers, and all are ornately embroidered. Later on coats will be of butcher linen and heavily embroidered, as all linen will be.

The popular suit coat will doubtless be the free and easy pony coat.

Silks are mostly china and other varieties of the East. The most popular is a new weave called automobile cloth. It is one of the serviceable pongees and is rather expensive, but, as its name implies, is adapted to hard usage, while giving a dainty appearance.

Organdies, mulls, printed, embroidered chambrays, linens, batistes, lawns and all novelty cotton stuff will be used for sheer summer gowns. White rules, but some color is to have fashionable license. With these gowns great quantities of lace and embroidery are to be used.

Belts are of soft leather in Japanese design and almost any color. Ribbon girdles are *de mode*, and only such belts are worn as aid the princess effect.

Spring veils show considerable color, either throughout the mesh or in dots.

Gloves are in elbow lengths, the black dressed kid first and the white suede next.

Handkerchiefs are mostly in all white of very fine linen, with delicately embroidered corners and lace edging.

Plain, black hosiery comes decidedly first. Tan is still to be considered, since the tan shoe still reigns. The chocolate shade of shoes will prevail in tans, as it is a soft kid, while the others are calf-skin leather and rather heavy. The black shoe always holds its own, it being a dull kid this year known as 'gun metal.'

The spring hats are as fantastic in shape this year as last. The hair is worn low, with ornamental combs, which gives an opportunity for much trimming in the back. 'Leghorn, Milan and Java straws are extensively used, with bouquets of vari-colored flowers, care being taken that the colors harmonize. Tall crowns and low, pot-crowned sailors with short brims, bring us back to the styles of our grandmothers, but they are really very chic, with long quills, aligrettes, feathers, ribbons, flowers and big buckles, many combined on the same hat. More than ever this year the hat expresses individuality.

Every baby needs a kimono, and these comfortable little wrappers are now made of a variety of dainty materials. In pale blue or pink cashmere they are very pretty, with a silk binding in white. Printed French flannel and challis are both less perishable material to use for the kimono.

Domestic Hints.

CORN DODGERS.—Sift two tablespoonfuls of baking powder with two cupfuls of corn meal and two tablespoonfuls of flour. Mix with two cupfuls of milk and two eggs and a little salt. Beat well together.

BAKED APPLES.—Peel and quarter enough apples to cover bottom of bake pan; have ready a dressing of $\frac{1}{2}$ cup of sugar, $1\frac{1}{2}$ tablespoon cornstarch, butter size of walnut, pint boiling water; stir and boil until thick, flavor with vanilla and pour over apples and bake.

BUTTER SCOTCH.—Wet a pound of brown sugar with a cup of water, into which two teaspoonfuls of vinegar have been stirred. Cook for ten minutes, add four tablespoonfuls of butter and boil until a little hardens when dropped into cold water. Pour into buttered tins and cut into squares.

SOUTHERN OYSTER STEW.—Drain the liquor from the oysters and simmer it in a stew pan; rub the yolks of three hard boiled eggs with a spoonful of flour; add to the liquor, with a generous lump of butter, the juice of a lemon and the oysters. Let it boil, season with salt and pepper and serve.

TEA—THE ENGLISH WAY.—Tea should not be boiled and should be made fresh at each meal by pouring boiling water upon the leaves, which are put into a perfectly clean teapot. The boiling water will extract the good of the tea, and the teapot should not be set on the stove at all. Made in this way, tea is a good, wholesome, cheering drink, which will do no harm to anyone.

POTATO ROLLS.—Rub four floury potatoes through a wire sieve; add four ounces of minced ham, tongue, or bacon, a teaspoonful of chopped parsley, a teaspoonful of chopped onion, pepper, salt, half an ounce of warm butter, and the yolk of an egg. Stir over the fire for a few minutes; spread on a plate to cool. Shape into balls, egg and breadcrumb these, and fry in deep, hot fat. These are very good for breakfast.

SELF-FROSTING LEMON PIE.—Mix in the order given three-quarters cup sugar, one rounding tablespoon flour, sifted together; add beaten yolks of two eggs, the juice of one lemon. After mixing well, add one cup boiling water; stir well, then add the whites of two eggs, beaten stiff. Bake with one crust in a slow oven. If care is taken to have the water boiling hot and the oven just right, this pie will frost itself.

ORANGE OMELET.—Beat the yolks of six eggs with seven teaspoonful of powdered sugar. Whip the whites to a stiff froth and pour the egg and sugar mixture over them. Mix lightly, at the same time adding the juice and grated rind of a large orange. Melt a tablespoonful of butter in a frying-pan and tilt it about until the bottom and sides are well greased. Pour in the omelet and cook slowly. When firm and nicely browned set in a hot oven for two minutes, then fold it together, place on a heated dish and serve at once.

LEMON PIE.—(Enough for two pies.) Form a crisp crust, line pie tins, prick the crust with a fork and bake it a light brown before pouring in the following filling: Stir into two cups of boiling water four tablespoons of corn starch dissolved in cold water; allow this to boil and in the meantime beat together the yolks of four eggs (reserve the whites for frosting), two cups of granulated sugar, the grated rind of one and the juice of two lemons and stir into the corn starch while it is boiling; then draw this off the stove and allow it to stand on the back of the stove for a few minutes. Pour this mixture into the previously lined tins. Beat the whites of the eggs to a stiff froth and into this stir one tablespoonful of powdered sugar, spread over the pie and place in a quick oven, allowing to remain till the frosting turns to a rich golden brown.

The Teeth.

Thorough chewing of the food tends to keep up the flow of saliva as well as mixing it with the food and pulverizing it. Then, too, chewing is necessary for the good, even preservation of the teeth. In case a person possesses poor teeth, they should have them put and kept in good repair, as they in turn are requisite for efficient mastication. Decayed teeth generate gases that are offensive and poisonous to the food and system generally. Keep the teeth clean. Persons who eat in the main soft things are apt to have soft teeth.

Coarse food is necessary for the welfare of the teeth, not only to keep them in a healthy condition, but to properly care for food, as they are always wearing and always forming.

Dorothy's Trials.

There's the kitchen as spotless and shining's can be—
Not a speck on the stove, not a spot on the floor;
There's the pantry well filled with pudding and cake,
And the tea in the pot all ready to pour;
There's the parlor fresh dusted and set all to rights,
And the flowers in the vases, and the light in the hall;
The brand new scarf on the dining room shelf,
The curtains and rugs and silver and all;
There's Dorothy clad in the bluest of gowns,
As dainty and sweet and as cool as can be.
There isn't a thing out of place or gone wrong,
And—nobody comes to tea.
There's the kitchen mussed up in a terrible way,
The cranberry jell spilled over the floor;
The cake fresh baked as heavy as lead;
The biscuits burned up, and the knob off the door;
There's the parlor upset by the neighbor's loose dog
And the tracks on the carpet of his wild, muddy feet;
There's the peddler, who stole from the sideboard's rich store,
And the furnace refusing to send up the heat;
There is Dorothy still in a rumpled-up dress,
As flustered and hot and weepy's can be.
The whole little house is turned upside down,
And—company comes to tea.

—Reinette Lovewell.

Chaff.

Minister—Bobby, do you love your teacher? Bobby (six years old)—Yes, sir. Minister—That's right. Now tell me why you love her. Bobby—Because the Bible says we must love our enemies.

"Your Honor," remarked the youthful lawyer for the defense, "my client wishes to gain time." "All right; I'll give him six months," replied the obliging Judge.

Rastus: What is yo' idea ob heaben? Ephraim: A place whar de animals hab de body of a melon, de laigs ob a 'possum an' de wings ob a chicken.

"He said he would lay the earth at my feet," said the sentimental girl.

"Yes," answered Miss Cayenne. "It sounds good, but it is not practical. You already have the earth at your feet. What you want is a three or four-story house over your head."

A case was being tried on the charge of selling impure whisky. The whisky was offered in evidence. Jury retired to try the evidence. Judge (presently)—What is the verdict? Foreman of the thirsty jury—Your Honor, we want more evidence.

One day a modest young man, after inspecting the mail-slots marked "foreign," "city" and "domestic," approached the clerk at the window. "Where do you mail letters?" he asked. Ascertaining that the letter was for city delivery, the clerk told the man to drop it in the slot marked "city." The modest man went over, read the inscriptions, and came back to the window with the letter still in his hand. "I don't know what to do," he said. "You see, it's this way; she lives in the city, but she is a foreigner and a domestic."

Imitation Jewelry.

"Never have I known such a craze for imitation jewelry as now," was the remark of the manager of one of the big department stores, and it only needs a glance to see that in a store where the crowds are greatest the imitation jewelry lies.

"We can't supply the demand," went on the manager, "and I know it is the case not alone with us, but even more so with those firms who make a specialty of selling it alone."

"Jewelers who have for years been in the business have told me their trade has suffered greatly from this cause. Such art and skill have entered into its manufacture that in many cases it can't be told from the real, and very frequently women who can afford better things purchase the cheap sort when some article is seen to be but a passing fad. That many of the wealthy women in society have duplicates of their handsome jewelry we all know."

Hints to Housekeepers.

A hotter oven is required for small layer cakes than for loaf cakes.

Fresh fruit, if taken when thirst arises, takes away the desire for alcohol.

A pair of knit wool gloves under a pair of soft leather mittens make the ideal hand covering for a driver.

A tablespoonful of paraffine added to each gallon of water in which clothes are to be boiled helps to whiten them, especially if they are yellow from lying by.

To give coffee a good aroma add a few cloves while roasting it. If you are not able to roast your own coffee, always warm the ground coffee before adding water.

A few drops of laudanum, heated slightly, with the same quantity of sweet oil, is an almost sure cure for earache. It should be dropped into the ear, carefully, and plugged in with cotton.

To relieve tender feet, soak them every night in strong alum water, letting it dry on instead of wiping it off when taking the feet out. Keep this up for several nights and most obstinate cases will find relief.

To obtain a gloss equal to new on white silk handkerchiefs, after washing them and well rinsing, put them into water containing a little methylated spirit—one teaspoonful of the spirit to a pint of water, and then iron. A beautiful gloss will be obtained.

The soda bath is declared to be a specific for rheumatism, besides rendering the skin soft and supple and the bather beautiful. One pound of washing soda is added to a tub of hot water and the patient must lie in this for 15 minutes. Then follows the cold spray and the bather emerges with every trace of her aches and pains dispelled.

Kitchen paints will soon acquire a shabby, dull look from the frequent cleaning that is necessary in this room. The use of soap only increases the difficulty, especially if the paints are varnished. The best plan is to boil one pound of bran in a gallon of water for an hour, then wash the paint with bran water, and it will not only be kept clean, but bright and glossy.

Veils may be cleaned by steaming. Get a piece of old broom handle or a roller, wind the veils carefully round it, being very careful that the edges are even. Lay across a boiler or saucepan of boiling water, and steam for three-quarters of an hour. Leave on the wood till dry. Crape is even more satisfactory when treated in this manner, the steam giving it the stiffness of new material, and also taking out all the dirt and dust.

A household economics authority says: "In caring for linoleum do not use soap-suds as for scrubbing a floor. It stands to reason that soap is going to injure the varnish and the finish. On a farm where there is plenty of milk, a cloth wrung out of skim milk is the best means of taking up the dust and brightening the linoleum. Where milk is scarce, or needed for food, use lukewarm water, to which has been added half a cupful of kerosene oil or some good furniture polish. Wring the cloth rather dry from this, and go over the linoleum after sweeping, and it will be quite new and bright, and the finish uninjured."

They Wouldn't Hear Him.

Angie invited her young man to supper. Everything passed off harmoniously until the seven-year-old brother broke the blissful silence by saying:

"Oh, ma, yer oughter seen Mr.—the other night when he called to take Angie to the drill. He looked so nice sittin' longside of her with his arm—"

"Fred!" screamed the maiden, quickly placing her hand over the boy's mouth. "Yer oughter seen him," continued the persistent informant after gaining his breath. "He had his arm—"

"Freddie!" shouted the mother, as, in her frantic attempt to reach the boy's auricular appendage, she upset the contents of the teapot.

"I was only just going to say," the half-frightened boy pleaded, between a cry and an injured whine, "he had his arm—"

"John," thundered the father, "leave the table!"

And the boy did so, exclaiming as he went, "I was only going to say Mr.—had his army clothes on, and I leave it to him if he didn't."

AN old farmer remarks that a home-grown, hand-spanked, barefooted and hard-fisted country boy makes a much better fighter in the battle of life than does the pampered, high-collared, creased trousered youth of our towns and cities whose clothes have always been dusted with a whisk broom instead of a shingle.



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Western Meat Company,
San Francisco.

*a
Farmer
Says*

Some good words about our Booklet on Farm Telephones.

Sweet Valley, Pa., Aug. 15, 1905.
Stromberg-Carlson Tel. Mfg. Co.,
Gentlemen:—Your booklet reached me safely. You have many valuable and timely suggestions, and I only hope that it may find its way into every locality that does not have the advantage of telephone service. THERE IS NO ONE THING AT THIS TIME DOING MORE TO BRING THE FARMER ON AN EQUAL FOOTING IN BUSINESS, EDUCATION AND CULTURE, WITH HIS URBAN BROTHER, THAN THE TELEPHONE.
As we have two well constructed, thoroughly equipped, successfully operated telephone lines in this locality, one known as the Lake and Lehman Telephone Co. and the other The Farmers Telephone and Supply Co., I can do no more than to wish you success.
Sincerely yours,
A. E. Lewis.

What Mr. Lewis says about the value of the telephone in the Farm Home is seconded by all farmers after they have once enjoyed the privilege of telephone service.

We have several booklets which will tell you how to get a telephone line started in your community and how to buy telephones and construction materials to the best advantage. Ask for our booklet 72-B, "How the Telephone Helps the Farmer." We will send you a copy by return mail.

STROMBERG-CARLSON TEL. MFG. CO.
Rochester, N. Y. Chicago, Ill.

Land for Sale and to Rent.

GLENN RANCH,

Glenn County, - - California.

FOR SALE
IN SUBDIVISIONS.

This famous and well-known farm, the home of the late Dr. Glenn, "the wheat king," has been surveyed and subdivided. It is offered for sale in any sized government subdivision at remarkably low prices, and in no case, it is believed, exceeding what it is assessed for county and State taxation purposes.

This great ranch runs up and down the west bank of the Sacramento river for 15 miles. It is located in a region that has never lacked an ample rainfall, and no irrigation is required.

The river is navigable at all seasons of the year, and freight and trading boats make regular trips.

The closest personal inspection of the land by proposed purchasers is invited. Parties desiring to look at the land should go to Willows, California, and inquire for P. O. Eibe.

For further particulars and for maps, showing the subdivisions and prices per acre, address personally or by letter,

F. C. LUSK,

Agent of N. D. Rideout, Administrator of the Estate of H. J. Glenn, at Chico, Butte County, California

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Sinaloa, Mexico, has all the elements and advantages that have made California famous. Profit-yielding lands at prices within the reach of almost everybody. Railroad and maritime activity; great mineral and timber wealth—State is "alive" with opportunities. Write or call for information.

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Summer resort in Santa Cruz mountains, 46 acres, 5 miles from Los Gatos. Beautiful for location. Printed circular and full information of JOHN F. BYXBEE, Palo Alto, Santa Clara Co., California.

SANTA CLARA COUNTY FRUIT ORCHARDS AND VINEYARD in bearing. Desirable location and just right for subdivision. For price, etc., address I. R. D. GRUBB, 825 Mills Building, San Francisco.

WANTED—Good Ranches. Burr-Paddon Co., Dept. J, 40 Montgomery St., San Francisco.

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on household goods shipped east or west between Washington, Oregon, California and Colorado or along the Pacific coast. For rates write Bekins Van & Storage Co., 11 Montgomery St., San Francisco. 244 S. Broadway, Los Angeles; 935 Washington St., Chicago; 1016 Bdwy, Oakland. Send 2c for city maps.

The Markets.

San Francisco Produce Report.

SAN FRANCISCO, Feb. 28, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday	\$2.22 1/2	\$2.22 1/2
Thursday	82 1/2	81 1/2
Friday	82 1/2	81 1/2
Saturday	82 1/2	81 1/2
Sunday	81 1/2	81 1/2
Monday	81 1/2	81 1/2
Tuesday	81 1/2	81 1/2

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday	43 1/2	43 1/2
Thursday	43 1/2	43 1/2
Friday	43 1/2	43 1/2
Saturday	43 1/2	43 1/2
Sunday	43 1/2	43 1/2
Monday	43 1/2	43 1/2
Tuesday	43 1/2	43 1/2

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	May, 1906.	Dec., 1906.
Wednesday	\$1.29 @ 1.28 1/2	\$1.29 @ 1.28 1/2
Thursday	1.29 @ 1.28 1/2	1.29 @ 1.28 1/2
Friday	1.29 @ 1.28 1/2	1.29 @ 1.28 1/2
Saturday	1.29 @ 1.28 1/2	1.29 @ 1.28 1/2
Sunday	1.29 @ 1.28 1/2	1.29 @ 1.28 1/2
Monday	1.29 @ 1.28 1/2	1.29 @ 1.28 1/2
Tuesday	1.29 @ 1.28 1/2	1.29 @ 1.28 1/2

Wheat.

The wheat market continues to be in a dull state. Trading on spot is dull and quotations have declined considerably since last week. The prospect of a good crop and foreign conditions alike conspire to keep the market down. Weather conditions are very favorable for growing crops and grain is in good condition, making a satisfactory growth. In many sections plowing and seeding are finished. Millers who have kept their supplies on hand low, owing to a declining market, are expected shortly to enter the field for new stocks. California wheat men are making offers more liberally, but there is but little wheat left in this State and buyers are compelled to look to the North for their main supplies. Conditions abroad have been in no mean way responsible for the lower prices of this week. At present, even at the quoted prices, the foreign demand has almost wholly fallen away and what little exporting exists is expected to diminish. Grain men in the North feel the situation even keener than local men. Plenty of unsold wheat remains in that part of the country yet, and when exporters use the supply they already have on hand, they will have no difficulty in securing more, as holders are realizing that they have waited too long to sell their grain and that the higher prices, which prevailed earlier, will not be seen again this season. The market abroad is very dull. The rumor concerning an increased demand from Germany has not developed into anything tangible, as nothing definite has been felt from it in the grain-supplying countries. The Chinese boycott has sufficiently affected the flour market to cause a corresponding effect on wheat and in this regard the situation has not improved in the least.

California Milling	\$1.33 @ 1.32 1/2
Cal. No. 1 shipping	1.30 @ 1.32 1/2
Northern Club	1.30 @ 1.32 1/2
Northern Bluestem	1.27 1/2 @ 1.32 1/2
Northern Red	1.30 @ 1.32 1/2

PRICES OF FUTURES.

Tuesday, at the forenoon session of Exchange Dec., 1906, wheat ranged from \$1.27 1/2 @ 1.28 1/2.

Flour.

The export trade has completely fallen away and no great demand for flour exists from any portion of the globe. Inactivity rules, and Japan and China are practically eliminated from purchasing flour. Millers are unable to explain the cause in the case of Japan. In China the boycott has a great deal to do with the slack demand. Very few mills are operating to any extent. Stocks of flour at the various mills are quite large, and more attention is being paid to local trade, which at present is only fair. The outlook for a speedy revival is, however, very favorable, according to the opinion of large millers, who say that we will shortly witness a revival of trade and that mills will resume operations in a short time. There is no change in quotations.

Patents, California	3.00 @ 3.50
Second Patents, California	2.00 @ 2.50
Straights	3.50 @ 3.75
Superfine No. 1	3.00 @ 3.40
Superfine No. 2	3.00 @ 3.40
Oregon Bakers'	3.00 @ 3.40
Washington Bakers'	3.00 @ 3.40
Eastern Patents	3.00 @ 3.40

Barley.

The barley market remains unchanged. There is only a little barley left here, and it will probably be used for local requirements. Sales are few and buyers do not manifest any spirit. In the north holders have advanced their prices, but buyers will not entertain the advanced figures,

as barley from Minnesota and Dakota can be brought in at the ruling figures. The use of corn, which is now growing in popularity owing to its relative cheapness, is affecting the demand for barley materially.

Brewing	\$1.25 @ 1.27 1/2
Feed, No. 1	1.25 @ 1.27 1/2
Feed, fair to good	1.25 @ 1.27 1/2
Chevalier, No. 1 to choice	1.30 @ 1.35
Chevalier, common to fair	1.20 @ 1.25
December	1.25 @ 1.27 1/2

Oats.

The oat market is considered easier this week, and a slight decline in prices is noted in Black and Red oats. Although supplies are light, the demand is not great, and sympathy with the wheat market is probably affecting oats.

White oats	\$1.30 @ 1.35
Black oats	1.30 @ 1.35
Red oats	1.30 @ 1.35

Corn.

Corn is not attracting a great deal of attention at present, although a slight advance in white corn is noted. Corn is being used in the northern States to make up for a tightness of barley there, and this has had a strengthening effect on the market, while the use of corn in the East is diminishing. Small yellow corn is weaker.

Large White, good to choice	\$1.20 @ 1.25
Large Yellow	1.17 1/2 @ 1.22 1/2
Small Yellow	1.50 @ 1.55
Small White	1.35 @ 1.40
Small Brown	1.25 @ 1.30
Kaffir	1.20 @ 1.25

Rye.

No change in the price of rye has taken place lately and few transactions are recorded. No other demand than that from the supply of local needs exists at present.

Good to choice	\$1.50 @ 1.55
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Buckwheat.

Prices quoted on buckwheat continue nominal. Only a small quantity remains on the market, but the slow demand for it does not seem to move it to any great extent.

Good to choice	1.50 @ 1.55
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Beans.

Beans are considerably easier this week. Limas have declined since last quoted and other varieties have shown weakness. This condition is probably due to the fact that the depressed market in the East has led Southern shippers to check shipments in that direction, which were quite large earlier in the season. Moreover the local demand does not seem to be up to par. A small decline in red kidneys is to be noted.

Small White, good to choice	\$2.90 @ 3.25
Large White	2.35 @ 2.60
Pinks	1.75 @ 2.10
Pinks, damaged	1.00 @ 1.25
Bayos, good to choice	3.30 @ 3.60
Red Kidneys	3.25 @ 3.75
Reds	3.00 @ 3.25
Limas, good to choice	4.50 @ 4.65
Black-eye Beans	4.40 @ 4.60
Cranberry	3.20 @ 3.35
Garbanzas, small	3.10 @ 3.25
Garbanzas, large	3.50 @ 3.75
Horsebeans	1.75 @ 1.85

Dried Peas.

Dried peas remain quiet and no change in quotations is noted. It is not expected that dried peas will show any activity before the new supplies come upon the market. The outlook for the new crop continues good.

Green Peas, California	\$2.15 @ 2.50
Niles	1.75 @ 2.00

Hops.

A dull market exists in hops, there being little trade. A recent sale in Sonoma of 109 bales brought 9c., being for prime choice goods. Inferior grades are neglected and Eastern inquiry is very limited. Some contracting for the coming crop is going on at present, and, where the contracts are extended over a term of years, 10c. and in some cases 10 and a small fraction is the price. The winter season has been very favorable to the roots, which, at this early date, show a healthy appearance.

Medium to fair	6 @ 8
Good brewing	8 @ 8 1/2
Prime	8 1/2 @ 8 3/4
Prime to choice	10 @ 10 1/2

Wool.

Wool quotations remain unchanged. There is no active buying as yet, though in some locations spring clipping has commenced. There is no demand from the East for California wools, however. Long wools are being used to a considerable extent.

Humboldt and Mendocino	15 @ 16 1/2
Northern, free	14 1/2 @ 16
Northern, defective	11 @ 13
Middle County, free	10 @ 14
Middle County, defective	10 @ 12
San Joaquin and Southern, free	5 @ 10
San Joaquin and Southern, defective	7 @ 10

SPRING.

Oregon, valley	23 @ 25
Eastern Oregon	15 @ 17
Nevada	15 @ 19

Hay and Straw.

Shipments of hay to this market continue to decrease, the total for the past week being 2,650 tons, as compared with 2,950 tons for last week and 4,150 tons for the week preceding. From all reports, no over-supply is expected to be sent here during the remainder of the season. Advances from the larger shipping points indicate that at the present rate of unloading, supplies will barely last through the summer. The local trade is absorbing readily all arrivals here and the country tributary to San Francisco is buying quite freely.

Wheat, choice	\$14.00 @ 16.00
Wheat, other grades	8.00 @ 13.00
Wheat and Oat	8.00 @ 12.00
Time Oat, fair to choice	8.00 @ 12.00
Wild Oat	8.00 @ 9.50
Barley	7.00 @ 9.50
Alfalfa	9.00 @ 11.50
Stock hay	7.50 @ 8.50
Straw, 3/4 bale	30 @ 50

Millstuffs.

Some activity in millstuffs is noted this week, but conditions have generally favored buyers. Bran and Oregon Shorts have declined a trifle from last week's quotations. The demand for millstuffs is not expected to increase from now on, as green feed is coming up in the country and the stocks on hand are ample to supply the needs of this season.

Alfalfa Meal, 3/4 ton	\$21.00 @ 22.00
Bran, 3/4 ton	19.50 @ 21.00
Middlings	27.50 @ 29.00
Shorts, Oregon	20.00 @ 21.00
Barley, Rolled, choice	25.50 @ 26.00
Cornmeal	27.50 @ 28.50
Cracked Corn	28.00 @ 29.00
Oleace Meal	39.00 @ 40.00
Cocoanut cake or meal	24.50 @ 25.50

Seeds.

This has been a very dull week for seeds. There have been scarcely any transactions lately. It is thought that the rains that have been coming so frequently have made planting operations slacken, but sunny weather during the next two weeks would fail to create a lively demand for many varieties. In case of an active demand some varieties might stiffen in price materially, as supplies are not any too plentiful.

Alfalfa	\$13.00 @ 14.00
Flax	3.25 @ 3.50
Mustard, Yellow	3.75 @ 4.25
Mustard, Trieste	4.50 @ 4.75
Canary	6 @ 6 1/2
Rape	2 1/2 @ 3
Hemp	6 @ 6 1/2
Timothy	5 1/2 @ 6

Honey.

There has been no change in honey quotations this week. The demand continues normal for local consumption, but there is no speculative interest. Consignments of honey are rather infrequent at this time, owing probably to bad roads in the country.

Extracted, Water White	4 1/2 @ 5
Extracted, White	4 @ 4 1/2
Extracted, Light Amber	3 1/2 @ 4
Extracted, Amber	3 @ 3 1/2
Extracted, Dark Amber	2 1/2 @ 3
Extracted, Hawaiian	2 1/2 @ 3
White Comb, 1-frames	10 @ 12 1/2
Amber Comb	9 @ 10

Beeswax.

Beeswax has maintained itself at the old price. Good, light grades of wax are scarce at present, while the darker grades move slowly at the prevailing prices.

Good to choice, light 3/4 D.	27 @ 28
Dark	25 @ 26

Live Stock and Meats.

The live stock market is very strong at the present time. There is a good demand for all varieties, and a large volume of business is going on. A slight advance in mutton and veal is quoted, but hogs continue to attract the most interest. Buyers are anxious for good hogs and, although the present quotations have not changed, the market is at present more strongly in favor of sellers.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net 3/4 D.	6 @ 6 1/2
Beef, 2nd quality	5 1/2 @ 6
Beef, 3rd quality	4 1/2 @ 5
Mutton—ewes, 8@9; wethers	10 @ 11
Hogs, hard grain, 150 to 250 lbs.	6 1/2 @ 6 3/4
Hogs, large, hard, over 250 pounds	5 1/2 @ 5 3/4
Hogs, small, fat, under 150 lbs.	6 @ 6 1/2
Hogs, soft	5 @ 5 1/2
Veal, large, 3/4 D.	8 @ 9
Veal, small, 3/4 D.	8 @ 9
Lamb, spring, 3/4 D.	11 @ 12

Hides, Skins and Tallow.

The hide market shows but little change, though the feeling seems to be slightly firmer, especially for good, sound stock. Good hides are very scarce and even the poor stock, which is arriving quite freely, is readily disposed of. The future situation is interesting, but there seems to be little desire to speculate in the future take-off.

Nothing but select hides, clean and trimmed, will bring full figures. Culls of all kinds either

from grubs, cuts, hair slips, side brands or murrain, are not always readily placed at the lower figures.

	Sound.	Culls.
Heavy Steers, over 56 lbs.	12 @ 12 1/2	11 @ 11 1/2
Medium Steers, 48 to 56 lbs.	12 @ 12 1/2	11 @ 11 1/2
Light Steers, under 48 lbs.	11 1/2 @ 12	10 1/2 @ 11
Heavy Cow Hides, over 50 lbs.	11 1/2 @ 12	10 1/2 @ 11
Light Cow Hides, under 50 lbs.	11 1/2 @ 12	10 1/2 @ 11
Stags	7 @ 8	7 @ 8
Wet Salted Kip	10 1/2 @ 11	10 @ 11
Wet Salted Veal	12 @ 13	11 @ 12
Wet Salted Calf	13 @ 14	12 @ 13
Dry Hides	19 @ 20	18 @ 19
Dry Kip and Veal, 11 to 16 lbs.	17 @ 18	16 @ 17
Dry Calf, under 4 lbs.	20 @ 21	19 @ 20
Pelts, long wool, 3/4 skin	1.50 @ 2.00	1.00 @ 1.25
Pelts, medium, 3/4 skin	90 @ 1.25	80 @ 1.00
Pelts, short wool, 3/4 skin	60 @ 80	50 @ 60
Pelts, shearing, 3/4 skin	20 @ 30	10 @ 20
Horse Hides, salted, large prime, each	3.00 @ 3.50	2.50 @ 3.00
Horse Hides, salted, medium	2.75 @ 3.00	2.50 @ 2.75
Horse Hides, salted, small	1.50 @ 1.75	1.25 @ 1.50
Horse Hides, dry, large	1.75 @ 2.00	1.50 @ 1.75
Horse Hides, dry, medium	1.50 @ 1.75	1.25 @ 1.50
Horse Hides, dry, small	1.00 @ 1.25	.75 @ 1.00
Tallow, good quality	4 @ 4 1/2	3 1/2 @ 4
Tallow, poorer grades	3 1/2 @ 3 3/4	3 @ 3 1/2

Bags and Bagging.

There has been a slight decline in wool sacks, which are now quoted at from 32 to 36c., as to weight. There is now a good movement in wool sacks, as spring shearing has in some places commenced, while sheep men are preparing for shearing in others. Bags of other varieties are unchanged, as there is scarcely any demand for them at this time.

Bean Bags	6 @ 6 1/2
Fruit Sacks, cotton, No. 1, 30x36; No. 2	7 1/2 @ 8
Fruit Sacks, jute, as to quality	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 22x36, spot	7 1/2 @ 8
Wool Sacks, 4-b	35 @ 36
Wool Sacks, 3 1/2 D.	32 @ 33

Poultry.

The poultry market is in a better condition than it was last week. Four cars arrived in the first part of the week, but were cleared up at slightly advanced figures. All lines are firm, with the exception of turkeys. There does not seem to be a very great demand for turkeys at present and, although few have arrived, there has been no advance in quotations. In other lines of poultry, however, the market is strong and all grades sell readily at prevailing quotations. Quotations are advanced on hens and broilers.

Turkeys, dressed, 3/4 D.	16 @ 20
Turkeys, choice Young, 3/4 D.	14 @ 15
Turkeys, live gobblers, 3/4 D.	14 @ 15
Turkeys, live hens 3/4 D.	15 @ 18
Hens, small, 3/4 dozen	5.00 @ 6.00
Hens, large	6.00 @ 8.00
Roosters, old	5.00 @ 5.50
Roosters, young (full-grown)	6.00 @ 7.50
Fryers	5.50 @ 6.50
Broilers, large	5.00 @ 5.50
Broilers, small to medium	3.00 @ 4.00
Ducks, old, 3/4 dozen	5.00 @ 6.00
Ducks, young, 3/4 dozen	6.00 @ 8.00
Geese, 3/4 pair	1.75 @ 2.00
Geese, old, pair	2.50 @ 3.00
Pigeons, old, 3/4 dozen	1.00 @ 1.10
Pigeons, young	2.00 @ 2.50

Butter.

Butter has suffered another decline this week and traders are keeping on their guard against the fluctuation of this commodity. The lower prices are a result of larger receipts, and no opinion is ventured as to the next probable movement, but it is expected that the fluctuating market will not continue long and that it will soon settle down to the spring level.

Creamery, extras, 3/4 D.	26 @ 27
Creamery, firsts	25 @ 26
Creamery, seconds	24 @ 25
Dairy, select	22 @ 23
Dairy, firsts	21 @ 22
Dairy, seconds	20 @ 21
Mixed Store	18 @ 20

Cheese.

The cheese market is stronger this week, California fancy, new, advancing a quarter of a cent. In other respects the last quotations have not changed. Young Americas are still in good request.

California, fancy flat, new	13 1/2 @ 14
California, good to choice	12 @ 13
California, fair to good	11 @ 12
California, "Young Americas"	18 @ 19 1/2
Eastern, new	15 @ 16

Eggs.

The egg market this week has declined a trifle, though last week's low quotations have not changed materially. Arrivals have been plentiful and the demand has been sufficient to clear them away at the quoted figures. Rainy weather, however, has retarded active storage operations, and this has helped to keep down the price. Bright, sunny weather will undoubtedly see storage operations at full blast and an advance in eggs is then looked for. It is believed by some that storage operations will this year run on a 16c. basis, which is a cent higher than last year.

California, select, large, white and fresh	16 @ 17
California, select, irregular color & size	15 1/2 @ 16
California, good to choice store	15 @ 16
Eastern firsts	17 @ 18
Eastern seconds	15 @ 16

Potatoes.

Trading in potatoes is very listless. The market does not seem to recuperate from the effects of the glut that occurred recently. Potatoes continue to arrive, but in smaller proportions. However, the consuming demand does not seem to wear down the stocks

for good or fancy varieties is good, and stocks are being picked over with this in view. With regard to sweet potatoes, only one line is now quotable.

River Burbanks, per cental.....	50	@	75
Salinas Burbanks.....	1 10	@	1 40
Oregon Burbanks.....	80	@	1 25
Tomatoes.....	90	@	1 00
Sweet Potatoes.....	1 25	@	1 50
Early Rose, Oregon.....	1 35	@	1 50
Early Rose, California.....	1 25	@	1 35

Vegetables.

The vegetable market shows considerable activity at this time. The advance of the growing season ushers in new varieties and increases the supplies sent into the market. Over 1,600 boxes of asparagus arrived during the first two days of this week and the price is now quoted from 5 to 10c. per pound. Rhubarb is arriving in increased quantities and is no longer quoted by the pound. Boxes range in price from \$1.50 to \$1.75. Artichokes have declined somewhat, owing to greater receipts. Garlic is now quoted at 4½ to 5c., but export shipments to the south are still very small compared with former years. White onions have not changed in price and the general condition of onions has not improved. A large quantity of poor onions remains piled up here and most of the stock has to be picked over, owing to its poor condition.

Celery, per dozen.....	50	@	—
Radishes.....	10	@	—
Lettuce.....	20	@	—
Asparagus, per lb.....	5	@	10
Rhubarb.....	1 50	@	1 75
Green Peppers, southern.....	20	@	—
Cucumbers, hothouse, per dozen.....	75	@	1 50
Summer Squash, southern.....	2 00	@	—
Turnips, yellow.....	1 50	@	—
Turnips, white.....	1 20	@	—
Cauliflower, per dozen.....	50	@	—
Beans, String, per lb.....	1 00	@	1 25
Cabbage, choice garden, per 100 lbs.....	10	@	15
Egg Plant, per lb.....	4½	@	5
Onions, Oregon, per cti.....	80	@	1 00
Onions, New Yellow Danvers, per cti.....	75	@	1 00
Onions, Australian Brown, per cti.....	1 00	@	—
Peas, Green, per lb.....	8	@	10
Tomatoes, per box or crate.....	2 00	@	2 50
Artichokes, per doz.....	40	@	85
Carrots, per sack.....	80	@	1 00
Hubbard Squash, per ton.....	25 00	@	—

NOTE.—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top, with hand holes in the ends, and weigh when filled from 50 to 60 lbs gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 35 lbs. gross.

Fresh Fruits.

Apple prices remain as last quoted. There has not been a very large demand for fresh fruits recently, most of the fruit being directed to oranges and citrus fruits. The outlook for berries is for good average crops. Tropical fruits are being favored now, as apples and citrus fruits are the only domestic varieties to be had.

Apples, choice to select, per 50-lb. box.....	1 25	@	1 75
Apples, good to choice, per 50-lb. box.....	75	@	1 00
Apples, common.....	40	@	50
Pears, Winter Nellis.....	2 75	@	—

Dried Fruits.

Dried fruits continue strong and firm. Apples are quoted at a quarter cent advance. Apricots are very strong at the advance figures quoted last week. Prunes are moving as formerly at the old quotations, which remain very firm. The dried fruit market on the whole is showing much strength for this time of year and the next season may start in with a clear board.

EVAPORATED OR BLEACHED.

Apples, 50-lb. boxes, rings, pressed, good to choice.....	8½	@	8½
Apples, extra choice to fancy, 50-lb. boxes.....	9	@	9½
Apricots, Royal, good to choice, per lb.....	8½	@	9½
Apricots, Royal, fancy.....	9½	@	10
Figs, 10-lb. box, 1-lb. cartons.....	55	@	62½
Nectarines, White and Stanwick, per lb.....	8	@	8½
Nectarines, red, per lb.....	8	@	8½
Peaches, unpeeled, good to choice.....	8½	@	8½
Peaches, unpeeled, fancy to extra fancy.....	9	@	9½
Pears, standard, per lb.....	8½	@	8½
Pears, choice to fancy.....	10	@	12
Plums, Black, pitted.....	5½	@	6½
Plums, Red, pitted.....	7	@	8
Plums, Yellow, pitted.....	6	@	8
Prunes, Silver, good to fancy.....	5	@	8½
Prunes, in bags, 4 sizes, —@—c; 40-50s, 5½@5½c; 50-60s, 4½@5c; 60-70s, 4¼@4¼c; 70-80s, 3¾@4c; 80-90s, 3¼@3¼c; 90-100s, 3@3¼c; small, 2¾@3c.			

COMMON SUN-DRIED.

Apples, sliced.....	5	@	5½
Apples, quartered.....	4	@	5
Figs, White, in bulk.....	2½	@	3
Figs, Black.....	2½	@	3

Raisins.

There has been no new developments in raisins this week, the market holding firm at maintained prices. The latest action of the growers in deciding against all organization has at least left the situation less complicated for the time being. No estimates on the coming crop have yet been made though the trade is guessing on a rather heavy yield.

(Fresno delivery except otherwise specified.)

London Layers, 2-crown, 20-lb. box.....	1 50	@	—
London Layers, 3-crown, 20-lb. box.....	1 60	@	—
Fancy Clusters, 4-crown, 20-lb. box.....	1 75	@	—
Dehesas, 20-lb. box.....	2 00	@	—
Imperial, 20-lb. box.....	2 50	@	—
2-Crown Standard loose Muscatel.....	5	@	—

WOOL SALE.

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Washed in 15 to 30 minutes

Thick Cream

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The creameries of the country have become so convinced of the increased value of thick cream over thin cream that many of them are paying one cent per pound more for cream testing 30 per cent. and over than for that testing under 30 per cent.

The reasons for this are—

First—Thick cream makes better butter because it contains less milk and therefore keeps in better condition.

Second—Thick cream is so much less in quantity that the cost of transportation is less.

It is much better for the dairyman to make thick cream because he has more skimmed milk left at home to feed calves—it then follows that dairymen should buy only such separators as can separate thick cream.

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to California customers from San Francisco warehouse. No delays. Address all letters to Bellows Falls, Vt.

3-Crown Standard.....	5¼	@	—
4-Crown Standard.....	5¼	@	—
Seedless Thompsons, 50-lb. boxes.....	4¼	@	—
Seedless Sultanias.....	4½	@	—
Seedless Muscatels.....	—	@	—
Fancy, 16-oz. Seeded.....	6¼	@	—
Choice, 16-oz. Seeded.....	6¼	@	—
Fancy, 12-oz. Seeded.....	5¼	@	—
Choice, 12-oz. Seeded.....	5	@	—
Fancy Seeded, bulk.....	6¼	@	—
Choice Seeded, bulk.....	6	@	—

Citrus Fruits.

The citrus fruit market has commenced to strengthen. It has been very firm during this week and an advance in some varieties will probably occur in the near future, as sellers are holding close to the outside figures. Receipts continue in a fairly normal condition. The first of the week, however, saw rather large consignments arrive, but these have been cleared away at the prevailing figures. Arrivals are usually of good, sound character.

Oranges, fancy.....	2 25	@	2 75
Oranges, choice.....	1 75	@	2 25
Oranges, standard.....	1 25	@	1 50
Oranges, Seedlings.....	1 25	@	1 25
Lemons, California, fancy, per box.....	2 00	@	2 50
Lemons, California, good to choice.....	1 00	@	1 50
Lemons, California, standards.....	60	@	75
Grape Fruit, per box, new.....	1 00	@	1 50
Grape Fruit, seedless.....	2 00	@	2 50
Limes, per box.....	3 50	@	6 00

Nuts.

No change in nuts is noted this week. The movement is light and steady and is confined to local consumption. No outside inquiry is experienced, and it is doubtful if anything will influence the market to the extent of a considerable change in prices in the near future.

Peanuts, fair to prime.....	4½	@	5¼
Cal. Walnuts, No. 1 soft shell.....	—	@	13
Cal. Walnuts, No. 2 soft shell.....	—	@	9
Cal. Walnuts, No. 1 hard shell.....	—	@	12½
Cal. Walnuts, No. 2 hard shell.....	—	@	8½
Almonds, IXL, per lb.....	12	@	13
Almonds, Ne Plus Ultra, per lb.....	12	@	12½
Almonds, Nonpareil, per lb.....	12½	@	13
Almonds, Langueodoc, per lb.....	8½	@	—
Almonds, Golden State, per lb.....	9	@	9½
Hard Shell, per lb.....	5	@	—

MAIL ORDER HOUSES.

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THE DAIRY.

Oregon Dairy Industry.

In his annual report, Dairy Commissioner J. W. Bailey estimates the amount of butter produced in Oregon during 1905 at 6,750,000 lb., and the cheese produced at 2,750,000 lb., an increase in both of from 20 to 25%. The number of registered creameries has increased from 108 to 196, and the number of registered factories from 64 to 79.

His report shows that during the year 36 persons were prosecuted for violations of the pure food law, and that in each case where they stood trial convictions were secured, bringing in a revenue of \$1,005, which has been added to the pure food fund. During the month of December there were seven convictions under the pure food law, the fines amounting to \$200. The report follows:

During the month of December, Dairy and Food Commissioner J. W. Bailey inspected ten dairies. One certificate of inspection was issued, and one dairy was condemned. Mr. Bailey reports that the dairies furnishing the milk supply of Portland are in better condition than they have been heretofore. The stables are kept cleaner, the cows are not shut up in close quarters, and the milk is being handled in a more cleanly manner. The new State law regulating the inspection is going to bring about the much-needed change.

TRYING ALFALFA.—One of the great difficulties confronting the dairymen of Oregon is to provide green, succulent feed for their cows during the dry summer months. Something over a year ago, Mr. Bailey decided to try an experiment with alfalfa, thinking that, perhaps, its culture might be the means of providing green feed when the pastures are dry. To every dairyman who would plant an acre Mr. Bailey offered to furnish the alfalfa seed. A number of dairymen accepted the offer, perhaps 15 dairymen residing in Washington, Marion, Linn and Lane counties. The reports are now coming in to the effect that in every instance a good stand had been obtained, and the prospects are that alfalfa will grow and solve the problem of summer dairying.

Although it is impossible to get accurate statistics from the creameries and cheese factories at this early date, it can be quite safely stated, from the facts already at hand, that the dairy industry has made rapid strides during the past year. The number of creameries having registered State brands has increased from 108 to 196, and the number of registered cheese factories has increased from 64 to 79. There has been an increase of 20 to 25% over last year's output in the matter of butter and cheese produced.

Good Outlook for Range Horses.

The man who has horses to sell for the next two years has a good chance to be king of the stockmen, according to H. I. Wilson, of Montana. Mr. Wilson is associated with Capt. W. J. Bradshaw, of Helena, in railroad contracts near Toronto on the Canadian Pacific. They tried to purchase horses in Montana last year, but could obtain but few.

The demand will be immeasurably increased with the building of the new roads. As it is now, all the big contractors have all the work they can do for several years ahead, and there is more in sight. The coming of the Milwaukee will mean work for an army of men and teams, the Gould system is to parallel the Union Pacific, and the Grand Trunk Pacific is to throw a line westward clear across Canada.

This will mean a market for thousands of horses. The contractors now buy their horses outright instead of hiring men with teams, and they want grade horses that weigh about 1,200 lb. Horses of the required standard command from \$100 to \$125 in the market.

At such figures the horseman has a bonanza. He runs less risk of loss than any other stockman. On the range the horses are good rustlers for a living, and by a little additional feeding they can be put in prime condition for sale. With the vast amount of work ahead of the contractors, there is no chance of a drop in price, in spite of the inroads of the automobile where the streets are paved.

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Homer—What! You call \$7 a lesson a delicate touch?

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THE SUGAR BEET.

Cultivation and Fertilization of Sugar Beets.

Abstract of a Lecture by DR. MAERCKER.

The somewhat popular idea that certain types of soils are necessary for profitable sugar beet culture seems to have no foundation in fact. Almost any type of soil is suitable for sugar beets, so long as moisture and tillage, and the necessary plant food are supplied. Even heavy clay soils, by systematic liming, may return regularly very satisfactory sugar beet crops. Sugar beets require a warm soil and sub-soil; that is, a soil free of stagnant water both above and below the surface. In practice this means a soil well drained, if not naturally, then artificially. Drainage alone is not sufficient, however, if the conditions are such that the soil is apt to become cloddy; on these soils lime must be used freely, broadcasted in the early spring. With the soil mellowed by lime and proper drainage, we come to the next essential in the profitable culture of sugar beets—deep cultivation. If soils are at all heavy they should be fall plowed, and even cross plowed, the roughly turned soil left to the action of the winter weather. The crop requires a deeper tilth than other crops, as it seems to have little power of soil burrowing on its own account, especially in soils at all compact naturally; yet, a well-proportioned tap root seems to be one of the conditions of a high sugar content. Not only must the soil be deeply worked in its preparation for planting, but it must have continuous and thorough cultivation during the growing season. The earth mulch must be maintained, and the soil kept free of weeds and surface crusts; these crusts may be a result of using very high-grade plant foods, but intensive cultivation demands their use. The plant-food of sugar beets is, of course, the same as for other crops, ammoniates, phosphoric acid and potash. The phosphoric acid must be used in ample quantities in order to push forward a well-nourished early growth, and with this crop water-soluble phosphoric acid should be used, the form found in acid phosphate. There is no direct connection between sugar formation and phosphoric acid plant food, but phosphates unquestionably prepare the way for the development of sugar by influences to come later in the growing season. Abundant phosphoric acid in the earlier stages of growth puts the crop through to an early ripening, and the earlier sugar beets are matured the more time they have for sugar making. Ammoniate plant food best for the sugar beet is a matter of some discussion, but the roughage ammoniates of the farm, such as farm-yard manure, etc., are used extensively, and with proper care are effective, except perhaps in the case of sheep manure, which is too rich in available ammoniates to be used to advantage, as losses are unavoidable for a fall application. The best practice seems to be to broadcast the manure and plow down in the fall—it is never wise to top-dress sugar beets with manure of the roughage type in the spring. The best form of plant food ammoniate is the nitrated ammonia of nitrate of soda. Sugar beets take all their ammoniate plant food in the form of a nitrated ammonia, while all ammoniates are in time converted into the nitrated form in the soil, the action is always irregular and is accompanied by a heavy loss of ammonia. With nitrate of soda all these disadvantages disappear. It is estimated that sulphate of ammonia loses 15% of its ammonia in this process of transformation, and that packing-house ammoniates lose 35%; farm-yard manures lose from 40 to 80%. For all this great loss, the disadvantage is probably not so much the actual loss of ammonia as the irregularity with which the plant food ammonia is supplied the crop. If the nitrated plant food is not present when wanted, the crop must wait for it, and nature in agriculture waits with very bad grace. Perhaps the best application of nitrate of soda on farms carrying the stock usually necessary to do the work of the farm and supplement natural oses, and the resulting manure regularly fall-plowed down is 300 lb. per acre. It is claimed to be proved that for an average year, 100 lb. of nitrate of soda will produce an increased crop of sugar beets of 2,500 to 3,000 lb. per acre. Experiments conducted by Professor Maercker gave an increased yield of from 4,000 to 4,800 lb. for an application of 150 lb. of nitrate of soda per acre, a second application of the same amount also resulting in an increased yield of 4,000 to 4,800 lb. per acre, but a third application of the same amount gave an increased yield of but 1,600 to 2,000 lb.; hence, the utility and profitability of nitrate of soda applica-

tions on soils of fairly good condition, commence to be subject to question only after an acre application of 300 lb. has been reached.

This nitrate of soda is not all applied at one time; in fact, from 150 to 200 lb. are all that should be applied at one time. Nitrate of soda spreads rapidly throughout the soil and this is one of its great advantages in quickly bringing plant food to the growing plants, but the same principle may prove a disadvantage in case of too lavish use, as more or less of the nitrate of soda is lost through simple seepage. Fall applications are not advisable for this same reason. The best way to apply 300 lb. per acre is to broadcast 150 lb. when the soil is being prepared for seeding in the spring, and the remaining 150 lb. from six to eight weeks later; the second application as a top-dressing, well worked into the soil. After top-dressing, the surface tillage should be deepened, and the treatment made more thorough; where high-grade plant food materials are used as a top-dressing, there is always a tendency to form surface crusts, the remedy is simply a trifle more thorough cultivation and a little deeper.

THE APIARY.

A Plea for More Honey.

TO THE EDITOR: Anyone who doubts that there is money in bee keeping need only to look up statistics on the honey crop of the United States to find out what a great marketable article honey is. In the year 1900 the total amount of capital invested in bees in the United States was \$10,196,000. The returns from the National honey crop that same year were \$6,665,000, a dividend of 65% on the amount invested. What other crop pays this rate of interest?

At a convention of the bee keepers of the State of Massachusetts held this year, the fact was revealed that only 40 tons of honey is raised annually in that State, while the amount of honey consumed each 12 months amounts to more than 200 tons.

Honey is always a ready seller, and the price per pound averages anywhere from 12 to 20c., depending upon the locality and quality. A good hive of bees in the average locality will produce about 75 lb. of honey per year, and pay 50% on the investment the first season. Get posted on bee keeping if you seek a pleasant and profitable occupation.—T. P. HALLOCK, Medina, Ohio.


Judging by local experience, the bee keepers have a plea for more money rather than for more honey, but honey is a great thing commercially. There is no doubt about that.

WANTED.

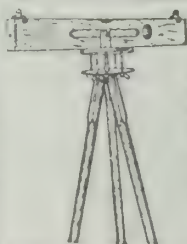
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AGRICULTURAL SCIENCE

Cutting and Spraying for the Pear Blight.

At a meeting of fruit growers at Courtland, Prof. M. B. Waite gave a spraying prescription as a supplement to cutting out pear blight. He said:

The primary treatment of this disease consists in cutting out the holdover blight before the blossoms open. This removal of the holdover blight is vastly more important than all other methods combined, and upon the thoroughness of this largely depends the successful accomplishment of controlling the disease.

This fact should not prevent our taking advantage of every secondary means of fighting this pest. One of the secondary methods is washing or spraying with the lime, sulphur, salt wash. It is recommended that this treatment with lime, sulphur, salt wash be put off as late as possible, and that a final inspection of the trees for blight should be made in advance of this treatment. It is suggested that in order to secure a thicker coating of the lime, sulphur, salt wash it be re-inforced by adding some freshly slacked lime to the ordinary boiled wash. For example, a good wash for this purpose may be made as follows: Fifteen pounds of sulphur, twenty pounds of stone lime, ten pounds of salt, about fifty gallons of water boiled for an hour or so, then fifteen pounds of freshly slacked lime made into a milk and added when filling into the spray barrel. This will give body to the wash and make a thicker coating on the trees.

The object of this spraying is to cover up any minor or overlooked case of the blight and temporarily seal up the disease through the blossoming period. Small exudations of the gummy virus will be killed by the poisonous sulphur wash. It is also thought that flies and other insects will be kept from the trees by the sulphur. The wash does not enter the bark, and does not kill the holdover blight inside the cuticle. It is, therefore, only a temporary expedient to tide over the dangerous blooming period. If gum exudes it will easily be seen on the whitewash. It has been repeatedly observed in California that blight remains inside the bark after thorough spraying with lime-sulphur. It has no effect on the opening blossoms or twigs directly, as they are not covered by it in any way.

Summer cutting out is also of benefit in fighting this disease. Growers should watch for colonies which may be found around an overlooked case of holdover, and if possible discover this holdover case, for they have a lesson in it. Frequently prompt cutting out of blossom blight and twig blight may do a great deal toward saving trees which would otherwise be lost. Spring and summer cutting, however, is by no means as successful as winter cutting.

In addition to the colonies of blight around the holdover, scattering cases may be looked for here and there through the orchard. This can usually be wiped out by summer cutting. Such cases are carried in by insects and birds from adjoining orchards.

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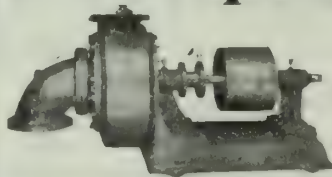
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New Patents.

DEWEY, STRONG & CO.'S SCIENTIFIC PRESS PATENT AGENCY, 330 Market Street, San Francisco, has official reports of the following United States patents issued to Pacific Coast inventors: FOR WEEK ENDING FEBRUARY 6, 1906.

- 811,915.—LIFE-SAVING BOAT—August Baumgart, Lind, Wash.
811,688.—CENTERLESS ENGINE—W. H. Blodgett, Los Angeles, Cal., and W. E. Miller, Boise Idaho.
812,163.—PANORAMIC CAMERA—Julian A. Bried, San Francisco, Cal.
811,542.—INDICATOR—P. S. Buckminster, Haywards, Cal.
811,762.—TIDE POWER—Enos B. Cade, Seattle, Wash.
811,698.—KEY-RING—Jose Calvo, San Francisco, Cal.
811,902.—HYDRAULIC CEMENT AND MAKING THE SAME—C. D. Clark, Clifton, Ariz.
811,905.—WELL-DRILLING APPARATUS—Allen Craig and E. Double, Los Angeles, Cal.
812,022.—CAR FENDER AND BRAKE—Lee A. Devin and F. S. Atkins, Oakland, Cal.
812,029.—KILN—H. T. Epperson, San Francisco, Cal.
812,030.—FLUSHING-TANK VALVE—J. E. Ericson, San Francisco, Cal.
811,912.—MUSICAL INSTRUMENT—W. B. Fleming, South Pasadena, Cal.
811,768.—PLANE-HEAD AND CUTTER—J. B. Forbes, Mill Valley, Cal.
811,769.—PLANE-HEAD—J. B. Forbes, San Francisco, Cal.
811,914.—POULTRY FOUNTAIN—G. F. Gillenwaters, East Sacramento, Cal.
812,129.—AUTOMOBILE—Ben E. Hervey, Spokane, Wash.
811,921.—EXTENSION COUCH—John Hoey, San Francisco, Cal.
811,985.—INSECTOR BURNER—L. K. Leahy, Los Angeles, Cal.
811,939.—FEED WATER MECHANISM—W. Loudon and J. J. Hendricks, Seattle, Wash.
811,858.—MEANS FOR LUBRICATING WHEELS—G. W. Lovejoy, Tehachapi, Cal.
812,059.—RAIL JOINT—U. G. Marcucci, East Oakland, Cal.
811,860.—BRIQUETTING PRESS—H. E. Marsh, Palms, Cal.
811,942.—CIGAR FOR ASTHMA—A. Mendelsohn, San Francisco, Cal.
811,651.—FRUIT-DISPLAY BOX—G. E. Miller, Riverside, Cal.
811,943.—ROCK-BORING MACHINE—W. C. Moore, Los Angeles, Cal.
812,083.—SMELTING FURNACE—A. R. Partridge, San Francisco, Cal.
812,085.—PLOW ATTACHMENT—W. J. Payette, Centralia, Wash.
811,742.—DRIP ATTACHMENT FOR BOTTLES—Margaret Perrie, San Francisco, Cal.
812,088.—CAPTRIDGE EXTRACTING IMPLEMENT—W. W. Pierce, Morro, Cal.
812,155.—FIBER-BAILING MACHINE—A. M. Sheakley, Stockton, Cal.
811,800.—ROLLER FOR TYPEWRITERS—W. A. Small, San Francisco, Cal.
811,802.—BUCKET FOR IMPULSE WATER-WHEELS—W. S. Smith, Berkeley, Cal.
811,966.—MEANS FOR AGING AND PURIFYING LIQUORS—R. A. Stewart, San Francisco, Cal.
811,600.—COMBINED WEEPER, ORCHARD CULTIVATOR AND FALLOW FLOW—Wm. Turner, Wenatchee, Wash.
812,100.—CHANGE-MAKING MACHINE—T. S. Wilkes, Phoenix, Ariz.
812,106.—SELF-FEEDING DERRICK TABLE—V. Winn, Toler, Wash.
811,681.—DADO-CUTTER—Emil Wismar, Los Angeles, Cal.
811,682.—CUTTER-HEAD FOR WOOD-SHAPERS—Emil Wismar, Los Angeles, Cal.
812,109.—FENCE-POST—G. R. Wyatt, Redwood City, Cal.
811,683.—DREDGE—F. Yeoman, Oroville, Cal.
81,806.—DESIGN—S. Hertzmann, San Francisco, Cal.

Notices of Recent Patents.

Among the patents recently obtained through Dewey, Strong & Co.'s SCIENTIFIC PRESS United States and Foreign Patent Agency the following are worthy of special mention:

POULTRY FOUNTAIN.—No. 811,914. February 6, 1906. Grant F. Gillenwaters, East Sacramento, Cal. This invention relates to drinking fountains for fowls and stock. Its special object is to provide a cheap, simple and practical device for watering chickens, which device will permit of a constant stream of running water to pass through it, which will admit easily of the mixture of a suitable disinfectant with the drinking water, which may be easily kept clean, and which will have no possibility of slopping over to wet the floors of the houses, coops, or compartments in which the chickens are kept, since it is essential to the health of the fowls that they be kept as dry as possible. It comprises a conduit provided with an inlet and outlet, a drinking-cup normally open to the atmosphere and connected with the conduit and interposed between said inlet and outlet, said outlet arranged slightly below the level of the top of the cup whereby flow may take place through the conduit without overflowing the cup, said cup arranged at an elevation above the ground, an incline leading up to said cup and a wicket partly inclosing the cup.

CIGARS FOR ASTHMA.—No. 811,942. February 6, 1906. Aaron Mendelsohn, San Francisco, Cal. This invention relates to a device for the relief of asthma and similar troubles. It consists of a cigar manufactured with a filling of cherry leaves and stramonium, having an exterior wrapper of tobacco leaves. It comprises a cigar having the center formed of the stems and heads of stramonium and cherry leaves inclosing or intertwining therewith to form a binder throughout the length of the stramonium filling, serving as a binder therefor, and an exterior wrapper of tobacco leaves.

FLUSHING-TANK VALVES.—No. 812,030. February 6, 1906. Job E. Erickson, San Francisco, Cal. This invention relates to an improved flushing-tank valve. It consists in the combination of mechanism whereby a flushing-valve when opened will be retained in its open position until the contents of the tank are discharged and will then automatically close against a continuously-flowing stream by which the tank is again filled. It consists of a device for controlling the flow of water, a pipe and casing through which the water flows, a valve-seat located within the casing, a vertically-movable valve closable upon the seat, a hood fixed above the valve when opened, said hood having an annular water-passage around it, a fulcrumed lever, one end of which contacts with the valves to open it, means carried by the other end of the lever and within the path of the flowing water whereby the valve is retained in an open position during said flow.

PATENTS

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Tulare Grange Meeting.

TO THE EDITOR: Tulare Grange met at its hall, on the 17th. There was a good attendance and an excellent lunch. Two candidates were admitted to membership, and two were elected for the degrees.

The special committee on promoting, quarantining Tulare county against diseased vines and vine cutting, reported. The special committee on the organization of a county mutual fire insurance association reported that they have prepared and have ready for signature the application to the State Fire Commissioner of Insurance, as required by law and the articles of incorporation. A recess of fifteen minutes was declared to give the members present an opportunity of signing; eighteen members, who have \$34,000 worth of property they desire to insure in the association, signed. It seemed to be the general opinion of all present that the organization of the mutual fire insurance company was, or is, another of the meritorious works of Tulare Grange, and that when all the members of Tulare Grange have signed the requisite numbers and the requisite amount of property to be insured, will entitle them to a franchise; nevertheless, the articles of incorporation will be circulated in Dinuba and Orsi Granges for signatures, and ample opportunity will be given to the members of all three Granges to sign, and to new members who may desire to affiliate with the Grange, to sign also. There are, now, three subordinate Granges in Tulare county, and a good prospect for three more, and then a Pomona, or county Grange. There will be eleven directors on the board, each subordinate Grange will have a member on it, and each will know what is being done. It is considered preferable to have eleven directors, the limit allowed by law. Los Angeles has eleven, and Sonoma has amended its by-laws, increasing its board to eleven. Seven is the smallest number of directors under the law. With seven directors, four would be a quorum, and experience has taught that small quorums are dangerous. The Grange will eliminate that danger. Everything will be done which will serve the very best interests of the organization and which merits public approval.

No by-laws have, as yet, been adopted, consequently no rates of premium have been adopted; it is understood, however, the rates will be low, but if a loss has to be paid and the funds on hand are insufficient to meet it, an assessment will be collected for that purpose. Los Angeles county mutual has now been organized 5½ years, and with an assessment of eight cents on the \$100 insured, has met every obligation. Fortunately for them their losses have been very light, and they have now on hand \$9,000 to meet any loss when it comes, as, no doubt, come it will sometime.

The subject for next meeting is: In the distribution of water for irrigation, should the allotment be in accordance with the requirements of the crop? by Bro. E. Barber, and an essay by Sister L. Weaver: How best can the young members of the family be kept at home evenings?

J. T.

The Grange and the Postoffice.

TO THE EDITOR: The Legislative Committee of the National Grange, P. of H., recently interviewed President Roosevelt and Postmaster-General Cortelyou. Among other subjects discussed was the Parcels Post. The President predicted its coming establishment, while Mr. Cortelyou was enthusiastic in speaking of the advantages of the Parcels Post, especially to the rural people, and predicted its establishment in some form in the near future. The Committee add: "The advisability of experimental adoption of the system in specified sections of the country, as was done in the initial establishment of rural mail delivery, was discussed, and your Committee heartily endorsed such action and request the members of the Grange to take immediate action in having their influence exerted in favor of legislation that will enable the Postmaster-General to inaugurate such experimental Parcels Post service." Will you, reader, earnestly take up this matter and personally urge your congressman to do what is needful to provide you with so great a boon as the Parcels Post would prove to all classes, and particularly to you?

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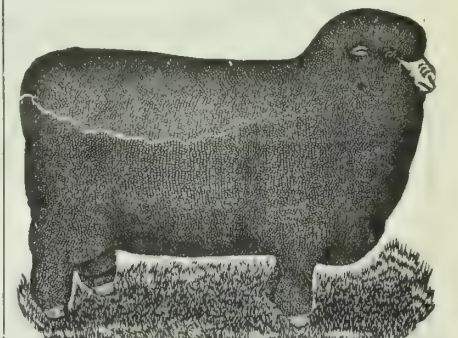


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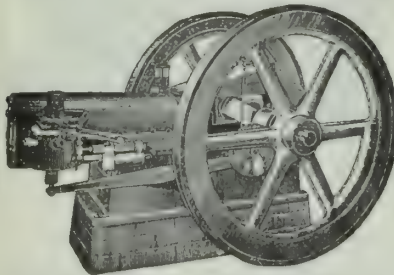
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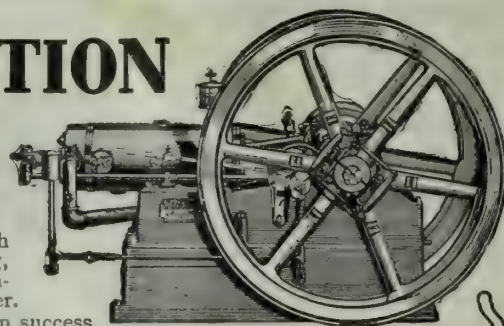
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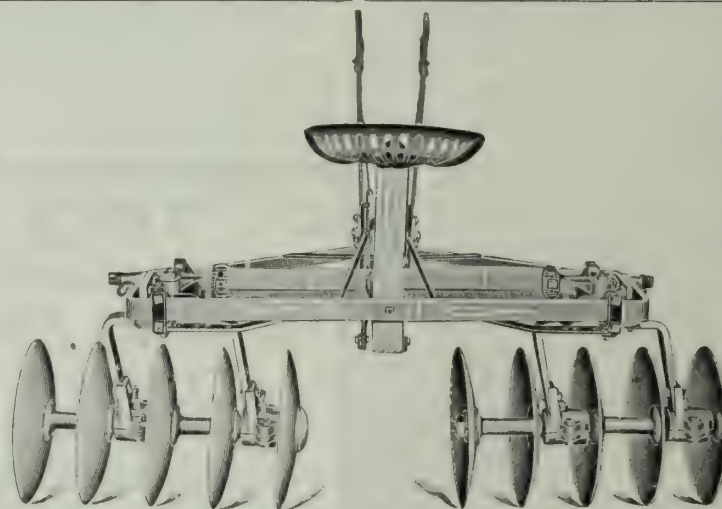
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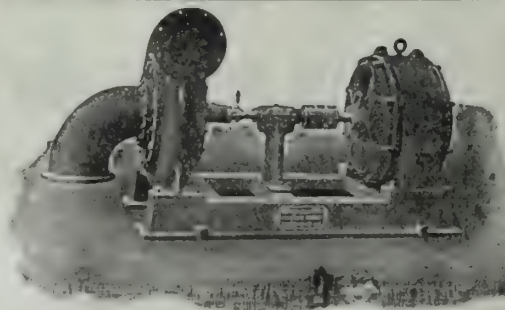
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THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 10.

SAN FRANCISCO, SATURDAY, MARCH 10, 1906.

THIRTY-FIFTH YEAR.
OFFICE: 330 MARKET ST.

Regulation of the Fertilizer Trade.

The sight of the glass fruit jars on this page might suggest that we are going on with the discussion of canning in which we have rather freely indulged during the last few months. Not so; the glass fruit jar has been so widely recognized as a convenient air-tight and transparent receptacle that its uses are many and some very far from that for which it was invented. Thus it is in this case, for the jars are filled with commercial fertilizer and the experiment was to show how the different ingredients may

materials largely collected as might be expected. Fig. 2 is the under side, which shows the fine stuff gone to the bottom, and Fig. 3 is a side view, showing both the coarse and fine in their respective positions. Mr. George Roberts, chemist in charge of the fertilizer control laboratory at the University Experiment Station, uses this striking illustration to emphasize his position that the mechanical condition of fertilizers is an extremely important consideration. Especially is this true of those materials in the fertilizer which are not soluble in water. It may be laid down as a general principle that the availability

sought in using water-soluble phosphoric acid and potash is fineness of division and evenness of distribution by solution, for both of these materials soon become insoluble by fixation in the soil, but in an extremely finely divided and well distributed condition, provided they were put in solution by sufficient rain or irrigation. Thus the fertilizer control work is a constantly present suggestion to the manufacturer that he must put his goods into finely ground condition. It is a suggestion also to the purchaser that, if not finely ground, the mixed fertilizer may become unmixed during transit. This means that he may be



Eighteen-Horse Team Hauling Nine-Ton Pieces of Machinery on the Mountain Roads of Trinity County.

separate during the shaking due to travel and how necessary it is that fertilizers should not only be fully mixed in the first place and that any tendency to separate during handling should be overcome by mixing before application. In fact, the plate on this page does not show three jars but three views of the same jar—different sides being photographed to show how the material grades itself according to size during the jarring by railway transportation. Fig. 1 is the upper side of the jar with the coarser ma-

of a given insoluble fertilizing material varies directly with its fineness. It is almost needless to say, for example, that bonemeal and tankage are much more effective when finely ground. For this reason, in Mr. Roberts' reports the fineness of these materials is given. Fineness is really a better test of their availability than the chemical tests of solution in various solvents. Fineness and evenness of distribution have more to do with the efficiency of a fertilizer than is generally supposed. The very object

applying the various substances very unevenly upon his land and it means also that he can easily find out whether the manufacturer is selling him stuff in the right condition or not. There is no provision in the law by which a manufacturer may be held responsible for the mechanical condition of his goods. The presumption is that the farmer will look to that matter himself.

This fertilizer control work, conducted by Mr. Roberts with great energy and acumen, is constantly increasing in volume and in interest, also in number of samples examined.

A Long Team.

Probably a 16-horse team would not be considered so very great since we have heard so much about 20-mule teams hauling borax. Nor is it so very great when we remember that nearly twice as many animals are often used to move a California combined harvester. And yet a sight of such a team hauling pieces of machinery each weighing nine tons over the mountain roads of northern California is a greater feat of horsemanship than a much larger team moving over the flat lands of the valley or the desert. Such work these 16 horses did, rising 1,480 feet in 60 miles and crossing three divides during the one journey. It was a very good piece of hauling.



FIG. 1.

FIG. 2.

FIG. 3.

Unmixing of Fertilizers—Coarse on Top, Fine on the Bottom and Both on the Side.

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SAN FRANCISCO, MARCH 10, 1906.

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The Week.

As we write, the weather has radically changed, the blizzards which have been belaboring the Rocky Mountain regions have gone on and this has cleared the upper atmosphere so that normal March sunshine can re-assert itself. With ample heat and sunshine, grass and grain are now growing rankly, the blossoming season will have clear, dry air for bees and other pollinating agencies and late sowing and planting are now going forward rapidly. Our observation of the earlier blooming fruits does not indicate a large product this year. It is, of course, too early to reach definite conclusions, but growers should be cautioned against taking it for granted that there would be large fruit crops because of the liberal recent rainfall. It looks to us as though apricots were going to be rather shy over considerable parts of the State and the peach trees do not look as well as they should. It will be a good thing therefore to be a little conservative about selling until this apprehension is affirmed or disproved. There promises to be a keen demand because last year's product is so fully cleared up and even large products, if we have them, ought to go at good prices.

On the first page of this issue there is reference to the work being done to assure purity and value in commercial fertilizers. A report of the last half year's work is now being sent out from the University at Berkeley to all who apply for it. It shows that the number of samples examined is increasing rapidly and shipments are caught up almost everywhere on their way from manufacturer to consumer, thus making it very necessary that the former should not become careless and allow his goods to fall below his guarantee, which, according to the law, is affixed to every package of the material delivered. In the southern end of the State, where fertilizer consumption is heaviest, there is now in operation a very successful plan of inspection, which will be introduced throughout the State as far as is practicable. In this district there is a resident inspector on duty throughout the year. He resides at Riverside and is within easy reach of nearly all the important points of consumption. He not only makes regular trips of inspection, but keeps himself posted as to the movement of fertilizer shipments, and goes at any time to places where these shipments are arriving. He is also in touch with purchasers of fertilizers, and, when requested to do so, he samples shipments made direct

from the factory to the purchaser. In this way many lots of goods are sampled which would escape inspection under the usual plan of visiting agencies and taking samples of goods stored in their warehouses. This plan will in no way interfere with farmers sending their own samples, with the fee provided for in the fertilizer law.

The campaign against pear blight is nearing its end and some of the Eastern experts who came to co-operate with our Experiment Station forces are returning East to take up other strenuous undertakings which the Department at Washington has ready for them. Several of the Sacramento valley and foothill counties have backed up the experts thoroughly and done all they could to give the present plan of fighting a fair chance to win. Messrs. Shear and Miles were first to return East. The former says the work has been very successfully conducted in Placer county, the pear growers there having taken it up with great enthusiasm, and he feels that he is leaving in excellent condition the district assigned to him. Mr. Miles was engaged in the Sacramento river orchards. The work in this field has also been very efficient and the growers have, as a rule, taken the liveliest interest in the campaign. The University of California, in co-operation with the Department of Agriculture, has been largely instrumental in the successful carrying out of this great work. Several Department and University men remain in the river district to complete the work, which it is hoped may be accomplished before the blossoming season.

There is continual progress toward organization of the cattle interests of California which bids fair to be strongly influential in whatever makes for the good of the live stock interests. We have already had reference to the interesting meetings of the grazing tenants of the forest reserves at various points along the Sierra Nevada foothills. Such assemblies are all calculated to promote, not only the grazing interests of individuals, but of the State as a whole. And there was a State organization effected at Salinas on Saturday last which will afford a means of assembling all local interests. The California Cattlemen's Association was organized by a number of prominent stock owners. A constitution and by-laws were adopted and the following executive committee, representing each county, was appointed: Charles W. Lowe, Santa Clara; H. W. Lynch, San Luis Obispo; P. Thompson, Santa Clara; L. Buell, Santa Barbara; Hamilton Otis, Sonoma; G. M. Durant, Los Angeles; George A. Knight, San Francisco; Thomas S. Smith, Kern; G. A. Kirkwood, Amador; A. S. Nichols, Sierra; S. J. Smith, Lake; J. L. Matthews, Monterey; Cran Brothers, Stanislaus; Hartley Brothers, Solano; Occidental Land & Improvement Company, Madera. This is all in the right direction.

One of the most promising measures now before Congress is that recently introduced by Senator Warren, of Wyoming, authorizing the Secretary of Agriculture to make investigations to determine the best methods of utilizing small water supplies in irrigation in sections where irrigation of large areas is not possible, and to demonstrate the relation of this undertaking to the settlement of the semi-arid region. It is contemplated to determine the best methods, with the cost, of rendering available for irrigation small water supplies through pumping, the construction of small reservoirs, or the copious watering of land in non-irrigation periods, and to determine the best and most profitable methods of applying water to the growth of agricultural crops through irrigation. That small sites for these investigations and demonstrations shall be chosen with a view to furnishing reliable information to the Federal Government about the agricultural possibilities of the public lands now used for grazing, and to enable the Agricultural Department to furnish to land-owners and intending settlers reliable and practical information about the best means of utilizing small water supplies in irrigation, with the cost and value of such irrigation. This is a thoroughly rational and timely supplement to the National Irrigation enterprises. It will help places not reached by great systems and it will help all, both small or great, to use water wisely and well. It ought to be enacted.

QUERIES AND REPLIES.

Plowing-in Cover Crops.

TO THE EDITOR: Will you tell me at what stage of growth should peas be plowed under to get best results in amount of nitrogen produced? Does the pea continue to gather nitrogen after the nodules are full grown? Peas are in full bloom here now and most ranchers are plowing them in now. I shall wait until next month thinking that they are still gathering nitrogen.—FARMER, Etiwanda.

Peas should be plowed in for the enrichment of the soil when they have made a maximum of succulent growth and while there is still surplus moisture enough in the soil to accomplish their decay without detracting from the moisture supply, which the trees need for their season's growth. Of course, with irrigation these plants can be allowed to grow a little later in the season than with rainfall, but then you must look out that they do not become too matured and woody, because then decay is more difficult and you are liable to have your land cumbered with dry trash, which interferes steadily with summer pulverization. The pea continues to gather nitrogen while the bacteria are still active in the nodules, but probably as the plant advances toward maturity this nitrogen is taken into the substances of the plant and this may explain why nodules are difficult to find during the latter stages of the plant's growth. If you have a good growth of plants coming into bloom we doubt very much whether you will gain anything by allowing them to stand longer. You incur the risk of slow decomposition and interference with cultivation which I have already mentioned.

Soy Beans—Coast Forage Plants.

TO THE EDITOR: In reading United States Bulletin, No. 58, issued in 1899, 'Soy Beans,' I see no reference in it to any results of this State's cultivation. I am seeking to know the best article to raise to feed cows for milk production other than alfalfa. It must be grown on the hilly lands of this section.—DAIRYMAN, Santa Cruz.

Soy beans are not successful on California uplands. They cannot be grown in the winter, owing to frost and they cannot well endure the long dry season in this State. A small quantity of them is grown by Chinamen and Japanese on the river bottom lands of the interior valley, but they do not constitute an important crop anywhere in this State. We do not know of anything that will give you green feed on dry uplands in the summer time. Ordinarily, Indian corn comes nearest to yielding a good amount of forage and is grown for that purpose and for putting in a silo on the hilly lands of Sonoma county, near the coast, where the conditions might be similar to yours. Perhaps the best perennial grass for moderately dry situations, near the coast, is the Australian rye grass, which is a good fall and winter grower and will hold on later in the spring than any other plant we have tried. Burr clover is also well worth sowing in many situations if the land is not already stocked with it.

For a Sand Swale.

TO THE EDITOR: I have 20 acres of land within a mile of Clovis, Cal., which was originally purchased as fruit land. From 5 to 10 acres consist of light sand about eight feet deep, which they call sand swale, hog wallow or old dry creek. Whatever its name, it is absolutely worthless as far as experiments have been made in trying to grow vines and peaches. Can you suggest a probable crop that might be tried successfully on such land or should it be abandoned?—OWNER, St. Paul.

You might grow some deep-rooting legume if you can keep the stuff moist enough by irrigation until it has a chance to get its roots down. Alfalfa might do under such conditions. Sweet clover (*Melilotus alba*), would probably catch on it and make you a lot of bee pasturage. You can gradually improve the soil by growing winter crops of peas or vetches or sweet clover and plowing them in while green. If you can increase the amount of vegetable matter it will hold water better and be good for something after awhile.

Tuberculosis Not Communicable From Cow to Biped.

TO THE EDITOR: In spite of the very pronounced statements made by certain parties at the State Farmers' Institute—statements to which I then and there demurred—Dr. Koch, in his Nobel lecture,

delivered at Stockholm, December 12, last, declares "the contagious character of tuberculosis is now generally recognized. It is communicated only from man to man. Tuberculosis in cattle is not communicable to human beings." This extract I take from p. 379 *Review of Reviews* for March. I believe it vindicates the stand taken at aforesaid institute by me. EDWARD BERWICK, Pacific Grove.

We were unfortunately not able to attend the meeting to which Mr. Berwick refers and consequently cannot confirm his vindication for lack of knowledge as to just what the issue was. We sincerely hope he and Koch are right. It would be a great blessing. If the question was as to whether Koch believes the disease incommunicable, Mr. Berwick is vindicated. If the question is, however, whether the disease is communicable or not, that is another question, and Koch's dictum does not answer it. Koch's name is great, but it is not exactly synonymous with demonstration. Like every other scientific man giving proof, he has to make it impossible to claim the opposite. If he has done this, we have not seen the record of it.

The Moon and Planting.

TO THE EDITOR: To forever quiet our minds on an ancient superstition, will you please answer the following question and confer an everlasting favor: In planting potatoes or other tubers which mature under the surface of the soil, does it make any difference in the product or quality if planting is done on the increase or the decrease of the moon?—ENQUIRER, Sacramento county.

We are glad of the chance of setting this question at rest, even if it be only in a single mind. The moon has absolutely nothing to do with anything under the soil. Moonlight may advance leaf growth a little, just as electric light does. As for the starting of tubers, if the soil, heat and moisture are right you need not pay any attention to the moon, and if they are wrong the moon cannot help you.

Buckwheat Growing.

TO THE EDITOR: As I am a stranger in this State, I want to know if buckwheat will grow and mature in the San Joaquin valley. If so, when is the best time to sow the seed?—NEWCOMER, Ceres.

Buckwheat cannot be sown until danger of frost is over, and, starting so late as that, the plant comes soon into hot, dry air, which it does not like. It needs heat and somewhat moist air, and, therefore, it can be grown on low river bottom and not on the plains. There is, however, very little reason to grow it in California, as the demand is very small. You might try a little with irrigation to see how you succeed.

Steam Cooking of Lime Salt and Sulphur.

TO THE EDITOR: A friend tells me that in the East where feed cooking for stock is extensively practiced the cooking is done by steam carried from a generator or boiler through a hose into the bottom of the feed receptacle. That method of cooking is safer and he thinks it could well be applied to our practice of boiling lime sulphur and salt for spray mixture for trees, making it quicker, easier and cheaper. Has anyone tried this and what do you think of it?—SUBSCRIBER, Penryn.

It is certainly feasible and has been done in California for many years. The first large scale steam cooking outfit we knew of was put in by Mr. H. P. Stabler of Yuba City nearly a decade ago and it was illustrated and described in the *PACIFIC RURAL PRESS* at that time.

Broom Corn in California.

TO THE EDITOR: I desire information on the raising and harvesting of broom corn. We have a piece of very rich river bottom land that we have cleared and plowed, and we want to put in some crop this year that will require some cultivation, so as to have it in a better state of cultivation for hops next year. We have been thinking of broom corn; but as there is none raised in this county, we are at a loss to know how much there is to this crop.—FARMER, Tehama county.

There is nothing published on broom corn in California, except brief articles which we have published from time to time. If you send to the Hon. James Wilson, Secretary of Agriculture, Washington, D. C., for Farmers' Bulletin No. 174, entitled 'Broom Corn,' you will get a very interesting account of the practice with the growing and harvesting of broom corn in other parts of the country, and it will give you all the suggestions you need for beginning with the crop

here. Broom corn is a tender plant and must not be started until frost injury is over. In this respect it is just like the Indian corn and sorghum; in fact, broom corn is one of the sorghums. Sometimes the brush, properly harvested, is very profitable in California, and sometimes it is very low, as we have only our own broom-makers to depend upon for customers. There is much about the harvesting of the brush which has to be learned by experience, and there is much hand work to be done and done in just the right time and way. There are, of course, objections to broom corn as a catch crop, for one just begins to learn about it when the land is given to another crop.

Not the Canada Thistle--Bloat Treatment.

TO THE EDITOR: In answer to your recent request I send you specimen of Canada thistle as grown on what has been the Calaveras river bottom since the flood of 1862. It is identical with that now growing here on my neighbor's place and mine. My cows are thus far safe from bloat, though they make me very anxious. I have provided myself with six feet of 3/4-in. rubber hose to thrust into the paunch in extremity. Will soil them as soon as I can provide the provender in that form. Salt is credited with their safety thus far, though I feel it a very tenuous treatment. I have no roughage to feed with the alfalfa.—DAIRYMAN, Lathrop.

The plant which you send is not the Canada thistle at all; it is the Spiny Clotbur (*Xanthium spinosum*). This is the plant which we usually receive from those who think they have found the Canada thistle. It is an entirely different plant, and can be readily reduced by preventing it from going to seed, while the Canada thistle has a perennial growth sprouting by underground shoots and is a vastly more troublesome weed. We hope the arrangements you have made to avoid bloat will be successful. You must, of course, use vaseline, or some other lubricant, on the hose and insert it quite carefully, for fear of abrasion or other injury.

Planting Two-year-old Almonds.

TO THE EDITOR: I am putting in 60 acres of almonds in rather sandy soil, including 40 acres of the Jordan. The latter are two-year-old trees, but were all I could get. I find that they had been headed about two and one-half feet from the ground last year. I wish you would advise me how to trim them.—PLANTER, San Joaquin Valley.

If we could see the trees we could tell in a moment how to handle them. It may be impossible to treat them all exactly alike. Probably they are somewhat branched, and if so we should not cut those branches off but cut back pretty well, selecting four or five of the best placed ones to form the head of the tree, and in this way it ought to be possible to get some of the branches quite as low down as desirable. If the branches have been lopped off we should plant the trees about as they stand without cutting back, and making selection from the shoots which start those which are best placed to balance the tree, and pinch off the others. This is the best we can do with a hypothetical case.

Tree Planting in Triangles and Squares.

TO THE EDITOR: Is the equilateral triangle system of tree planting practical? Is it difficult to plow or cultivate or take care of the land on that system? Which do you consider the best system?—ENQUIRER, Monterey county.

The planting of fruit trees in equilateral triangles is perfectly practicable. The arguments made for it are that it more equally subdivides the land between the different trees, and at the same time enables one to cultivate in more directions than when the trees are planted in squares. It is, however, a fact that although these advantages are admitted, probably three-quarters at least of all the trees being planted in California are set in the old-fashioned rectangular system. Will some one tell why this is the case?

No Scale at All.

TO THE EDITOR: Not being acquainted with the San Jose scale and having been told that an orchard I have bought is infested with scale, I write to you for information, inclosing to you some apple peel with scale or spots on, also one apple twig and one cherry twig containing spots that I am unable to tell whether they are natural or not.—NEW COMER, Shasta county.

The markings on the bark are not the San Jose scale, nor any other pest. They are simply the corky spots natural to the bark, which are botan-

ically called lenticels. The marking upon the apple peel is merely the healing of some blemish, probably made by some puncturing insect. We see nothing on the specimens to indicate that your trees need spraying.

For Grasshoppers.

TO THE EDITOR: Last year the Turlock colony suffered greatly from the grasshopper, small trees and grapevines both being destroyed. Is there anything that could be used as a spray without injury to the tree or vine, to protect them from these pests?—SUBSCRIBER, Elmwood.

We do not know of any such thing. You can, of course, put on something which will poison the hoppers, but by the time each one gets a bite your tree is defoliated and ruined. The true way is to feed the hoppers on bran and arsenic before they get to the trees. You can get a publication telling all about fighting grasshoppers by applying to the agricultural department of the University at Berkeley.

WEATHER AND CROPS.

Report of the U. S. Weather Service for Week Ending March 5, 1906.

ALEXANDER MCADIE, Forecast Official and Section Director.

Sacramento Valley.

Showers occurred Tuesday, with southerly winds changing to northerly, and cold, clear weather Wednesday, with frost Thursday morning. Friday was again cloudy, with rain at night and also on Saturday and Sunday. The following are the seasonal rainfalls to date: Red Bluff—present season, 18.23 in.; last season at the same date, 25.24 in. Sacramento—present season, 12.36 in.; last season, 14.60 in. Heavy snow fell during the week at elevations above 4,000 ft. The weather has not been warm enough to cause any rapid melting yet. At Summit, elevation 7,025 ft., there is about 13 ft. of snow, whereas, at the same date last year, not more than four feet remained on the ground.

Coast and Bay Sections.

The weather continued cool and cloudy most of the week, with frequent showers in all sections. Snow fell on the higher peaks of the Coast range frequently and extended well down the mountain sides. Except on Thursday, unsettled weather prevailed throughout the week. In the San Francisco Bay district the seasonal rainfall exceeds 12 in., which is somewhat less than in any season since 1900. There were no heavy frosts during the week. Light frosts occurred in some localities Wednesday morning.

San Joaquin Valley.

Cloudy, cool weather, with good rains and heavy snow in the mountains, prevailed during the week. Sharp frosts occurred on the morning of March 1st and light frosts on the morning of March 4th. At Fresno the seasonal rainfall is 5.72 in., compared with 8.08 in. for the previous season. In the mountains, at elevations above 6,000 ft., the snow is from two to four feet deep and is apparently well packed, indicating a probable water supply lasting late in the season. In the high Sierra the storms have been frequent and the report from the eastern side of the range indicates that in the vicinity of Mt. Whitney very heavy snow has fallen.

Southern California.

The weather for the week was in marked contrast to that of the preceding week. Rain fell at nearly all points, and snowstorms with occasional thunderstorms and hailstorms were reported. The latter were confined chiefly to the mountain sections. Following the thunderstorms there were periods of temporarily fair weather. In the citrus fruit sections the temperature fell to about 30° on the morning of March 1st and 32° on the morning of the second. There were frosts, light to heavy, in the early morning hours of the first and second. The warmest weather was on February 26th, when temperatures exceeding 70° prevailed. The seasonal rainfall at Los Angeles amounts to 11.23 in., while during the preceding season it was 12.16 in. At San Diego during the present season 8.30 in. have fallen to date, while last season 10.69 in. were reported.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, March 7, 1906, are from official sources and are furnished by the United States Weather Bureau for the *PACIFIC RURAL PRESS*:

CALIFORNIA STATIONS.	Total Rainfall for the Week.....	Total Seasonal Rainfall to Date.....	Total Seasonal Rainfall Last Year to Same Date.....	Average Seasonal Rainfall to Date.....	Maximum Temperature for the week..	Minimum Temperature for the week..
Eureka.....	1.20	25.26	23.17	83.92	58	34
Red Bluff.....	1.90	18.23	25.24	19.65	68	36
Sacramento.....	.96	12.36	14.60	14.64	66	38
San Francisco.....	.92	12.09	16.92	17.34	69	42
San Jose.....	.98	9.65	12.45		72	36
Fresno.....	.26	5.72	8.03	6.54	70	36
Independence.....	.02	3.72	1.70	3.01	72	36
San Luis Obispo.....	.98	13.15	16.31	15.98	76	36
Los Angeles.....	.66	11.23	12.22	11.28	74	40
San Diego.....	.20	8.30	10.69	7.37	70	42
Yuma.....	.00	5.06	6.61	2.60	76	40

HORTICULTURE.

Women's Work With Fruit.

We recently commented upon women's and children's work in connection with our fruit industries. Along the same line is a record of observation in Fresno county, contributed by Belle Bradley to the *Laton Argus*, which is interesting. She says:

In this country we find hundreds of acres of grain, alfalfa, orchards and vineyards; besides these are strawberries, loganberries and all kinds of vegetables, which grow in abundance. Berry picking begins in April. Quite a number of women and girls are hired to do this work. In June the apricots are ripe and ready to cut. This work lasts about three weeks. We then have to wait two or three weeks for peaches, nectarines and pears to get ripe. This work lasts between two and three months. People who live in town and want to cut fruit generally get a tent, go to the fruit orchards and camp. Many a widow takes her children and goes out to the fruit orchards. When the season is over she has quite a sum of money laid over for the winter.

I hear you ask: "How much can one make per day cutting fruit?" From \$1 to \$2.50 per day, and I know some girls, who are old cutters, that have made as high as \$4 and some over \$5 per day. Anyone that is quick with her hands can make good wages cutting fruit.

Yet, I have known persons who were very slow at housework who made \$2.50 to \$3 per day packing dried figs. One little girl nine years old made \$1.50 to \$1.75 per day last year cutting fruit, while her mother could only make \$1 to \$1.25.

About the first of August grape picking begins. This is the work I am most familiar with, as I do more grape and dried fig packing than any other kind of fruit work. We are paid mostly by the day for grape packing, as one has to be very careful to clip all decayed or bruised grapes off the bunch before packing them in baskets. When they pay by the piece one is apt to slight her work, and one bad grape left on a bunch is likely to spoil the whole basket. They pay \$1 per day to beginners and old packers get from \$1.25 to \$2. One time they paid by the piece and I made over \$5. Grape packing lasts until after Thanksgiving, and is much cleaner work than fruit cutting, so I like it better. Dried figs are ready to pack the latter part of September. It is piece work and I can make more at it than I can when paid by the day at grape packing, so I generally leave grape packing and pack figs. This is clean work but hard on one's hands, as all figs are dipped in strong salt water, and the water is hot and the figs must be packed while hot. I make from \$2.50 to \$4.75 per day. Some do not like fig packing and would rather pack raisins or other dried fruits. Many boys and girls work in the fruit in the summer and go to school after the fruit season. I know one boy who is 16 who worked in the cannery last summer. When he started to high school in September he had earned \$125 and had most of it in the bank. Many earn enough to pay their way through business college, and in this way fit themselves for teachers, stenographers, telegraph operators, etc.

Do not get the idea that only the poorer class work in the fruit. I know of many men who get big wages, yet their wives and daughters work in the fruit.

The Cassaba Melon.

Ira W. Adams, some time ago wrote us a full account of his long experience with the Cassaba melon, but another sketch which he prepared for the *Fruit World* may have other points of interest. He says:

The seeds of this valuable melon were procured by J. D. B. Stillman at Smyrna in 1879. It came from Cassaba, in Asia Minor. They were propagated and in 1880 distributed by the *Weekly Bulletin* to 3,000 of its country subscribers. As I was one of the number, I received a few seeds and planted them early in May. I was living on Round Valley Indian Reservation, Mendocino county. I watched their development with unusual interest, as up to that time I had never raised a muskmelon from seed obtained in Europe. As soon as the melons set and commenced to grow, I discovered at once that they were altogether different in shape and general appearance from any other variety of muskmelons that I had ever seen or raised and, therefore, I was exceedingly anxious for them to get ripe in order to test their eating qualities. Early in October they seemed to be as large as they would ever grow; however, there was not a single melon that showed the least sign of ripening.

About the middle of the month a very severe frost killed the vines entirely, and I surely thought my heretofore very promising melons were entirely ruined.

However, on examining them very carefully I found, very much to my surprise, that they were not damaged in the least. I cut one of the largest ones and

found it to be very firm, but it tasted more like a poor squash than a good melon. They remained on the ground where they grew for nearly two weeks, though there were very heavy frosts nearly every night, and I could not discern that the melons were injured in the least. As they did not show the least sign of ripening I commenced to feed them to my hogs and poultry. I put about a dozen in my house. On Christmas day I ate my first one, with my family and a few friends. They all pronounced it (as did I) to be the best and finest flavored muskmelon we had ever tasted. In fact, it was so exceedingly rich, spicy, sweet, and with such a delicious pineapple flavor, that I concluded to name it the Winter Pineapple Muskmelon, by which name it has generally been known throughout the United States.

I certainly consider it to be the most valuable of any muskmelon I ever saw or raised, and I have grown most of the varieties known to seedsmen. If I am not a pretty competent judge of a good melon, I certainly ought to be, as I assisted my father in raising them over 60 years ago, in Dorchester, Massachusetts.

I am still raising these melons. I sell the selected ones that weigh from 10 to 15 pounds each for table use, and the small ones I sell by the ton for feeding to cows, hogs and poultry. I have raised as high as 15 tons of these melons on one acre, with fertilizers or irrigation. They are at their best in November and December. I ate my last one this year on January 15. The small melons keep much longer. The Department of Agriculture at Washington, D. C., sent me some years ago twelve kinds of what they called winter muskmelon seeds that they obtained in Europe—and wished me to plant them and report 'at length' as to my success with the melons. My report was not 'at length,' I simply wrote that every variety sun-burned very badly, while the few that escaped and fully matured before frost proved to be a very inferior quality. Notwithstanding the fact that the winter pineapple muskmelon has been grown in a small way since 1880 in many parts of the State, I am fully satisfied its great merits have in some way been almost entirely overlooked. Parties here who have bought these melons of me by the ton for feeding to poultry alone say that they consider them almost invaluable, as they commence to feed them as soon as the frost destroys all kinds of vegetation, and they continue to feed them until vegetation springs up again, generally (here) about the middle of January. I fed these melons to my milk cows and hogs, seeds and all, for years, with the best of results, also to my poultry. I am fully satisfied that this invaluable melon will yet be raised extensively in all parts of the Pacific Coast, not only for table use, but especially where live stock and poultry are raised on a large scale. I was the first person to sell the seed to an Eastern seedsman, who agreed to purchase 1,000 lb. of me in one season (which I raised), but he only took 500 lb. At the rate he sold them, '50 seeds for 20c.,' he received about \$32 a pound for his seeds. I am credibly informed by reliable Eastern seedsmen that this melon, for some unknown cause, is almost an entire failure east of the Rocky mountains, with the exception of some of the Southern States, where it does fairly well.

THE FIELD.

California Hay.

Mr. R. P. Lathrop, of San Francisco, who has had much to do with the California hay crop, writes the following interesting sketch of it for the *Breeder and Sportsman*.

Hay production in California is entirely different from that in almost every other State. In the East there are but few kinds of hay, the principal staple article being timothy, and it is much the same in all sections and can be graded, as there is a uniformity about it wherever you find it.

In California, however, one farmer may raise wheat hay, his neighbor red oat hay, another barley or barley and oat mixed, or wheat and oat mixed while still another will have volunteer wild oat hay. Then one will have a first-class article and his neighbor an inferior article, location and climatic conditions having much to do with the production of good hay.

The man whose product brings the fancy price is generally the one who makes a close study of it, watches results and year after year improves on his methods. In California there is practically no danger of rain spoiling the hay, excepting volunteer wild oat hay, which is cut so early that it sometimes gets a shower, but wheat, wheat and oat, red oat, barley or barley and oat are generally safe.

The methods generally followed in the larger and most successful hay districts are to cut the hay quickly, irrespective of kind, running from two to a half dozen mowing machines if necessary. In a few hours follow with rake, and after curing a little in the winnow, put it into shock. Then in 15 or 20 days stack it, and bale any time after it has been in stack 30 days.

One of the great essentials is to get a bright green color. Many of our most successful hay-

makers cut when the straw is right, irrespective of the condition of the grain in the head. Very frequently there is no grain at all in the head, but the straw is one bright, crispy, uniform green in color, very sweet, and stock eat every particle of it and do well.

At one time it was considered here in California that hay was not first class without grain in the head, and everything else was sacrificed to attain that result. This was particularly so with growers of wheat and red oat hay, but it is not so now. Color is the one great quality desired to get a good selling article, and properly colored and cured hay commands the largest price.

The two great hay-producing sections of California are the Livermore valley and the Hollister section. In both these locations climatic conditions are most favorable. The country about Stockton is also coming to the front as a large producer, but Hollister is the largest shipping point in the State, and this section produces one-fifth of the State's supply. It has the largest hay warehouses in the world, the plant covering 37½ acres. The four warehouses of this plant would extend over a quarter of a mile if placed end to end, and they hold 16,500 tons. Hollister station ships an average of 2,700 carloads of hay annually, some years even more.

The Eastern trade is supplied principally from the Livermore and Hollister districts. This is a growing demand and was created in a very simple way. Owing to the mild winters in California, many Eastern racing stables winter their horses here, and at first brought their fancy timothy hay with them. But in training their horses on the same tracks where our California trainers were feeding California hay it soon became very evident that our horses had more spirit, more power and seemed to be better nourished, while they ate their hay up cleaner than did those fed on the imported timothy. Naturally the Eastern trainers substituted our California hay for their imported article, and when they returned East there was California hay in the car, and in many instances orders were left for carloads to be shipped to different points where their horses were to race. Soon others learned its value and merit and in this way quite an extensive Eastern trade has been built up. Hay is now shipped direct to Chicago, New York, Cincinnati, Lexington and a number of other points, and many of the largest stables of race horses use none but California hay. A great deal of hay is also shipped to Honolulu and to the Philippines, and up and down the coast.

The San Francisco trade, exclusive of the shippers, consumes about 125,000 tons annually. Oakland is a large consumer, while San Jose, Los Angeles and many interior points, especially in northern California, order large quantities of Hollister hay and the demand is increasing annually.

THE VETERINARIAN.

White Scours in Calves.

From a paper by DR. M. H. REYNOLDS, University of Minnesota, before the Minnesota Dairymen's Convention.

This paper deals with the infectious bowel disease or diseases of very young calves which many of our breeders know only too well as white scours. I do not like the name, for it is misleading. The discharge is often not white or even dirty white, as some have described it. But it seems better to retain the name rather than add to the confusion by using another.

We had an outbreak of this type of the disease to deal with last fall among our cattle at the University Experimental Farm. The disease was checked quite promptly and it is the purpose of this paper to give the public the benefit of our experience.

In white scours we have a disease that is serious for the breeder of either pure bred or grade cattle. When it has gained access to a stable it is very persistent; its curative treatment is unsatisfactory; and successful preventive treatment involves work and bother. It causes extensive losses, a very great deal of annoyance, and disturbs all of a man's breeding plans for the herd. These are involved in addition to the loss of the calves themselves. It is very discouraging, at least, to have one good, vigorous calf after another dropped, just get it nicely started and then lose it from this trouble.

SYMPTOMS.—In diagnosing this disease we should always bear in mind the history. White scour affects calves from a few hours to a few days old, young calves; but some cases live for days and even weeks after the first illness, and die eventually of a pneumonia.

A considerable number of calves in the same herd are usually involved and the disease is often coincident with an outbreak of infectious abortion.

The characteristic symptom is the very severe diarrhea with light-colored and foul discharge. In our University Farm outbreak the discharges were distinctly yellow. The patient loses flesh and is evidently very sick. The back is arched; the calf is dull and listless and weak; the eyes are sunken and the nose is apt to be hot and dry. A peculiarly offensive odor occurs in the breath and from the body

surface. There is no evidence of acute abdominal pain, as in some other forms of intestinal disease. We usually find considerable fever and the respiration and pulse are both increased. Sometimes the joints are involved, as in the well-known disease of colts, which we commonly call joint disease. According to Nocard, acute cases last three to six days. In our experience, they have been sick less than two days and have died before they were three days old. Our calves were all strong, of good size and well developed. Other observers report that some cases seem to survive the intestinal disorder for a time and then die later from pneumonia and related diseases of the chest cavity.

Infectious abortion and white scours frequently occur together in the same outbreak. In these cases we may infer that the infection remains virulent in the internal organs of the mother, and the calf is infected at or before birth, the disease appearing in the calf as an infectious diarrhea or white scours. For this reason the treatment to be advised later—for the pregnant cow—becomes a wise precaution.

We must bear in mind in this connection that a cow may abort from many causes, and calves have diarrheas of many kinds, and from many causes. The mere fact that a farmer has had one or two cows drop their calves, and that he has had one or two cases of some bowel trouble among his calves, does not prove at all that the cows had infectious abortion or that the calves themselves had the disease we are discussing.

The farmer should not be too hasty in coming to the conclusion that he has this disease to deal with, although it is common enough. He may possibly have a number of cases of bowel trouble among young calves—occurring at the same time or closely following one another—and all of them be caused by the same kind of feed or other faulty conditions of care. The disease would not be infectious, that is, be spread from one calf to another. In other words, the farmer is losing a lot of calves from a bowel trouble that is not infectious white scours. There are many well-known causes of the simple diarrhea of calves, such as lack of vitality or inherited weakness, chilling from stable draughts of cold air, overfeeding, dark and filthy stall surroundings, irregular feeding, bad milk from bad food given to the mother, and very often from unclean calf pails.

EXAMINATION OF THE CARCASS.—In order that we may be more certain that we have this disease to deal with, let us examine some carcasses of calves, dead from the white scours of Nocard.

The cord is usually enlarged; its vessels are swollen and hardened, and these vessels may contain clots of blood. There are usually hemorrhages or leakages of blood along these vessels, perhaps extending as far as the bladder.

There are typical lesions of hemorrhagic septicemia in the more severe and acute cases. For example, the characteristic blood-stained spots under the surface membranes of the various chest and abdominal organs. The lungs are generally involved, showing collapsed areas, and various types of pneumonia. These abnormal conditions of the lungs are very commonly found in the chronic cases, that is, those that have lived for some time, and in these cases the lesions are more extended and further advanced.

The parts around the principal joints of the limbs are often filled with a yellowish, slightly gelatinous liquid. The joint sac itself is inflamed, and the synovia, or what is commonly called joint water, may be red tinted or a much deeper yellow than usual. Clots of yellowish material may appear in this liquid when a joint is opened. If the joint trouble is of long standing, the contents of the synovia sac are more nearly solidified instead of having the consistency of the white of a fresh egg, as is normal synovia.

DIFFERENTIAL DIAGNOSIS.—This is, in many cases, apt to be difficult, perhaps unsatisfactory during the life of the calf first affected. We have first the age of the calf, white scours affecting very young calves, and is rapidly fatal as a rule, whereas common diarrheas do not usually appear until the calf is several days or even weeks old, and are not rapidly fatal. This is especially true of calves that are suckling mothers or other fresh cows. Then we usually have the history of previous cases, if the outbreak is one of infectious white scours. If the disease is non-infectious, or a common form of calf diarrhea there are usually possible and reasonable explanations as to the cause. For instance, the owners or attendants will remember that the calf had gone a long time without feed and then it had been allowed to take too much; the milk pails from which it was fed had not been properly scalded, or some one of many commonly known causes of bowel trouble for young calves. In true white scours there is usually no bloating or acute pain. The discharge of white scours is at first yellow, then grayish yellow, then dirty yellow or gray, with a foul odor.

CAUSE.—Nocard investigated what is probably an outbreak of this disease among calves in Ireland, and concluded that the infection occurred by inoculation. He seemed to demonstrate that the specific cause of the disease which he investigated was a bacillus, clearly belonging to the same group as the germs which have been recognized as the causes of chicken cholera and swine plague, commonly known as the hemorrhagic septicemia or pasteurella group.

The organisms which seem to cause these diseases are wonderfully similar and possibly are but slightly differing varieties of the same species, but there has not been demonstrated any connection between outbreaks of these several diseases, for example, between chicken cholera and white scours.

But let us bear in mind that other bacteria have been shown to be capable of producing an infectious diarrhea of calves. It is generally accepted by bacteriologists and veterinarians that the infection may readily occur from the mother, or shortly after birth from soiled bedding, dust, etc., through the raw surface of the cord. This trouble is often introduced into a previously free stable by older cattle, more commonly perhaps by a pregnant cow that has been contaminated with infectious abortion. Sometimes the calf disease comes to a clean stable with a calf purchased from an infected one.

Calves lacking in vitality, or expressing it in another way, calves born with weak constitutions, are of course easily susceptible to the causes which produce any form of diarrhea.

PREVENTION.—Medical treatment for this disease is usually considered hopeless. The only relief lies in the way of prevention, which may now be considered as quite well understood and satisfactory. At present the preventive treatment is something of a nuisance to apply, but any intelligent stockman may make use of it for himself, and it is not expensive. Further experience may justify us in simplifying it. It is possible that we may soon have available a serum for preventive vaccination. Jensen has developed a serum that has been reported on favorably by several observers, including the celebrated Dr. Kitt.

In order that we may have a clear study of this phase—prevention—let us imagine a very possible infection occurring after the birth of a calf. Suppose we start with a stall that is dark and damp. Germs thrive in the absence of light, and in the presence of moisture. The bedding is moderately clean as would be found in an ordinary box stall, but soiled more or less with feces and urine. There are, lurking in bedding, in the corners of the stall, and in the dirt generally, a variety of infectious germs, some of them the hemorrhagic septicemia type. Perhaps there has occurred a contamination with germs which may cause, under other conditions, infectious abortion.

We may suppose, without much question to the contrary, that germs of the hemorrhagic septicemia type are very commonly present in a variety of places about stables and the animals themselves. They may or may not be virulent, but suppose that we have in this particular stall some that are virulent, that is, able to produce disease. A calf is born in this stall. He struggles to rise and falls repeatedly. The torn and raw surface of the cord is dragged through the litter and becomes infected. The germs then easily enter the lymph channels and blood vessels, and become scattered through the body. The little calf soon has a case of infectious white scours. The germs diffuse rapidly through the various tissues, manufacturing their various poisons from body tissues and fluids. These are carried to the lungs, intestines and joints, or other susceptible tissue, and the calf dies. Other calves, born subsequently, have the disease, and the owner has an outbreak of true infectious white scours on his hands.

The treatment adopted in our Station herd outbreak, and with the most gratifying results, was as follows: Put the cow in an uninfected, clean place, a week before calving, and use an abundance of fresh bedding.

Wash out the cow's vagina with a syringe, and wash over the external parts once daily with warm 2% creolin in water. Repeat this if possible when labor begins.

When the calf is born it should be received on fresh, clean bedding.

Tie the cord $1\frac{1}{2}$ to 2 in. below the navel and cut the cord off about one-half inch below the thread. This leaves the whole cord stump about 2 to $2\frac{1}{2}$ in. long. The hands must be clean and fresh from 4% creolin solution in water before handling the cord. The knife or shears used for cutting the cord must be previously flamed in an alcohol lamp or by matches. The thread—ordinary cotton string will do very well—should be kept ready for use in 4% creolin solution.

As soon as the cord is tied and cut, wash its stump and around the navel with solution No. 1. Then coat the cord over with solution No. 2. When the cord is dry, put on a thick layer of 1% iodine collodion. Hold the calf until this is firm and dry, which takes but a little while. The calf may then be released. He must be kept in clean quarters during the first five days at least.

Solution No. 1.—Distilled water, 500 c.c.; iodine crystals, 1 gram; iodide of potash, 2 grams.

Solution No. 2.—Alcohol, 500 c.c.; iodine crystals, 1 gram.

After the calves previously mentioned had died with very clear cases of white scours, this treatment was adopted. The next five calves were treated as above outlined and none of them were attacked by the disease. For calves born more recently than No. 10, we have dropped this navel treatment but have continued to disinfect our heavily pregnant cows, with warm 2% creolin solution, and have had

no further cases, although these latter calves were born in the disinfected stalls 1, 2 and 3, previously mentioned.

It is possible that this treatment alone would suffice, but I would not risk it in event of an outbreak among valuable calves, until we have better evidence to that effect.

THE IRRIGATOR.

An Arizona Experiment With Sub-Irrigation.

Director R. H. Forbes of the Arizona Experiment Station describes a trial of sub-irrigation as follows:

During the three years the writer has used this system for irrigating his own trees many practical points have suggested themselves.

The facilities employed are a well in which the water stands at 90 ft. depth; a 3x14-in. pump cylinder operated by a 12-ft. geared windmill of a type adapted to the light winds of the region; a 5,000-gal. storage tank on a stand 18 ft. high; and perforated pipe lines laid along the lines of trees to be watered. These pipe lines are connected both with the storage tank and directly, at the surface of the ground, with the column delivering water from the pump cylinder to the tank. This connection at the surface of the ground does away with the extra lift of about 25 ft. to the top of the tank, and, especially in time of light winds, increases the amount of water delivered at the surface to the irrigating pipe lines.

These lines are of $\frac{1}{2}$ -in. ordinary black iron pipe laid, with as few bends as possible, up and down hill with the grade, along the lines of trees to be irrigated, and at a distance of one to two feet from them. Each branch of the system is controlled by a valve next the supply. Opposite each tree a bored coupling is placed in the line, which is fitted accordingly. The orifice used is the smallest practicable size, which is $\frac{3}{8}$ of an inch. With a little practice, using a vice, a brace, and ordinary twist drills, anyone can make the borings. This work may be reduced more than half by filing a notch midway and crosswise of the coupling with a three-cornered file, and boring in the bottom of the notch. The completed pipe line, with bored couplings, is buried two or three inches below the surface for protection, being exposed in the shallow irrigating basins around the trees. If the line is deeply buried in the soil the orifices cannot be cleaned and are liable to be choked by roots. For convenience of access the orifices are laid to discharge horizontally, toward the trees. For flushing the line a removable plug completes each branch of the system, making it possible to remove rust, moss, or other obstructions getting into the water supply and choking the holes.

When it is desired to close an orifice in order to increase the discharge farther along the line, an ordinary round toothpick is inserted, this device being as effective and convenient as an expensive stop cock. To equalize and lengthen the system, partial obstructions may be introduced at the points of greatest discharge.

Thus arranged, when it is desired to irrigate a row of trees, the valve is turned at the head of the line, the water is slowly delivered, without waste, where wanted, and after one to several hours the supply may be shut off again.

Delivered in this manner in small, slow streams, the water penetrates deeply into the soil, inducing deep root systems and lessening loss by evaporation. With the system described above, and a head of about 20 ft. of water, the writer satisfactorily irrigates as many as 20 trees at a time along a $\frac{1}{2}$ -in. line 600 ft. long. With a 1-in. pipe and the judicious use of toothpicks, twice to three times as many irrigations could be made along one line.

In order to lessen surface evaporation, various mulches have been tried. The trees experimented with all stand in shallow basins four to six feet across and three to six inches deep, which is a convenient arrangement for mulching. Cultivating the soil about the trees after each irrigation is laborious and not so economical of moisture as a mulch of fine chip dirt or barnyard manure. Either of these loose mulch materials, spread to a depth of two or three inches in the basin around a tree, takes irrigating water readily, does not pack when wet and require cultivation, and greatly restricts subsequent evaporation. To the root systems of shallow rooted plants also, these mulches are a protection from the excessive heat of the sun in summer. Aeration of the deep root systems which the small-stream method of irrigation tends to create may, where needful, be accomplished by putting down a hole two to five feet deep, near the tree, with a common post hole digger, then placing a joint or two of old stovepipe in the hole to make it permanent. This device secures aeration with comparatively little exposure of the soil to evaporation.

In situations where the soil is rocky or underlaid with hardpan, tree holes of ample size must, of course, be excavated and filled with good soil. A good practice, in such situations, is to dig a hole four feet square and deep and blast three feet deeper, using a combination of black and giant powder, to rend and lift the bottom.

Planted, mulched and irrigated in the manner described, trees in this climate, with its long growing

season, make most satisfactory growth with a minimum water supply. The efficiency, under working conditions, of these methods of distributing and conserving a small water supply may be judged by the following statement of the results obtained in practice. The water pumped by the plant described above, the region being one of light winds, furnishes domestic supply the year round to one house and irrigates:

61 olive trees	2 Eucalyptus crebra
2 cottonwoods	7 Eucalyptus polyantha
8 pepper trees	1 ash
4 bagotes	9 miscellaneous—ivy, agaves, oleander and wild cane
1 date palm	
4 grape vines	
19 pomegranates	
1 fig	

making a total of 87 useful trees, mostly fruit bearing, and 32 vines and bushes.

Although the trees and plants listed above are yet small it is evident from this showing that a far more effective use can be made of a small water supply than is customary. The great value of trees for shade and fruit in this climate warrants the expense of pipes, amounting to about \$1.50 a tree in the system described.

Incidentally, the list given is an excellent one from which to select ornamental and fruit trees for spring planting. Most of them are evergreen and resist drouth well, while the olive, vine, date palm, pomegranate and fig are additionally valuable for their fruit. It should also be stated that olives, peppers, bagotes, the two eucalypti, date palms and figs, are limited in this region by a winter temperature of about 10 to 15° F.; while the two eucalypti are also unfavorably affected by extreme heat of the warmest localities in the Southwest.

Besides the irrigation of house grounds this system is applicable to city streets and parks in this region and of especial value on irregular grades where ordi-

nary ditches may not be used. It is not impossible, also, that with the more valuable sorts of trees, such as olives or date palms, and with the invention of cheaper distributing pipes, this method of irrigation may be found of commercial importance.

SYLVICULTURE.

The Eucalyptus in Humboldt County, Cal.

TO THE EDITOR: Judging from the tone of an answer to an inquiry regarding suitable varieties of eucalyptus for Humboldt county in a recent issue of your paper, it would seem that it is not generally known that the blue gum, and most likely many other species, are perfectly at home in this county, especially in the lowlands. Because we are in the northern part of the State is not a reason why we should have low temperatures. Indeed, so far as extreme minimum is concerned, Eureka will compare very favorably with Los Angeles, and at Shelter Cove frosts are very rare indeed. I know this to be a fact, for I have seen acacia trees of considerable size growing there of a species that with me freeze as easily as a tomato.

The blue gum thrives splendidly in nearly all parts of the county, and there are many trees to be found here and there that are 25 to 35 years old. So well does the climate suit them, they not infrequently spring up from self-sown seed. In my experience, the young trees are as easily grown as cabbage plants. When two or three inches high, the young seedlings were transplanted in nursery rows, and by midwinter were from three to six feet high. In February they were dug up, the roots pruned and then dipped in a mud batter, to protect the roots from the drying air. In some 1,500 trees I handled as above

I do not remember that even one died. Of course, only a few were dug at a time and I was always careful in my work.

The above-mentioned trees were planted in Eel River valley 12 and 13 years ago, mostly along the banks of Salt river and Perry slough, as an ornament, a windbreak, a fuel supply and a bank protector. In every instance they are a great success, and today they stand little, if any, short of 100 ft. high, and many of the larger ones are fully two feet in diameter. As a tree for holding a bank from settling, caving or washing, it is to be recommended. At the point where these trees are planted the river is subject to tide-water of one to five feet, but not of salt water, and some of the trees were planted below high-tide mark, and yet they grew as well as any, and where they have been banked up with sediment in late years, from three to six feet, they grew on as though it just suited them.

By their rapid growth and immense system of exceedingly strong cable-like roots, the blue gum will in a few years lace a sandbank as nothing else will, and in such a situation they seem not to 'sap' the land about them as they do on level land. It is also interesting to note that the root-knot fungus does not affect the blue gum as it does alder, cottonwood and willow of its several species.

Farmers and dairymen in Eel River valley complain that the land does not produce near so well now as it did before the natural timber was all cleaned out, and the above-mentioned eucalyptus windbreak fully bears out this assertion, and the proof of it at hand ought to set them to thinking if it would not be wise to plant the waste land and necessary triple-row belts of eucalyptus across the valley, to serve the double purpose of a fuel supply and to break the cutting blast of northwest wind that now sweeps the valley, lessening production and making it unpleasant as well.

ALBERT F. ETTER.

Ettersburg, Humboldt county.

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Agricultural Review.

Alameda.

VEGETABLE PEST.—Hayward special to *Alta Advocate*, Feb. 27: Since the rains a parasite has been noticed on the early pea vines, which threatens to ruin the crop. It attacks the buds and ruins them. It is feared fruit is also in danger from the pest.

Butte.

STONE BROTHERS BUY HORSES.—Chico special to *Alameda Argus*, Feb. 23: A contract was made with the E. B. & A. L. Stone company to send at once 400 horses to Orland to be used in the work of grading the bed for the Southern Pacific to the new town of Hamilton, where the beet sugar factory is being built. Work has been delayed by the inability of the contractors to get teams.

ALMOND CROP INJURED.—Biggs dispatch to *Sacramento Bee*, Feb. 23: The rains are believed to have damaged the almond crop to a considerable extent. The trees have been drenched while in full bloom, and rains during blossoming time are as bad as frosts later on. The pollen is washed from the flowers and the fruit does not set well, as a consequence of lack of fertilization. A light crop of almonds is predicted for Butte county.

Fresno.

GROWERS DEFENDANTS.—Fresno *Republican*: On Feb. 14 Attorney E. A. Williams filed with the County Clerk at Fresno the answer of 565 defendants in the suit brought by the California Raisin Growers' Association against its members to recover money overpaid them by the association.

Humboldt.

HAY FED TO CATTLE.—Redding *Searchlight*, Feb. 23: Louis Gerber, a Klamath stockman, reports that there are not over 1,000 head of beef cattle left on the great Klamath alfalfa feeding grounds. He says there were over 20,000 tons of alfalfa hay fed out there since November 1, and hay has advanced to \$7 and \$8 per ton. Over 10,000 head of beef and 20,000 head of sheep were fed there for the California market.

Kern.

THREE CARLOADS OF BULLS.—Kern *Echo*, March 1: J. J. Warren, superintendent of the Kern County Land Company's ranches in New Mexico, and H. A. Arbogast arrived with three carloads of fine bulls for the company's ranches near Sacramento. One of the cars is loaded with Shorthorns and the other two contain Herefords. The bulls were purchased in the southwest.

Los Angeles

TWO ORANGE GROVES FOR \$12,600.—Pomona *Progress*, Feb. 22: G. A. Lathrop sold 11 acres of land at North Pomona for \$6,600, and reserves the orange crops now on the trees. R. E. Lasher, of St. Louis, is the purchaser. He also bought 10 acres of land from Mr. Van Syke for \$6,000. Mr. Van Syke bought 13 acres, of which he has now sold 10, from Mr. Lathrop for a little more than \$5,000.

Mendocino.

GRAPE CUTTINGS.—Ukiah *Democrat*, Feb. 23: P. C. Rossi has shipped 100,000 cuttings and on Tuesday he sent 52,000 more, together with 15,000 for Laughlin. This makes 267,000 cuttings shipped here this year for free distribution. Mr. Rossi says that the farmers need be in no hurry about planting the cuttings. The last of March or the first of April is plenty time. All that is necessary is to stand the cuttings on end until time to plant them. The farmers who have gone into the grape business are forming a viticultural society. When the society is organized Mr. Rossi will come up and address the farmers on the subject of grape culture.

Modoc.

HORSES SUFFER.—Dinuba *Advocate*, Feb. 23: Horses are dying by the hun-

dreds in the country surrounding Madeline. The heavy snows have robbed them of food and in many instances prevented them from breaking into new ranges. Stockmen south of Madeline say the suffering among the animals is very widespread and that there will be great losses among the herds.

Orange.

POTATO ACREAGE.—Anaheim dispatch to *Santa Ana Blade*, Feb. 23: Wagner Bros. are preparing to seed 200 acres to potatoes and the crop will be sold in Los Angeles. In a competition for the sale of a large lot to a Los Angeles house, a shipment from this ranch was tested against potatoes from northern California, and secured the contract.

Riverside.

ORANGE SHIPMENT.—San Bernardino *Sun*, Feb. 23: Another orange special went East, consisting of about 26 cars, 10 of which came from the Riverside territory and the other cars from the orange districts scattered all the way from Redlands to Ontario and Pomona.

Sacramento.

PULL OUT PEARS.—Sacramento *News*, Feb. 25: Prof. Waite, the Federal expert on pear blight, says that the pear orchards in a considerable portion of the San Joaquin valley are utterly destroyed and that the trees are being pulled out in several places. The trouble was that the blight was not taken hold of in time. In the Sacramento valley he finds that the will be trifling, the orchardists having taken steps to check the plague before its ravages were beyond control.

BUYING CATTLE.—Sacramento *Union*, Feb. 25: O. Oyharzabal and J. P. Daguerre, stock raisers of Capistrano and El Toro, in Orange county, are seeking blue-blooded cattle and sheep of the finest quality. They will visit the Glendale ranch to select sheep. A number of fine Durham bulls have already been shipped to southern California.

San Bernardino.

HAIL IN ORANGE BELT.—Redlands special dispatch to *Santa Rosa Press Democrat*, Feb. 28: Hail fell to a depth of half an inch during the afternoon. Some damage was done to oranges and deciduous fruits. There is some fear of a frost.

San Diego.

HONEY PROSPECTS.—San Diego *Union*, Feb. 22: The beemen are pleased over the honey prospects. Everywhere the hills are a mass of flowers. The apiarists say that the outlook for a big honey crop has not promised so well for 20 years.

San Joaquin.

THIRTY-ACRE VINEYARD FOR \$10,000.—Lodi *Sentinel*, Feb. 24: Dr. S. R. Arthur of Woodbridge sold his 30-acre vineyard to J. A. LaFevre of Fresno, formerly of Milwaukee. The vines are four years old; 20 acres are in Tokays and 10 in wine varieties. The consideration was said to have been \$10,000.

SALE OF BEEF CATTLE.—Lodi *Sentinel*, Feb. 27: Thos. Parker of Lockeford has sold 400 head of beef cattle and calves to J. C. Evans of Gridley. The shipment will be made early in March. Mr. Parker has orders to secure 2,000 head more for the same man, who has near Gridley upward of 300 acres in alfalfa.

Santa Clara.

BLOSSOM FESTIVAL.—San Jose *Mercury*, Feb. 28: Secretary S. R. Clarke, of the Chamber of Commerce, is distributing a number of circulars exploiting the charms of the blossom season in Santa Clara Valley. The Blossom Festival begins March 10 and extends into April. One hundred and twenty-five square miles of six million fruit trees are in blossom at the same time.

Shasta.

FARM ORGANIZED.—Redding *Searchlight*, Feb. 20: The Trinity Farm and Cattle Company is organized for the purpose of buying, selling and leasing property in Shasta and Trinity counties and

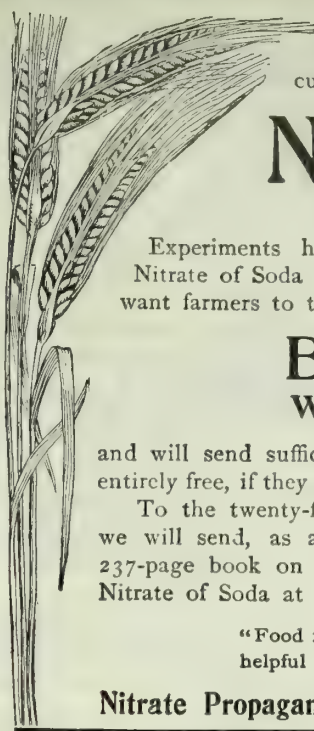
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elsewhere in the State. The company intends to engage in the business of farming and stock raising. It is capitalized at \$75,000.

PONDEROSA.—Mr. E. C. Newell, of Oakland shows a Ponderosa lemon 13 inches in circumference grown on the foothill place of Mr. Martin W. Woodward, east of Mantion. Mr. Woodward's specimen is an inch larger than one recently mentioned in our columns. The tree has grown with exceeding rapidity and is very thrifty and beautiful. The Ponderosa is said to be good pie timber.

Solano.

ALFALFA CULTURE.—Vacaville *Reporter*, Feb. 24: J. Caughy, superintendent for Frank H. Buck, will add 20 acres of alfalfa this spring. T. L. Gates will endeavor to get 50 acres seeded. F. B. Chandler will put in 25 acres this spring. D. Cooper will sow 12 or 15 acres. T. H. Buckingham plans to put in 15 acres next fall. O. E. H. Garlich will sow 30 acres. G. W. Long and E. S. Chase will also devote some of their land to alfalfa.

Sonoma.

SHIP PRUNES.—Santa Rosa *Press-Democrat*, Feb. 28: The McDonald Warehouse cleaned up last season's prune crop shipping two carloads of prunes one to New York and one to Philadelphia.

Stanislaus.

QUAKER COLONY.—Modesto *Herald*: Stanislaus is to have a Quaker colony of 200 families to be settled within two years on some 4000 acres of land. Eight families have already arrived from southern California, from which the colonists will be largely derived.

TALL ALFALFA.—Modesto *Herald*, Feb. 23: F. A. Williams of the Greendale farm brought to this office some stalks of alfalfa cut February 18, that measured 29 and 30 inches. Mr. Williams has 115 acres in alfalfa and is adding 45 acres to it to round out an even quarter section.

Sutter.

ANALYZING FERTILIZERS.—Sutter *Farmer*, Feb. 23: Prof. W. H. Volck, of the State University, was here securing samples of commercial fertilizers which have been sold to farmers and fruit growers and will have them analyzed to see if the companies who are selling the fertilizers are following the law in regard to the ingredients used.

Tehama.

STOCK DYING.—Chico *Record*, Feb. 23: B. and M. Hoy brought in a load of cattle hides, taken from stock that had perished during the winter on the ranges in the northwestern part of this county. The scant water supply and the lack of nutriment in the dry grass was the cause of cattle in their section becoming poor, and those who are not prepared to feed their stock will suffer considerable loss. The Hoy brothers said their loss would be 20% of the herd. Stockmen claim that the most critical period is now at hand, and unless the weather remains warm and the feed grows rapidly many cattle will yet die. The stock dying now are the cows and young calves. Some of the cattlemen are feeding both hay and ground barley, but the high price of hay and grain and the remote location of many of the ranges prevent many from doing this. It is reported that H. Heitman, who has his sheep on Red Bank, has lost

700 head out of a band of 1,400, and Mr. Roberts, who has 3,000 on the Blossom range, lost 2,000. Losses to stockmen will be heavy, but will not be known until the spring rodeo.

Yolo.

SHORT APRICOT CROP.—Winters special dispatch to *Sacramento Bee*, Feb. 24: Examination of the orchards in this district discloses the fact that the apricot crop will be very short, probably not over 25% of normal. Though a week early, the apricot trees are now in blossom, and not a dozen orchards in the district show normal conditions. This is surprising, as the fruit buds are plentiful, but they refuse to open. The second blossom promises to be abundant and this will make up the defection, though such fruit is good for drying only and does not enter into the shipping proposition. It is noticeable that orchards that were irrigated last year have plenty of bloom and the non-irrigated orchards in full blossom are those most favorably situated to receive more than a normal share of natural moisture.



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The Home Circle.

Lavender Leaves.

The waving corn was green and gold,
The damask roses blown,
The bees and busy spinning wheel
Kept up a drowsy drone,
When Mistress Standish, folding down
Her linen, white as snow,
Between it laid the lavender,
One summer long ago.

The slender spikes of grayish green,
Still moist with morning dew,
Recalled a garden sweet with box
Beyond the ocean's blue;
An English garden, quaint and old,
She nevermore might know;
And so she dropped a homesick tear
That summer long ago.

The yellow sheets grew worn and thin,
And fell in many a shred;
Some went to bind the soldiers' wounds,
And some to shroud the dead.
And Mistress Standish rests her soul
Where graves their shadows throw,
And violets blossom, planted there
In summers long ago.

But still between the royal rose
And lady lily tall
Springs up the modest lavender
Beside the cottage wall.
The spider spreads her gossamer
Across it to and fro—
The ghost of linen laid to bleach
One summer long ago.

—New England Magazine.

That Boy o' Rogers.

That boy o' Rogers—Lord spare me
From raisin' sech a brat as he!
Ef ever mischief was boiled down
Into a freckled, red-haired clown,
An' turned loose on two spindlin' shanks
T' bother mankind with his pranks,
'Twas that ar boy o' Rogers!

Th' wa'n't no question that he'd be
Inside th' penitentiary
Afore he was a man full grown.
He could conspire more tricks alone
Than any boy I ever seed.
Th' biggest scamp, we all agreed,
Was that ar boy o' Rogers!

He turned up missin'—went out West
I 'low we thought it was th' best
Thing that ever happened yit,
When he made up his mind t' git.
For us he couldn't go too fur,
An' we all said, "Good riddance," sir,
T' that ar boy o' Rogers!

He left us twenty years ago;
I was out West a month or so
Las' spring, an' Jack, my boy, says he:
"I'll take ye up today t' see
Th' Guvernor!" Wall, sir, I'm cussed
'F I knew him when I seed him fust,
'Twas that ar boy o' Rogers!

—Bismarck Tribune.

The Tryst.

I will not break the tryst, my dear,
That we have kept so long,
Though winter and its snows are here,
And I've no heart for song.

You went into the voiceless night;
Your path led far away.
Did you forget me, Heart's Delight,
As night forgets the day?

Sometimes I think that you would speak,
If still you held me dear;
But space is vast, and I am weak—
Perchance I do not hear.

Surely, howe'er remote the star
Your wandering feet may tread,
When I shall pass the sundering bar
Our souls must still be wed.

—Louise Chandler Moulton.

Fate.

One ship drives east and another west,
With the self-same winds that blow;
'Tis the set of the sails
And not the gales
Which tell us the way to go.

Like the winds of the sea are the ways of
fate,
As we voyage along through life;
'Tis the set of a soul
That decides its goal
And not the calm or the strife.

—Technical World Magazine.

Cholly (about to propose)—I've half a
mind—a half a mind—
Sweet Girl—I know that, but what were
you going to say?

"Looizy."

The girl straightened up from her heavy
cotton hoe, pushed back her sunbonnet
and hollowed a toil-worn hand over her
mouth into a trumpet, directing it toward
the adjoining field.

"O-oh, Loo-i-zy," she called, "he's
comin' home tomorrow. He writ so."

The other girl did not seem to under-
stand, for her hand went into a curve
behind her ear.

"Comin'—home—tomorrow—Kemp is,"
the trumpet carried more shrilly over the
two fields of cotton plants.

This time the other girl nodded com-
prehendingly, hesitated a little, and then
stuck her hoe into the ground, blade up,
and crossed to join her friend.

As she passed down between the rows
of cotton, barefooted and coarsely clad,
with a man's dilapidated straw hat pushed
back from her forehead, she presented a
picture which brought a pleased look into
the eyes of the waiting girl.

"Looizy is purty, jest purty," she said
to herself, softly. "No wonder Kemp
wants to see her. The surprisin' thing is
how he's kept away so long. But then,
she was only a gal when he left. Look at
that ha'r now."

The approaching girl was silhouetted
like a clear-cut etching against the morn-
ing sun, and its rays had caught up the
golden meshes of her hair and reflected
them across the shimmering green into
the warm eyes of her friend. A goldfinch
was singing rapturously to itself as it
bounded in midair overhead, and beyond
the cottonfield in the background a group
of live oaks pressed their dense foliage
against the sky as a fitting frame for the
aureole of the girl's head.

"Looizy, you're a perfect picture,"
breathed her friend, as she drew near.
"I jest wish you could see yourself a
minute."

Looizy flushed and laughed protest-
ingly.

"It's jest 'cause you like me, Linda,"
she smiled. "An' anyway, prettiness
ain't no great. It don't hoe a single plant
o' that cotton for me, nor make the
rows a bit shorter. Hey-ho!" stretch-
ing her arms above her head in good-
natured exaggeration of discontent,
"three whole days a-draggin' back and
forth across the field, an' a week more to
come. An' that's only jest one part o' the
work. If dad wa'n't humpin' to git more
mules an' a cotton gin, an' to make his
farm the best one in all the country
round, I'd beg for jest one shiftless year
so we could sort o' rest up."

Linda's face grew wistful.

"You-all have the best farm in the
country now," she said, "an' its gettin'
better all the time. It's a pleasure jest
to walk over to your fence an' look 'round.
An' then see ours; tumble-down fences
an' tumble-down house, an' everything
lookin' like 't wa'n't keered for nor kept
up. It makes me sick everytime I look
around."

"But you all are doing something so
much better an' finer," cried Looizy, her
face flushing with enthusiasm. "What's
fences an' more mules an' new plows
'longside o' educatin', an' makin' a gen-
tleman of one's own brother? Ever since
I've knowed you-all, you've worked hard
an' saved every cent for Kemp. You've
sent him through little schools an' big
schools, till he's learned everything there
is in the world. It's grand. He'll make
it all up to you, an' more."

"Yes," with a satisfied note of joy in
her voice, "I know he will, an' now he's
comin' home. But I hate tumble-down
things, an' when I look 'round I feel we
ought to have worked harder, so we could
have helped him, and kept up things,
too."

"Oh, well, never mind," soothingly.
"Kemp's got his learnin' an' will be
helpin' you know. With you-all an' him
it won't take no time to fix up the farm as
well's ours. Then you'll have Kemp an'
the farm, too."

Linda shook her head.

"Kemp ain't comin' home to stay," she
answered, "only jest for a little visit. Of
course we'd knowed he couldn't, if we'd
jest thought. The country here's too
small for him now. I'm glad he's got
ahead so, except jest for daddy. Daddy's
pretty old, you know, an' he's worked
hard an' is all tired out, an' he's counted
so on Kemp's comin' home to stay. He
sets the world an' all on Kemp, an'—an'
the letter upset him right bad. Then his
havin' to sell the last pair o' mules, too."

"What for?" sympathetically.

"Oh, it'll only be for a little while,
Kemp writes, an' then it'll be paid back a
thousand times over. But it makes daddy
feel bad, for he raised the mules an' hates
to see 'em go. You see, Kemp's fitted for
the biggest kind o' position now, an' he
advertised for it jest as soon's he got

through his last school. He didn't want
to keep us spending money on him, he
wrote. But folks ain't got to know him
yet, an' he's been waitin' nearly a year
an' used up all the money we could send.
There's been plenty o' small jobs offered
him, he writes, but they'd hurt his chances
an' have him busy when the proper one
comes. So he's waited. It'll only be a
little while now, for there's a number o'
big places needin' him. He's jest comin'
for a few days to see us an' git the mule
money, an' then will go back to be ready.
He has to dress up fine, of course, or the
fine places will slip by. We all are going
to be mighty proud o' Kemp some day."

"Of course we are," acquiesced Looizy,
warmly, "the whole neighborhood 'round.
There ain't another young man in these
parts that's had Kemp's chance."

"Deed there ain't. That's what I tell
daddy, an' he 'grees with me; but he's
old an' tired out, an' feels bad that Kemp
can't come to stay. But we-all 'll be
mighty glad to have him for even a few
days." She looked at her friend archly,
adding: "Kemp wrote a whole lot about
you, an' about you an' him bein' engaged
when you wa'n't but thirteen. Funny
you ain't seen each other in more'n eight
years. But Kemp ain't forgot. I wrote
him how you-all was gettin' the best farm
in the country an' your dad makin'
money, an' that you was the prettiest girl
ever lived, an' Kemp he was real inter-
ested. He writ the very next day an' said
a whole lot about you an' him bein' en-
gaged—though we knew it before. Mebbe
he'd forgot that. An' he said he should
start right off, he wanted to see you so
bad. The letter came this mornin', an'
he'll be here tomorrow. That shows how
much he thinks of you. Won't it be nice
when you're married an' get to be one of
us?" gleefully.

Looizy looked at her tenderly. "It'll
be nice to have you for a sister, Linda,"
she answered. "But I spect I shall be
scared o' Kemp, he's such a great man
now. I—I wish, though," hesitating, as
though the wish might be blasphemy,
"that Kemp hadn't asked for the mule
money."

"Oh, daddy ain't mindin' the wuth a
bit," quickly; "it's only the partin' with
mules he's raised. An'—an' it'll be a lit-
tle hard with the farm work for a while.
If 't wa'n't for Calvin I don't see what
daddy could do—not for a short time, I
mean, till Kemp sends money for new
mules an' horses an' carriages an' farm
tools, like he wrote."

"Calvin's a good boy," said Looizy.
"I heard dad tellin' the other day that
he was the most promisin' young man in
the neighborhood, reliable, steady, am-
bitious an' hard workin'. You ought to
be proud to have two such brothers as
Kemp and Calvin."

"I am," answered Linda, "but of course
Calvin ain't to be compared with Kemp.
He's a good boy, though, an' does most
all the work on the farm, an' he's learned
how to read an' write an' a lot more
things from books in the evenin's. He
has to work by day, an' of course we
could never spare him to 'tend school.
Yes, Calvin's a good boy, far's not havin'
genius goes."

"H'sh! here he comes now," warned
Looizy.

A compactly built young man, with
strong face and bright, cheery eyes, had
vaulted the boundary fence by placing a
hand lightly on the top rail, and was now
coming toward them with quick, eager
strides. But though he nodded and
smiled at his sister, his words and eyes
were for their neighbor.

"Your dad at home, Miss Looizy?" he
asked.

"Yes, paintin' the barn."

"Then I reckon I'd better hurry over.
He told me yesterday that he wanted me
to come an' help lift some heavy ladders
he couldn't manage by himself, to paint
up under the eaves an' on the ends.
Kemp'll be here tomorrow, an' I 'low he'll
be callin' for most o' my time, one way
an' another."

"Yes, Linda just told me you was ex-
pectin' him. You-all must be glad—
though," roguishly, "I don't s'pose you
remember him much, bein' eight years?"

Calvin grimaced a little.

"I remember him all right," he an-
swered. "He made me do most of his
work, an' beat me for exercise an' to keep
me in mind that he could make me do it
all, I suppose. He was two years older
than me."

"Calvin!" remonstrated Linda, hotly.
"You were nothin' but boys then. All
boys fight, an' I don't doubt you pro-
voked him."

"Praps," grinned Calvin. "I know
I wanted to, an' I was fourteen then—old
enough to know my own mind. But you
needn't feel anxious, Linda. I don't hold
any spite against Kemp, an' shall help to
give him the very best time I can. Be-
sides," with another grin, "Kemp writes
he weighs a hundred and twenty; I weigh

a hundred and fifty; so there won't be
any of the old misanderstandin'!"

"I've been tellin' Looizy some o' the
things Kemp wrote," said Linda, mis-
chievously. "See how she colors up.
Oh, Kemp'll have a good time all right.
But you must drive him 'round all you
can, Calvin, to every place he used to go.
Kemp never was much with animals, an'
didn't like to go by himself."

A shadow had come to Calvin's face,
but he nodded with a forced smile and a
side glance at Looizy. She was not look-
ing at either of them, but off across the
fields, in which, however, there was no
cheeriness.

"I'll 'tend to him all right," he said.
"But I must be going now, or them lad-
ders'll be sendin' roots into the ground."

The next day brought Kemp, a tall,
well-dressed, fine-looking young man,
with easy tongue and frank, confidential
manner that won them all from the start.
Even Looizy's shyness and apprehension
melted rapidly away. Linda was openly
jubilant, and her father happy. Calvin
met his brother with warm, memory-
effacing cordiality, to which was soon
added a respect and admiration which he
would not have believed possible. Kemp
was well informed, with clear head and
remarkably practical views of life. He
had come home to conquer, and all his
forces of agreeableness were kept forward
to that end. He went into the fields and
worked with them as he had never done
in the old days; he walked with Linda,
deferred to his father, and talked with
Calvin about crops and their studies and
the future. When the mules were sold it
was done more as an act of pleasure than
sacrifice, and without even the expected
regret being felt. Kemp was going to
return everything so abundantly, and it
would not be many months before the
mules would be re-purchased. Inside of
a week Calvin made it a point to seek
Looizy and apologize for what he had
said about Kemp's overbearing disposi-
tion as a boy.

"He's all right," he said, "an' smart's
a steel trap. Folks used to 'low he was
good stock, but sp'iled in the raisin', an'
that was my idea. But we was all mis-
taken. You—you'll have a fine man,
Looizy!"

But, though the words were bravely
spoken, and the look which accompanied
them open and sincere, when he turned
away the shadow came back to his face,
stronger than ever, so strong that all the
resoluteness of his nature could not efface
it when alone by himself.

Looizy's practical father had been the
most suspicious and uncompromising, but
even he began to waver and show signs
of capitulation. Kemp was interested in
every detail of the farm, and accom-
panied him from point to point, asking
numberless questions of valuation and
possibility, and making shrewd sugges-
tions that surprised and delighted the
money-making farmer; and though the
old man was a close-mouthed person gen-
erally, it was not many days before Kemp
knew almost to a dollar the valuation of
his possessions.

But Looizy, as the days went by,
missed something which she could not
define herself. Beneath her practical
common sense was an undercurrent of
romance. Kemp seemed to meet every
desirable quality that she could have ex-
pressed in words, and yet a shadow was
beginning to sober her eyes, which, oddly
enough, the presence of Calvin some-
times lifted. But Looizy did not know.
If she had been asked whom she loved,
she would have said Kemp, unhesita-
tingly. And Calvin would have said the
same; so he went off more and more to
himself.

One day he and Kemp met on the bank
of a small stream which formed a bound-
ary line of the two places. Calvin had
a pick which he had intended to use
against some obstructing roots; Kemp
was returning from a visit to Looizy's
father. Between them and the cultivated
fields was a fringe of young live oaks,
made dense by an undergrowth of shrubs.
The river path was a favorite walk of
the neighborhood.

"Linda brought a letter from the post-
office for you just now," Calvin began,
affably, "from Macon, the postmark
said."

Kemp looked grave.

"Yes, from the young lady I spoke to
you about, very likely," he answered.
"I've been half expecting one, for I
haven't written in over two weeks.
Well," regretfully, "I suppose I shall
have to write and tell her it's off."

"What's off?"

"Why, whatever's between us, of
course. Meta's the prettiest girl I ever
met, and the nicest. I stopped there
coming down, and a few things were said
without much thinking. I knew as soon
as I left that it would be all broken off,
for her people haven't a bit of money."

"You mean that you like this Meta

better'n you do Looizy?" incredulously. "I must not say that," carelessly. "As I'm to marry Looizy, of course I'm to like her better than any girl in the world. And I'm willing to admit that she is very pretty and very nice. But you can see yourself there would be a difference. Meta is well-dressed and educated, and knows how to talk and entertain, and Looizy is just an ignorant—" "Stop!" cried Calvin hotly. "Just an ignorant, barefooted and cheap—"

He paused suddenly, for the good and sufficient reason that Calvin had caught him in a powerful grasp and now with white and wrathful face was holding him at arm's length high in the air.

"Take that back, Kemp," he cried, hoarsely. "No man can call Looizy cheap in my hearin'."

"Oh, well," coolly, "if you feel that way about it, I'll take it back, of course. I was only going to say cheaply dressed, anyway. Looizy's a fine girl."

Calvin returned him to the ground, the anger leaving his face as suddenly as it had come.

"I'm sorry I had to do that, Kemp," he apologized, "but nothing must be said against Looizy. If you hadn't taken it back I would have thrown you into the river."

Kemp was readjusting his clothing calmly. Whatever else he might be, he was not a coward. And he was exhibiting remarkable self-control. He looked at Calvin curiously.

"So you are in love with Looizy yourself," he said.

Again the red flamed to Calvin's face, then receded, leaving him white and trembling.

"Perhaps I am," he answered slowly, "but it won't hurt you, not if you do the right thing. Looizy loves you, and I—well, I don't know as I need mind sayin' it—I'd give my life to please Looizy. You mean to marry her?"

"Of course, her father's worth ten thousand dollars."

"Then I'll do everything in the world for you," ignoring the last part of the sentence. "You try to make Looizy happy; an—"

There was a rustling of the foliage, and Looizy stood before them, her face pale, her eyes bright. She went straight to Calvin and placed a hand upon his arm.

"I didn't 'low to listen," she said. "I was lookin' at a bird's nest and waited for you to go by. Then something was said that made me want to hear the rest. I think Kemp I had better write to Meta what she'd most like to know. He understands. An—'an' you, Calvin—" She paused and looked into his face, a soft color coming to her own.

Calvin tried to say something, but could not. And after all, there was no need for either to speak. It was all in their eyes. —Frank H. Sweet.

Chaff.

"Alice told me she was beginning to study painting." "She needs to. Her complexion was perfectly startling today."

"Mamma, did you ever flirt when you were a girl?"

"Yes, my dear, I did once."

"And were you punished for it?"

"It led to my marriage with your papa."

Jim—How old is Clara?

Jane—I don't know. She and the family Bible differ on that point.

Warden (to newly arrived convict)—In this institution we try to put a man to work at his own trade or profession, so that he can work his way up. What is your occupation? Convict—I'm an aeronaut.

"If there is anything I like," said he to his wife, "it is a woman who knows enough to be a good listener," whereat the servant girl at the keyhole could not repress a smile of satisfaction.

"Yes," she sighed, "for many years I've suffered from dyspepsia." "And don't you take anything for it?" her friend asked. "You look healthy enough." "Oh," she replied, "it's my husband that has it."

"I don't believe bachelors have any hearts," she said.

"Why, we're just the men who do have them," he replied.

"Why is that?" she asked.

"Because we haven't lost them."

Son—Pop, what does cleave mean? Pop—It means to unite or stick together. Son—Then when a butcher cleaves a bone does he stick it together? Pop—Well, then—I guess cleave means to separate. Son—If a man separates from his wife does he cleave to her? Pop—Young man, I guess it's about time for you to go to bed.

Domestic Hints.

CHICKEN SALAD.—Cut enough celery in thin crosswise slices to make one cup. Mix with two cups of white chicken meat and moisten with mayonnaise dressing.

SALT PORK AND MILK.—Salt pork for breakfast is much nicer if it has been sliced the night before and laid in sweet milk to freshen. It gives it a flavor entirely different from the ordinary fried pork.

CREAM BISCUIT.—Mix two heaping teaspoonfuls of baking powder with four cups flour and one level teaspoonful salt; add a lump of butter the size of an egg and enough cream to make soft dough; roll thin, cut out, and bake in hot oven.

PANNIKINS.—Warm minced ham or tongue or veal in a thick cream sauce and pile it in the center of a platter. Heat and butter some earthen cups; break an egg in each and bake until the egg is firm. Turn them out and arrange around the meat.

ONION SOUP.—Melt a rounding tablespoon of butter and fry one onion in it after slicing thin. When the onion is soft add two level teaspoons of flour and stir until smooth; then add one cup of boiling water. Put one rounding tablespoon of mashed potatoes into four cups of hot milk, add to the thickened onion mixture and half a level teaspoon of salt and a saltspoon of pepper. Strain and serve.

FISH CHOWDER.—Three pounds had-dock (skinned and cut in pieces), one quart potatoes, sliced; one onion, one pint milk, three slices fat salt pork, six crackers. Cut the pork into dice, fry brown, strain into the chowder kettle. Use a layer of fish, a layer of potato, a few slices of onion, salt, pepper and a 'shake' of flour. Repeat until all is used; cover with boiling water, cook gently till potatoes and onions are done; pour in one pint milk; lay crackers on top; let stand half hour at least; a longer time is better. Serve hot.

ROAST BEEF WITH LIMA BEANS.—A very hearty and satisfying cold weather dinner is roast beef with lima beans, instead of Yorkshire pudding. The roast is browned in a hot oven in the usual way and, after the cooking is well under way, pour in on one side of the pan a pint of dried lima beans, which have soaked over night in cold water, and cooked until tender in boiling, salted water. Pour in, water and all, of course taking care that not too much water is there. If desired, potatoes may be cooked in the same pan, on the other side. Baste frequently, adding a little water if the beans threaten to become dry. Beans and potatoes should be delicately brown. Serve the vegetables in separate dishes.

Hints to Housekeepers.

Hot sour milk will brighten silverware. Never pierce meat with a fork while cooking, or the juice will escape.

The camp frying pan will become clean if soaking five minutes in ammonia and water.

A lump of butter dropped into boiling molasses or maple candy will prevent its running over.

In making sponge cake, if you desire it to be yellow use cold water; hot water makes it much whiter.

A spoonful of strong vinegar added to the kettle of hot fat will prevent doughnuts from soaking fat, it is said.

A few stalks of rhubarb cut up and boiled in a tea kettle full of water will soften the deposit of lime so that it may be scraped away.

Hot buttermilk is good to relieve a cough. It is also good for those troubled with indigestion and, for that matter, so is cold buttermilk.

To prevent starch from sticking, boil it about half an hour. It will become very clear, starch linen beautifully, and is less likely to burn in ironing.

Milk thrown on burning kerosene or gasoline will smother the flames quickly. Never use water. If milk is not handy use flour, sand or earth.

To freshen up leather chair seats, valises, bags, book covers, etc., which have become shabby or spotty, rub them with the well-beaten white of an egg.

A floor should never be swept in a room where there is a contagious patient. It should be washed with a cloth dipped in borax water, so that no dust annoys the patient and no germs are raised in the air to drift out of the window.

A reputable medical journal says that anyone who eats fresh lettuce daily will be made absolutely immune from small-pox. Onions and celery are as good, perhaps, as lettuce, but must be eaten fresh.



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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, March 7, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday	82 @ 81 3/4	81 3/4 @ 81 1/2
Thursday	81 3/4 @ 81 1/2	81 1/2 @ 81
Friday	81 1/2 @ 81	81 @ 80 3/4
Saturday	80 3/4 @ 80 1/2	80 1/2 @ 80
Monday	79 3/4 @ 79 1/2	79 1/2 @ 79
Tuesday	79 @ 78 3/4	78 3/4 @ 78 1/2

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday	43 3/4 @ 43 1/2	44 @ 43 3/4
Thursday	43 1/2 @ 43	43 3/4 @ 43 1/2
Friday	43 @ 42 3/4	43 1/2 @ 43
Saturday	42 3/4 @ 42 1/2	43 @ 42 3/4
Monday	42 1/2 @ 42	42 3/4 @ 42 1/2
Tuesday	42 @ 41 3/4	42 1/2 @ 42

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	May, 1906.	Dec., 1906.
Wednesday	1 27 1/2 @ 1 27	1 27 1/2 @ 1 26 3/4
Thursday	1 27 1/2 @ 1 26 3/4	1 26 3/4 @ 1 26
Friday	1 26 3/4 @ 1 26	1 26 1/2 @ 1 25 3/4
Saturday	1 26 1/2 @ 1 25 3/4	1 25 3/4 @ 1 25 1/2
Monday	1 25 3/4 @ 1 25 1/2	1 25 1/2 @ 1 24 3/4
Tuesday	1 25 1/2 @ 1 24 3/4	1 24 3/4 @ 1 24 1/2

Wheat.

The wheat market is in a bad condition. It has been declining steadily for a considerable time, although no serious break has occurred. The principal cause of the decline is the apathy of European buyers, who have been buying steadily from Australia and Argentina. Furthermore, the China boycott has done no little to prevent any relief coming to the wheat market through a revival in the demand for flour. Millers on the Pacific Coast, who have been looked to to take a large quantity of milling wheat, have, owing to the poor export demand for flour, enough wheat on hand to supply their mills for some time to come. Then, too, buyers are disposed not to buy up supplies, but rather to buy according to their immediate needs, and profit by the declining market, and to wait to see how the predicted good wheat crops turn out. There is no demand from Japan either for wheat or flour, and the leading millers are without orders. It looks as if the export trade from now on until the new crop comes in will be of a dragging character. There is plenty of wheat in the North, fully one-half of it being owned by growers. Opinions seem almost unanimous that a lower range of values must be looked for before wheat finds an improved trade. A serious decline is hardly anticipated. European advisers say millers and importers with dwindling stocks cannot hold out indefinitely; but they are supposed to hold the whip in hand, and it is confidently anticipated that shippers will be the first to give way. Australian shipments are now taking place on quite a liberal scale, and there seems every prospect of the same rate being kept up for some time to come. Argentina is gradually shipping heavier each week, and her exports will shortly assume greater proportions. Russia has wheat to sell, but finds a market in the Mediterranean at prices considerably above those obtainable in the United Kingdom.

California Milling	1 32 1/2 @ 1 35
Cal. No. 1 shipping	1 27 1/2 @ 1 30
Northern Club	1 30 @ 1 32 1/2
Northern Bluestem	1 33 1/2 @ 1 35
Northern Red	1 25 @ 1 27 1/2

PRICES OF FUTURES.

Tuesday, at the forenoon session of Exchange Dec., 1906, wheat ranged from 1 1/2 @ 1 1/2 3/4.

Flour.

The flour market is dull and nothing has transpired during the past week to lend any encouragement to the situation from either China or Japan. A few steamers sailing from the coast during the week carried flour to China, but dealers say shipments were principally on old orders. Very little went to Japan. Two large Northern milling concerns have received some new orders from Oriental ports, but they were too small to make any comment on. The outlook is not very encouraging. Some cables have been received from Japan in the North, but prices offered were so ridiculously small that millers were compelled to decline the offers. There is no demand from the United Kingdom for Pacific Coast flour, and this is not comforting to millers on the coast who have European trade. Central and South American buyers purchase sparingly, anticipating lower prices later on. Northern mills are offering flour in San Francisco at ridiculously low prices, and buyers do not care to purchase, anticipating still lower prices on account of the dull export trade and heavy stocks carried by millers who wish to dispose of them. Not 10% of the mills are in operation, and most of them are only running part of the time. Millers' stocks of wheat are fairly large, and stocks of flour are ample for all requirements for some time to come.

Patents, California	1 45 @ 1 50
Second Patents, California	1 40 @ 1 45
Straights	1 40 @ 1 45
Superfine No. 1	3 50 @ 3 75
Superfine No. 2	3 00 @ 3 40
Oregon Bakers'	3 90 @ 4 25
Washington Bakers'	4 00 @ 4 10
Eastern Patents	5 50 @ —

Barley.

The barley market, in sympathy with wheat, has remained dull and quiet. The demand is principally for local consumption and no outside inquiry is experienced. In the north barley is in very limited supply, but the price does not advance. Most of the larger movements have been made with a view to avoid the tax assessment.

Brewing	1 25 @ 1 27 1/2
Feed, No. 1	1 17 1/2 @ 1 20
Feed, fair to good	1 15 @ 1 17 1/2
Chevalier, No. 1 to choice	1 30 @ 1 35
Chevalier, common to fair	1 20 @ 1 25
December	96 1/2 @ —

Oats.

The oat market has been quiet this week. The transactions have not been large, and the very little buying pressure could be detected even at the low prices last quoted.

White oats	1 50 @ 1 55
Black oats	1 30 @ 1 35
Red oats	1 45 @ 1 50

Corn.

Corn remains in the same condition as last reported. This commodity is not apt to increase in value, despite the fact that it is used more than usual in the North, as the green feed will undoubtedly more than counteract this increased demand.

Large White, good to choice	1 20 @ 1 25
Large Yellow	1 17 1/2 @ 1 22 1/2
Small Yellow	1 50 @ 1 55
Egyptian White	1 38 1/2 @ 1 40
Egyptian Brown	1 22 1/2 @ 1 30
Kafir	1 20 @ 1 25

Rye.

Rye continues to move at a fair rate and quotations are a shade firmer. Good to choice rye is quoted at \$1.55, a slight advance over last week. However, there is no speculative interest in this commodity, and supplies on hand are of a limited character.

Good to choice. — @ 1 55

Buckwheat.

Buckwheat is extremely quiet. The transactions reported are very small, and although the stock on hand is limited, there is no disposition to raise prices.

Good to choice. 1 50 @ 1 55

Beans.

The bean market remains weak, probably in sympathy with the Eastern market, where there does not seem to be the usual good demand for beans. A slight decline is noted in several varieties and the movement to local consumers is limited. There is some activity, however, in Red Kidneys. It is a little too early to make estimates of the coming crop, although an average acreage is expected. So far no speculative interest is manifest and no attention is paid to futures.

Small White, good to choice	1 20 @ 1 25
Large White	2 25 @ 2 50
Pinks	1 75 @ 2 10
Pinks, damaged	1 00 @ 1 25
Bayos, good to choice	3 30 @ 3 60
Red Kidneys	3 50 @ 3 75
Reds	3 00 @ 3 25
Limas, good to choice	4 50 @ 4 85
Black-eye Beans	4 25 @ 4 50
Crabapple	3 20 @ 3 35
Carabazas, small	3 10 @ 3 25
Carabazas, large	3 50 @ 3 75
Horsebeans	1 25 @ 1 50

Dried Peas.

The quotations on dried peas have not changed. There is little trade in this commodity at present and little interest is shown in it. The new crop is too far away as yet to affect the current prices, but even with light supplies the situation is developing no strength.

Green Peas, California	1 15 @ 1 20
Niles	1 75 @ 2 00

Hops.

At the present time it seems that most of the breweries are supplied with hops for their present needs at least, and unless a streak of warm weather should strike the East brewers may not be expected to make any further demands for some time. There remains scarcely any hops of the high-grade order in first hands. There remain considerable quantities of low-grade hops near Sacramento, but this does not seem to find any buyers at the prices asked at present.

Medium to fair	6 @ —
Good brewing	8 @ 8 1/2
Prime	8 1/2 @ 9 1/2
Prime to choice	10 @ —

Wool.

The wool market is commencing to attract more attention from the trade. The quotations have not changed on the varieties last quoted, but spring clipping has commenced in several locations. Southern spring is now quoted at 12@15c; Middle county, 14@17c, and Northern free, 17@21c. The situation is considered satisfactory on the whole, and, in view of Eastern conditions, fair prices for the spring clip may be anticipated.

FALL.

Humboldt and Mendocino	15 @ 16 1/2
Northern, free	14 1/2 @ 16
Northern, defective	11 @ 13
Middle County, free	10 @ 14
Middle County, defective	10 @ 12
San Joaquin and Southern, free	8 @ 10
San Joaquin and Southern, defective	7 @ 9

SPRING.

Oregon, valley	23 @ 25
Eastern Oregon	15 @ 17
Nevada	15 @ 19
Southern	12 @ 15
Middle County	14 @ 17
Northern free	17 @ 21

Hay and Straw.

Shipments of hay to this market have continued in moderate supply, the total for the week just ending amounting to 2940 tons in comparison with 2650 for the week preceding. As the season advances there is a more marked scarcity of the choicer grades shipped. Monday's arrivals of 72 cars did not show a single bale of choice hay and the bulk of arrivals is of rather poor quality. There is a rather marked tendency on the part of many ranchers to unload what little hay they had saved for an emergency, and as the bulk of this is poor hay, the market is being oversupplied with this particular quality. The situation may be considered a little weaker, but with no real decline in prices so far.

Wheat, choice	14 00 @ 16 00
Wheat, other grades	8 00 @ 13 50
Wheat and Oat	8 50 @ 12 00
Tame Oat, fair to choice	8 00 @ 12 00
Wild Oat	8 00 @ 9 50
Barley	7 00 @ 9 50
Alfalfa	9 00 @ 11 50
Stock hay	7 50 @ 8 50
Straw, 1/2 bale	30 @ 50

Millstuffs.

Millstuffs are moving at a fair rate into local consuming channels, but the demand is not an active one. Prices have remained unchanged, but bran and middlings are considered somewhat stronger, probably owing to lack of active milling operations.

Alfalfa Meal, 1/2 ton	22 00 @ 22 00
Bran, 1/2 ton	19 50 @ 21 00
Middlings	27 50 @ 29 00
Shorts, Oregon	20 00 @ 21 00
Barley, Rolled, choice	25 50 @ 26 00
Cornmeal	27 50 @ 28 50
Cracked Corn	28 00 @ 29 00
Oleicake Meal	39 00 @ 40 00
Cocoanut cake or meal	24 50 @ 25 50

Seeds.

Seeds do not attract any buyers at present and the market is considered weak. There has been a decline of 50c. in alfalfa and all other varieties are weaker. This is probably due to the rains just experienced. Dealers look for greater activity as soon as a few bright days dry out the ground for cultivation.

Alfalfa	13 00 @ 14 00
Flax	3 25 @ 3 50
Mustard, Yellow	3 75 @ 4 25
Mustard, Trieste	4 50 @ 4 75
Canary	6 @ 6 1/2
Rape	2 1/2 @ 3
Hemp	6 @ —
Timothy	5 1/2 @ 6

Honey.

There is no activity in honey at present. Prices remain as last quoted. There is a considerable stock of extracted honey on hand, but comb honey is scarcely to be found anywhere. Arrivals have so far hardly come up to the predictions of the San Francisco trade.

Extracted, Water White	4 1/2 @ 5
Extracted, White	4 @ 4 1/2
Extracted, Light Amber	3 1/2 @ 4
Extracted, Amber	3 @ 3 1/2
Extracted, Dark Amber	2 1/2 @ 3
Extracted, Hawaiian	2 1/2 @ 3
White Comb, 1-frames	10 @ 12 1/2
Amber Comb	9 @ 11

Beeswax.

The demand for beeswax is extremely limited. The light grades keep up a fair movement, but the dark grades receive little attention. The prices last quoted remain.

Good to choice, light 1/2 lb.	27 @ 28
Dark	25 @ 26

Live Stock and Meats.

Live stock and meats are in a very firm condition and there is a good demand for all varieties, even at the present high quotations. There is great caution among dealers about going above the present high prices, but mutton has made another advance, nevertheless. Hogs continue to be very scarce. There seems to be no more left in the interior. The high prices do not seem to bring in any large supplies. Local packers cannot operate under the present condition of the market and have practically suspended operations for the time being.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net 1/2 lb.	6 @ 6 1/2
Beef, 2nd quality	5 1/2 @ 6
Beef, 3rd quality	4 1/2 @ 5
Mutton—ewes, 1/2 lb., wetters	11 @ —
Hogs—cured, 150 to 250 lbs.	6 1/2 @ 6 3/4
Hogs, large, hard, over 250 pounds	5 1/2 @ 6
Hogs, small, fat, under 150 lbs.	6 @ 6 1/2
Hogs, soft	5 @ 5 1/2
Veal, large, 1/2 lb.	8 @ 9
Veal, small, 1/2 lb.	8 @ 9
Lamb, spring, 1/2 lb.	11 @ 12

Hides, Skins and Tallow.

The hide market in San Francisco is attracting a little more attention, although the volume of business is not particularly large. Hides are still of poor quality, and no better grades are expected for several weeks. The Chicago situation continues as heretofore with everything well sold up. Tanners are beginning to realize that lower prices are not to be expected for some time.

Nothing but select hides, clean and trimmed, will bring full figures. Culls of all kinds either egroft umb, cuts, hair slips, side brands or murrain, are not always readily placed at the lower figure.

	Sound.	Culls.
Heavy Steers, over 56 lbs.	13 @	12 @
Medium Steers, 48 to 56 lbs.	12 @	11 @
Light Steers, under 48 lbs.	11 1/2 @	10 1/2 @
Heavy Cow Hides, over 50 lbs.	11 1/2 @	10 1/2 @
Light Cow Hides, under 50 lbs.	11 @	10 @
Stags	7 @ 8	7 @
Wet Salted Kip	10 1/2 @	10 @
Wet Salted Veal	12 @	11 @
Wet Salted Calf	13 @	12 @
Dry Hides	19 @	19 @
Dry Kip and Veal, 11 to 15 lbs.	17 @	15 @
Dry Calf, under 4 lbs.	20 @	21 @
Pelts, long wool, 1/2 skin	1 50 @ 2 00	
Pelts, medium, 1/2 skin	90 @ 1 25	
Pelts, short wool, 1/2 skin	60 @ 90	
Pelts, shearing, 1/2 skin	30 @ 50	
Horse Hides, salted, large prime, each	3 00 @	
Horse Hides, salted, medium	2 75 @	
Horse Hides, salted, small	2 25 @	
Horse Hides, dry, large	1 75 @	
Horse Hides, dry, medium	1 50 @	
Horse Hides, dry, small	1 00 @	
Tallow, good quality	1 @ 1 1/2	
Tallow, poorer grades	3/4 @ 3/4	

Bags and Bagging.

Dealers in bags and bagging report new activity in this market. Not only have wool sacks been moving, but grain sacks have been in demand. However, it is thought that the present prices have caused many buyers to hold off for lower prices. Men who are in a position to know most about the sack market, however, believe that the price will not go lower, and some hold that it may even advance.

Bean Bags	6 @ —
Fruit Sacks, cotton, No. 1, 2@8 1/2; No. 2	7 1/2 @ 8
Fruit Sacks, jute, as to quality	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 22x36, spot	7 1/2 @ 7 3/4
Wool Sacks, 4-b	35 @ 35
Wool Sacks, 3 1/2-b	32 @ 33

Poultry.

The poultry market is firmer this week. Eastern poultry continues to arrive as previously. The Eastern receipts of the early part of the week, however, consisted chiefly of hens and only affected the quotations on that variety. California poultry, in spite of Eastern arrivals, remains very strong and firm. Local receipts of California stock have been rather light this week and an advance all along the line is noted, while all arrivals move off freely at the advanced prices. There has been very little activity in game and quotations on these remain unchanged.

Turkeys, dressed, 1/2 lb.	17 @ 21
Turkeys, choice Young, 1/2 lb.	14 @ 15
Turkeys, live gobblers, 1/2 lb.	15 @ 17
Turkeys, live hens, 1/2 lb.	5 00 @ 5 50
Hens, small, 1/2 dozen	6 50 @ 7 50
Hens, large	4 50 @ 5 50
Roosters, old	6 00 @ 7 00
Roosters, young (full-grown)	6 50 @ 7 50
Fryers	6 00 @ 7 00
Broilers, large	5 00 @ 6 00
Broilers, small to medium	3 00 @ 4 00
Ducks, old, 1/2 dozen	5 00 @ 6 00
Ducks, young, 1/2 dozen	6 00 @ 7 00
Geese, 1/2 pair	1 75 @ 2 25
Goslings, 1/2 pair	2 50 @ 3 00
Pigeons, old, 1/2 dozen	1 00 @ 1 25
Pigeons, young	2 00 @ 3 00

Butter.

Butter experienced a slight decline since last week, but quickly recovered and is again as last quoted. The dip was occasioned by heavy arrivals of butter and by the fact that traders underestimated the ability of consumers to take it away; but it moved very rapidly and prices were quickly restored. It now appears that butter has about found its level for this time of the year.

Creamery, extras, 1/2 lb.	26 @ —
Creamery, firsts	25 @ —
Creamery, seconds	24 @ —
Dairy, select	23 @ —
Dairy, firsts	22 @ —
Dairy, seconds	21 @ —
Mixed Store	18 @ 20

Cheese.

Cheese has remained steady during the week. There has been a fair movement into consuming channels. It is expected that arrivals will commence to increase in the near future.

California, fancy flat, new	12 1/2 @ 14
California, good to choice	12 @ —
California, fair to good	11 @ —
California, "Young Americas"	13 @ 13 1/2
Eastern, new	15 @ 16

Eggs.

The egg market has been very strong and firm this week with a slight advance in the outside figures. Some extra fancy stock has exceeded the top quotations. With the arrival of warm spring weather the receipts have increased, but at the same time storage operations have commenced in earnest and a further advance in prices is looked for before long.

California, select, large, white and fresh	17 @ 18
California, select, irregular color & size	15 1/2 @ 16
California, good to choice store	15 @ 16
Eastern firsts	17 @ 18
Eastern seconds	15 @ 16

Potatoes.

The situation in potatoes has not on the whole, improved. The large amount of poor grade stock does not seem to move off satisfactorily, but first class stock is in better demand. Oregon potatoes continue to arrive in considerable quantities. A large consignment of sweet potatoes arrived this week, but was of an inferior grade. There are a few imitation new potatoes making their appearance.

River Burbanks, per cental.....	50	@	75
Salinas Burbanks.....	1 10	@	1 40
Oregon Burbanks.....	80	@	1 25
Tomatoes.....	90	@	1 00
Sweet Potatoes.....	1 25	@	1 50
Early Rose, Oregon.....	1 35	@	1 50
Early Rose, California.....	1 25	@	1 35

Vegetables.

The vegetable market continues to display considerable activity. The volume of trade in vegetables increases as the season advances and several of the quotations have been reduced since last week. Asparagus has been firmer this week and the price has held up to its former quotation. Spinach and parsnips are now at their height of activity. The situation in onions has materially changed for the better. The large stocks on hand have been cut down to reasonable proportions and the market is firmer and in much better shape. An advance in Oregon is quoted and fancy varieties have sold for higher prices than quoted. Australian onions have commenced to arrive and are quoted at \$3.50 per cental.

Celery, per dozen.....	40	@	50
Radishes.....	10	@	—
Lettuce.....	10	@	20
Asparagus, per lb.....	5	@	10
Rhubarb.....	1 00	@	1 25
Green Peppers, southern.....	20	@	—
Cucumbers, hothouse, per dozen.....	75	@	1 50
Summer Squash, southern.....	2 00	@	—
Turnips, yellow.....	1 50	@	—
Turnips, white.....	1 20	@	—
Cauliflower, per dozen.....	50	@	—
Beans, String, per lb.....	20	@	—
Cabbage, choice garden, per 100 lbs.....	85	@	1 00
Egg Plant, per lb.....	10	@	15
Garlic, per lb.....	4 1/2	@	5
Onions, Oregon, per ctn.....	90	@	1 25
Onions, New Yellow Danvers, per ctn.....	75	@	1 00
Onions, Australian, per ctn.....	3 50	@	—
Peas, Green, per lb.....	8	@	10
Tomatoes, per box or crate.....	1 75	@	2 25
Artichokes, per doz.....	40	@	85
Carrots, per sack.....	80	@	1 00
Hubbard Squash, per ton.....	25 00	@	—

NOTE.—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top, with hand holes in the ends, and weigh when filled from 50 to 60 lbs gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 35 lbs. gross.

Fresh Fruits.

The apple market has been much stronger this week. A good demand for the higher grade exists, but common apples are not noticed. The better grades move freely and the supply is limited. An advance of 75c. and 25c. is noted on choice to select and good to select, respectively. Bananas are in abundant supply. Most of the local fruit interest is now devoted to oranges.

Apples, choice to select, per 50-lb bx.....	1 50	@	2 50
Apples, good to choice, per 50-lb. box.....	75	@	1 25
Apples, common.....	40	@	50
Pears, Winter Nellis.....	2 75	@	—

Dried Fruits.

The market in dried fruits keeps up its firm character and a good demand exists for all varieties. The stocks on hand are reducing fast and the smaller varieties are almost exhausted. The reported injury to the coming apricot crop by frost has not made any impression on the market, as it is too early yet to know what effect it will have on the total output of apricots. Prunes and apples continue firm and strong under limited supplies. The outlook for future crop is good, but it is still too early to make estimates.

EVAPORATED OR BLEACHED.

Apples, 50-lb boxes, rings, pressed, good to choice.....	8 1/2	@	8 3/4
Apples, extra choice to fancy, 50-lb boxes.....	9	@	9 1/4
Apples, Royal, good to choice, per lb.....	8 1/2	@	9 1/4
Apples, Royal, fancy.....	9 1/2	@	10
Figs, 10-lb box, 1-lb cartons.....	55	@	62 1/2
Nectarines, White and Stanwick, per lb.....	8	@	8 1/2
Nectarines, red, per lb.....	8	@	8 1/2
Peaches, unpeeled, good to choice.....	8 1/2	@	8 3/4
Peaches, unpeeled, fancy to extra fancy.....	9	@	9 1/4
Pears, standard, per lb.....	8	@	8 1/2
Pears, choice to fancy.....	10	@	12
Plums, Black, pitted.....	5 1/2	@	6 1/4
Plums, Red, pitted.....	7	@	8
Plums, Yellow, pitted.....	6	@	8
Prunes, Silver, good to fancy.....	5 1/2	@	8 1/2
Prunes, in bags, 4 sizes, —@—c; 40-50s, 5 1/2@5 3/4c; 50-60s, 4 1/2@5c; 60-70s, 4 1/4@4 1/2c; 70-80s, 3 1/2@4c; 80-90s, 3 1/4@3 1/2c; 90-100s, 3@3 1/4c; small, 2 1/2@3c.			

COMMON SUN-DRIED.

Apples, sliced.....	5	@	5 1/4
Apples, quartered.....	4 1/2	@	5 1/4
Figs, White, in bulk.....	2 1/2	@	3
Figs, Black.....	2 1/2	@	3

Raisins.

The market in raisins is steady. There is a fair volume of business at the quoted prices, which remain unchanged. It is expected that the stocks on hand will nearly be cleaned up by the time the new crop makes its appearance. The trade

WOOL SALE.

The Century Mercantile Company is conducting regular sales at its warehouse. This interests all growers. Full particulars by mail. Office, 14 Sansome St., San Francisco.

seems to have greater confidence in the stability of raisins than for some time, and a repetition of the recent violent fluctuations is not anticipated.

(Fresno delivery except otherwise specified.)

London Layers, 2-crown, 20-lb box.....	1 50	@	—
London Layers, 3-crown, 20-lb box.....	1 60	@	—
Fancy Clusters, 4-crown, 20-lb box.....	1 75	@	—
Dehesas, 20-lb box.....	2 00	@	—
Imperial, 20-lb box.....	2 50	@	—
2-Crown Standard loose Muscatel.....	5 1/2	@	—
3-Crown Standard.....	5 1/2	@	—
4-Crown Standard.....	5 1/2	@	—
Seedless Thompsons, 50-lb boxes.....	4 1/2	@	—
Seedless Sultanas.....	4 1/2	@	—
Seedless Muscatels.....	—	@	—
Fancy, 16-oz. Seeded.....	6 1/2	@	—
Choice, 16-oz. Seeded.....	6 1/2	@	—
Fancy, 12-oz. Seeded.....	5 1/2	@	—
Choice, 12-oz. Seeded.....	5	@	—
Fancy Seeded, bulk.....	6 1/2	@	—
Choice Seeded, bulk.....	6	@	—

Citrus Fruits.

Oranges have profited by the weather conditions this week, and although large consignments have arrived they have been cleaned up quickly at the prevailing prices. Lemons are considerably stronger owing to a much better demand, and an advance of from 25 to 50c. is noted. As a rule, citrus fruits are arriving in very good condition, a fact which has helped no little to make them acceptable to the trade. With continued warm weather a further advance is probable. Limes remain the same.

Oranges, fancy.....	2 25	@	2 75
Oranges, choice.....	1 75	@	2 25
Oranges, standard.....	1 25	@	1 50
Oranges, Seedlings.....	1 25	@	1 50
Lemons, California, fancy, per box.....	2 00	@	2 75
Lemons, California, good to choice.....	1 25	@	1 75
Lemons, California, standards.....	60	@	75
Grape Fruit, per box, new.....	1 00	@	1 50
Grape Fruit, seedless.....	2 00	@	2 50
Limes, per box.....	3 50	@	6 00

Nuts.

The nut market is very quiet. There is little demand for nuts at present outside of the retail demand for local consumption. Stocks are not large, but are probably ample for requirements, unless a scarcity should develop in the East.

Peanuts, fair to prime.....	4 1/2	@	5 1/4
Cal. Walnuts, No. 1 soft shell.....	—	@	13
Cal. Walnuts, No. 2 soft shell.....	—	@	9
Cal. Walnuts, No. 1 hard shell.....	—	@	12 1/2
Cal. Walnuts, No. 2 hard shell.....	—	@	8 1/4
Almonds, IXL, per lb.....	12	@	13
Almonds, Ne Plus Ultra, per lb.....	12	@	12 1/2
Almonds, Nonpareil, per lb.....	12 1/2	@	13
Almonds, Langueed, per lb.....	8 1/2	@	9
Almonds, Golden State, per lb.....	9	@	9 1/4
Hard Shell, per lb.....	5	@	—

Prof. Pierce Believes in the Lenoir.

Work of the Pacific Coast Laboratory of the United States Department of Agriculture has demonstrated the resistance of one variety of European grape to the California vine disease. A number of acres of this variety have been grown by the department and the cuttings from these vines, several thousand in number, are now ready for distribution in lots of 10 to 100 to individuals who may wish to get a start with a resistant grape. These cuttings may be secured at the Wild Plant Improvement Gardens on Durant street, between West and Ross streets, north of Washington avenue, Santa Ana.

The grape here being distributed is the Lenoir, a dark variety with rather small berries and bunches of medium size. The vine is very vigorous and fairly productive, and has rich, dark green foliage. The grape is best suited for coloring wines or for making port wines, though the flavor as a table grape is not bad. As a stock to graft upon it will prolong the life of a tender variety though not keeping the tender top from disease. It is well adapted as an arbor plant.

Extensive hybridizing work is being conducted between this resistant grape and other varieties with the object of transmitting this resistance to a considerable number of new hybrid grapes of various qualities, and it is confidently believed the department will thus master the disease which has caused a loss of fully \$50,000,000 to the State of California.

NEWTON B. PIERCE.

Pathologist in charge of the Pacific Coast Laboratory and Plant Improvement Gardens, Santa Ana, California.

MAIL ORDER HOUSES.

Do you get the price list of the IMPERIAL CASH STORE? If not, better send for it to-day. The best, cheapest and most reliable Mail Order House on the Pacific Coast. 531 Washington Street, San Francisco, California.

Chickens and Eggs

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Notice to Stockholders of Century Mercantile Company.

Notice is hereby given, that in pursuance of a resolution and order by the Board of Directors of the Century Mercantile Company, a corporation organized and existing under the laws of the State of California, unanimously adopted at a meeting of said Board, duly and regularly called and held on the 1st day of March, 1906, at the office of said corporation, No. 14 Sansome St., in said City and County of San Francisco, State of California, all the members of said Board being present and acting, a special meeting of the stockholders of said Century Mercantile Company is hereby called and will be held at the office of said corporation, No. 14 Sansome St., in said City and County of San Francisco, State of California, said place of meeting being at the principal place of business of said corporation, and at the building where the Board of Directors usually meet, on Wednesday, the 16th day of May, 1906, at 10 o'clock A. M. of said day, for the purpose of considering and acting upon the proposition to increase the capital stock of said corporation from \$20,000.00, divided into 2,000 shares of the par value of \$10.00 each, to \$100,000.00, divided into 10,000 shares of the par value of \$10.00 each.

By order of the Board of Directors of Century Mercantile Co.
Dated March 1st, 1906.

J. H. CONGDON,
Secretary of Century Mercantile Co.
ALBERT C. AIKEN, Attorney-at-Law, No. 802 Mills Bldg., Attorney for said Corporation.

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330 Market St., San Francisco, Cal.

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THE GARDEN.

Hints for City Gardens.

Many of the interior towns can garden successfully according to suggestions made for Sacramento, and for this reason the following hints in the *Union*, by Mr. S. H. Gerrish, an old-time amateur of the Capital city, are widely interesting:

In making a garden it is essential that soil be well spaded and the clods of earth well pulverized, raked over and made as level as possible. The beds for a garden can be measured off the size to suit the taste of the planter, but one where it can be easily reached by the hand is most convenient, as it is imperative that weeds be pulled out and destroyed, and every plant is a weed that grows where it is not wanted. The soil should be rich, but the application of fertilizers must not be overdone, as it will retard the growth or make it so rank that the value of its application will be lost. Use it sparingly until experience teaches the amount, as some plants stand more than others. On the papers of seeds sold directions are given as to this.

In planting vegetables here in Sacramento, which has a semi-tropical climate, any of the hardy vegetables, as peas, carrots, parsnips, cabbage, onions, radish, turnip and lettuce, can be planted, any time after the rains have made the ground moist enough. February is the time it is generally done unless the rains have held up earlier and the ground is fit to work.

Some raise up the earth for a bed and plant lettuce early in December, so as to have it early, enriching the ground with a warm fertilizer. All vegetables must have the sun half the day, at least, to get any returns.

In March plant beans, squashes, melons, cucumbers, peppers, corn, etc., and set out tomato plants. In shaded parts of the yard where the sun only occasionally shines, bulbs or amaryllis will grow and blossom, but will be later than if grown in the sun. Violets do well in the shade; the hydrangea, or hortensia, grows well with very little sun, but most flowers must have at least the sun half the day to do well and blossom.

Do not water too much and keep the ground loose and they will grow well. Of course, geraniums, especially the zoele variety, will grow with little trouble and make a fine show in any yard. These should be planted everywhere.

Rose slips or bushes grow better if set out in November, as the sap is then more dormant than at any other time. In December they begin to make fresh roots, and to move them late there is great risk of their dying.

A rule easy for one from the north-eastern States to use in their calculations on garden work, is to consider February as April and March as May, and act accordingly in respect to the garden. They will obtain the same results here as they did in their old homes.

In this connection it is well to add that the most valuable fertilizer, the leaves, which are too often burned, thus are wasted; even if the ashes remain on the soil it is deprived of the nitrogen, that most important element of plant food, the potash, soda, lime and phosphorus remaining.

A gardener should save them, make them protect his garden in the cold season and fertilize his land, as they contain the best elements of plant nutrition. It is a strange sight to see anyone who has a garden burning this valuable fertilizer because they are a temporary inconvenience.

In setting out tropical trees and plants, such as orange, lime, lemon and the different varieties of palm trees, April or May is the proper time, as the ground is warm and they root better. This is the only safe time to prune these varieties, as if done in the cold season they are sure to be chilled in the exposed place where they are cut and often die. Hundreds of eucalyptus and other trees have been killed in Sacramento by the stupidity of the tree cutters, who treat tropical vegetation the same as the most hardy deciduous trees from a cold climate.

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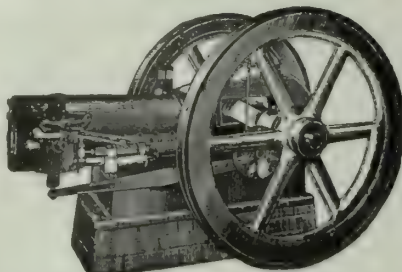
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VALUABLE VINEYARDS.—Lodi special to Stockton Independent, Feb. 24: G. McDonald refused an offer of \$6,500 for his vineyard two miles southeast of town. The vineyard comprises 20 acres without improvements. The vines are four years old, 12 acres being wine grapes and eight acres Tokays. Three hundred and twenty-five dollars was the average per acre. Less than a year ago Mr. McDonald paid \$4,000 for his property. E. B. Wright recently refused \$300 an acre for his three-year-old 20-acre Tokay vineyard. An offer of \$700 per acre for the Cowell vineyard at Woodbridge has also been refused. These are vines with age.

The Overloaded Engine.

One of the best little books ever written is being sent free to farmers by the Western Malleable and Grey Iron Company 127 Chase St., Milwaukee, Wis., explaining the effect of overloading a gas or gasoline engine. It also tells in a convincing manner of money being saved by its use and the method of effecting the same. All in all it is the best hand book on engines published for a long time and will help the owner, or prospective owner, over many difficulties. Write for a copy if you have not already done so.

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And there's money in chicken raising when you get it down to a certainty. When you can figure up a profit of \$12.00 to \$15.00 per month on each machine you operate.

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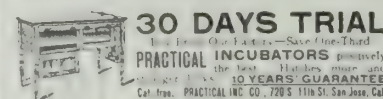
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Tulare Grange.

On Saturday, the 3d, Tulare Grange convened in its hall in regular session. The attendance was fair, but the lunch was excellent. After the routine of opening and the reading and approval of the minutes of the last meeting, the literary program was discussed in open Grange. Before going into session in open Grange, three applications for the degrees, being favorably reported on, were balloted for and all elected. Incidentally, all new members now coming into the Grange are such as desire to insure in the County Mutual Fire Insurance Association. The committee on this association made a partial report, which was discussed in open meeting.

The application to the insurance commissioner is in circulation at Dinuba and Orosi and when returned here will be sent on for approval. Various questions were asked as to the responsibility of the mutual insurance associations, as agents of the stock companies make it their business to falsely report that all mutual fire associations are irresponsible. This is deliberate misrepresentation. Stock companies, being private corporations, do fail, where large losses are sustained, as in destructive city fires. County mutual insurance associations, being public incorporations, under a special law of California, insuring only isolated, country properties, from which the chance of any large conflagration is eliminated, only the insured being members of the association, every member is, by law, bound to pay his assessment, should it be necessary to levy one, and his policy of insurance will require him to do so; every loss will be a small one and the assessment to meet it will be small accordingly, so small that no policy holder will endanger his own policy by failing to pay his assessment promptly. Of the 10 mutual fire associations doing business in California, not one default in the payment of a loss but has been promptly paid to the full amount of the policy. There can be no failure to pay a loss. The payment of a loss is surer than taxation, for stock insurance companies are notorious, expert tax dodgers. It was said that very many farmers, now holding insurance in the stock companies, will insure in the mutual as soon as their policies run out; it was shown, however, that waiting for their policy to run out is unnecessary inasmuch as their policies provide for its surrender at any time the holder desires, that most of their policies are written for three years and if it had to run for one year yet, the surrender value would be 20% of the premium paid, or, on a policy of \$2,000, about an average one, more than enough to pay a membership fee and five years' premium on a mutual policy. No farmer, in justice to himself, should delay in cancelling a policy in a stock incorporation, and in insuring with the mutual. A policy in the mutual company will be 50c. on the \$100 for five years, beside a membership fee of \$2.50. Let every farmer examine his insurance policy and see how much he can save by surrendering it and get a better security in the mutual. Incorporated insurance companies are but devices for forcing the insured to pay more than a just remuneration for services rendered. A mutual insurance is to save the farmer all over the actual cost of the service economically performed.

The subject of the day was, 'In the Distribution of Water for Irrigation, Should the Allotment Be in Accordance With the Requirements of the Crop to Be Grown?' The discussion was led by Bro. E. Barber, C. E., who has had long experience in the construction of irrigation canals and the distribution of water for irrigation. His address was an able one—one of the best we have heard on this most important subject. The subject is one of which every one present has some experience. It seemed to be agreed by all that water should be charged for by measurement, the cubic inch or foot, and this will tend to its economical use, and not by the acre. The amount of water required to irrigate any crop depends on the rainfall, the crop, the land and the proper application and cultivation of the land. The amount used, if charged for by measurement, may be left to the irrigator. The discussion was timely, as well as instructive.

Two questions were drawn from the question box, 'What can the Grange do to get the Southern Pacific Railroad Company to carry the farmers' sugar beets from non-competing points to the factory on similar terms to those of the Santa Fe Railroad Company?' It was agreed that, in the absence of competition, this can not be done. Experience has taught that the Southern Pacific Railroad Company will give reduced



ARE YOU READY FOR HARVEST

How about it?

Old Mother Earth, the sun and the showers, the dews and the winds are doing and will do their part to produce the wheat and oats and rye and barley that go to make a bountiful harvest.

Are you doing your part?

Are you getting ready to harvest the crop after it is grown?

Do you know how you will cut your grain?

Are you sure you will harvest it to the best advantage—with the least loss of grain, the least waste of time, the least trouble and worry and expense?

These are mighty important questions, for a large share of your profit depends upon them.

It's not too early to begin to think about them.

With high priced land and high priced labor, you need to get every cent from every acre you cultivate.

Help will be scarce and expensive; therefore, you need a harvesting machine that will save you the most labor.

Harvest days are few; therefore, you need a harvesting machine that will save you the most time.

Grain is worth money; therefore, you need a harvesting machine that will save you the most grain.

You can't afford to run risks.

You can't afford to take chances.

And you don't have to.

Take an hour or two, now, before you get too busy and talk to any agent of the International Harvester Company of America, and find out about the International line of harvesting and haying machines for 1906.

You'll be interested whether you buy or not.

Buying a machine of any kind for use on the farm is not as simple a matter as it may seem.

You can "size up" a farm and know pretty accurately how much an acre you can afford to pay for it, but unless you are a mechanical expert you can't judge a machine in the same manner.

You have to take other things into consideration. For example:

You need to know something about the design—the mechanical principles—how the machine works. You need to know something about the materials used in it.

You need to know something about the skill used in its construction.

You need to know something about the responsibility of the man behind it and about the machine's reputation.

The International Harvester Company line of machines for 1906 will satisfy you on these points—and on every other point that you may bring up.

Bigness is not necessarily a merit in itself.

If you're buying a horse you don't care very much whether the man who raised it, raises one colt a year or 500.

But you know that the man who makes a specialty of horse breeding is more likely to raise a hundred good colts, than is the man who goes at

it in a hit-and-miss, haphazard manner.

It's the same way with farm machines.

You don't care whether a manufacturer makes 1,000 or 100,000 of them, just so the machine satisfies you.

But there's this to take into account:

The first harvesting machine was largely an experiment.

For fifty years inventors and manufacturers continued to experiment, making changes and improvements, adding this and taking away that, until finally a half-dozen harvesters began to stand out head and shoulders above the others.

Why do you suppose that was?

HOW did it happen that the Champion, the Deering, the McCormick, the Milwaukee, the Osborne and the Plano increased in popularity and sales so much more rapidly than the hundred and one other harvesting machines that have been put on the market at various times in the past 50 years?

There is only one reason for it.

They met the demands of the farmer, and satisfied his needs.

In the expressive language of the day, "they made good." They are better today than ever before; they do better work and give greater satisfaction.

And here are the reasons:

1st.—The mechanical principle is right.

The manufacturers of the Champion, the Deering, the McCormick, the Milwaukee, the Osborne and the Plano, by co-operation are able to include in their respective machines every device, every invention, every mechanical principle yet discovered that tends to make a harvesting machine do better work.

By co-operation they are able to maintain such experimental shops as the world has never seen before, making certain that every im-

provement and every device that mechanical genius can contrive will be employed in their line.

2nd.—The materials are right.

By co-operation they are able to own, control and operate their lumber camps, their own saw mills, their own coal and iron mines, their own coke ovens, their own steel mills, relieving them of the necessity of depending upon the uncertain and fluctuating steel markets, coal markets, lumber markets, etc., for their raw materials, and insuring them at all times an abundance of materials which they know to be right. These are added reasons for the superiority of these harvesting machines.

3rd.—The workmanship is right.

The demand for these six leading makes of harvesting machines enables their manufacturers to maintain manufacturing plants of the highest efficiency and to employ workmen of the highest skill—factories and workmen which could not by any possibility be maintained to supply a small demand.

4th.—Their reputation is right.

The fact that so many farmers cannot be persuaded to buy any other,—the fact that so many farmers continue to buy them,—the fact that they are considered the standard wherever grain is grown in every part of the world is sufficient indication of their reputation and their reliability.

You probably need one of these harvesting machines.

You cannot afford to begin harvest with a machine that is liable to break down and cause you several days' delay.

You cannot afford to use a machine that loses a few stalks now and then and a whole sheaf here and there, for a little leak like that eats into your profits at a surprising rate.

Go to the dealer now, and get which ever catalogue you want.

If you don't know an International Dealer—write to nearest branch house.

International Harvester Company of America, (INCORPORATED) Chicago, Illinois.

WESTERN GENERAL AGENCIES: Denver, Colo., Portland, Ore., Salt Lake City, Utah, Helena, Mont., Spokane, Wash., San Francisco, Cal.

International Line—Binders, Reapers, Headers, Header-Binders, Corn Binders, Corn Shocks, Corn Pickers, Huskers and Shredders, Corn Shellers, Mowers, Hay Tedders, Hay Rakes, Sweep Rakes, Hay Loaders, Hay Stackers, Hay Balers, Knife Grinders, Gasoline Engines, Pumping Jacks, Manure Spreaders, Weber, Columbus and Bettendorf Wagons, Binder Twine.

rates of freight where competition, either by wagon or rail, exists or is instituted and will give reduced rates of fares and better service if the competing line is only a 'jerkwater' stage.

The second question was, 'Does the average member take all the interest in promoting the Grange he or she should?'

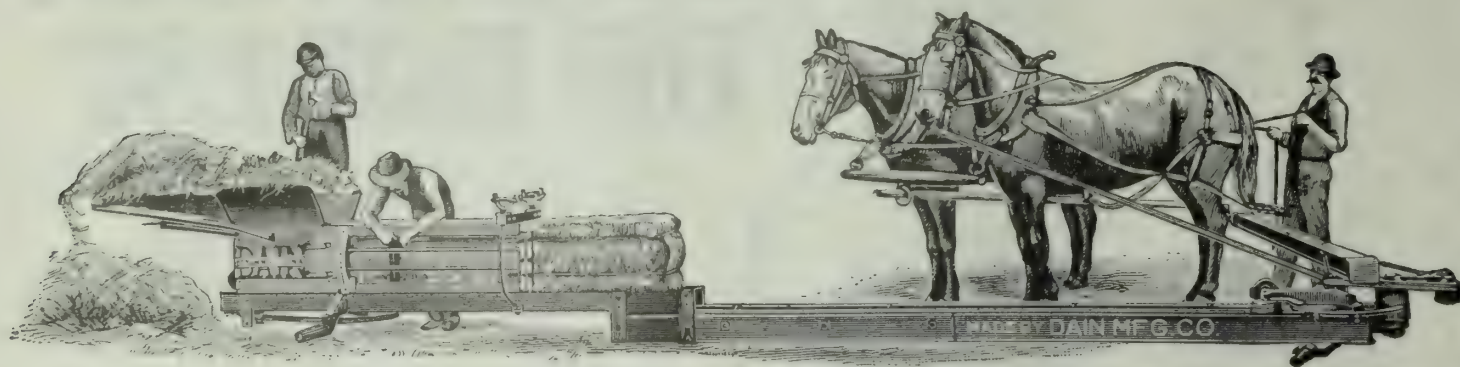
It was agreed that the long existence of the Grange, now over one-third of a century old, shows it has over an 'average' amount of interest; that some members,

notably the male persuasion, do not give it the consideration and attention that it deserves or their duty as good citizens requires, still the Grange has filled, is filling and will continue to fill a very useful place politically, socially and educationally, in every community, fortunate to have one in its midst.

Subject next meeting, 'Should Tulare Grange Encourage the Culture of Sugar Beets in this County?' by Bro. H. T. Hunsaker.

NEW SUGAR TOWN.—Chico special to the Oxnard Courier, Feb. 23: Two thousand shade trees are to be planted along the streets of Hamilton. The foundations for the factory of the Alta California Beet Sugar Company are completed, and work is being done on the walls. Two hundred head of stock are engaged in plowing and several hundred men are employed in building the factory, putting up residences and tilling the soil for the cultivation of the sugar beet.

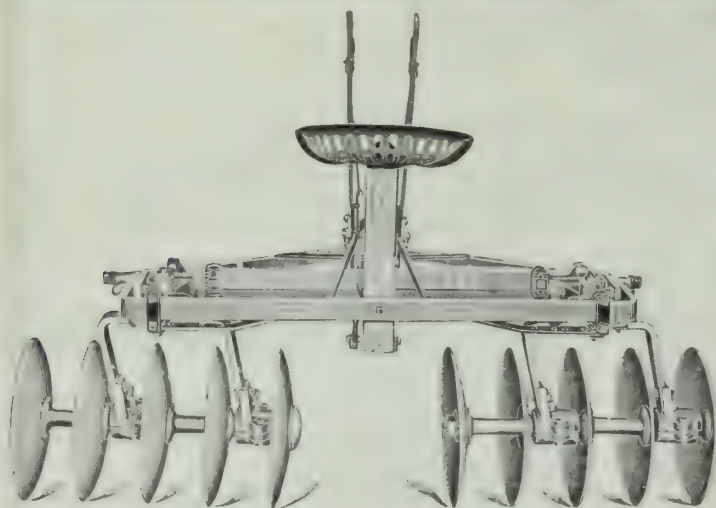
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NOTHING COMPLICATED ABOUT IT. NO HEAVY PITMAN FOR THE TEAM TO TRAVEL OVER. NO GEARS IN THE POWER TO BREAK AND WEAR OUT. JUST AN EVEN, STEADY PULL. THE TEAM KEEPS TRAVELING ALL THE TIME. THE Pull Bar is a flat bar of steel setting close to the bed reach and does not interfere with team in the least. The Bale Chamber is tight and extends 8" beyond the end of the plunger. The Feed Opening is large and Feed Table is placed at end of Press in the correct position to feed the Press with minimum amount of work and give it the largest capacity of any Press on the market making same size bale. SEND FOR HAY PRESS CATALOGUE A.

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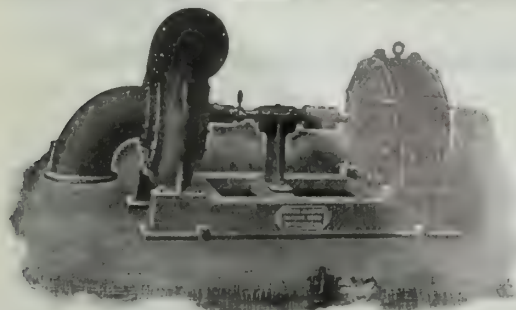
Cut shows gangs extended and throwing all the dirt in one direction. The machine can readily be set for either in-throw or out-throw. The special long head or frame gives the extensible feature without the need of an additional extension head.

This harrow is particularly well adapted for orchard and vineyard work. Hard wood maple bearings, strong frame, quickly set out full length of frame and quickly set in or reversed without removing from frame. When extended the width between the two gangs of the disc is about equal to the width of one of the gangs, thus making the implement particularly well adapted for cultivating under low hanging limbs or orchard trees. Gangs when extended may be set to throw the dirt all toward the center or to throw the dirt from the center. Can change the angle of the gang or tilt them for ridge work. Levers are low and very handy for the operator.

We have a few 5-foot only with either 18" or 20" discs.

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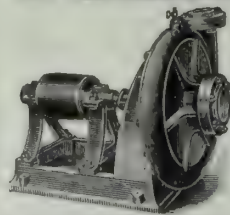
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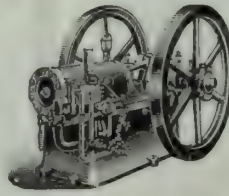
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AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 11.

SAN FRANCISCO, SATURDAY, MARCH 17, 1906.

THIRTY-FIFTH YEAR.
OFFICE: 330 MARKET ST

Gems From Africa.

Famous and beautiful are the two works of nature and of art which are portrayed by the engravings on this page. They are so famous that most people, with only general information, if asked to mention great things of the dark continent, would include either one or both of these wonders which bear the name of the great queen. In fact, the two are nearly one, for the bridge spans the chasm in which the falls are situated and the falls in turn cast the spray of their impressive precipitation upon the bridge. Of course, the Victoria falls of the Zambesi were known long before enterprise and civilization had arisen to the triumph of the bridge—in fact, the bridge is of very recent construction, while one can read about the falls in all the encyclopedias published since Livingstone gave his description of it. The chief physical feature of the Zambesi is the Mosi-oa-tunya ('smoke sounds there') or Victoria falls, admitted to be one of the noblest waterfalls in the world. The cataract is bounded on three sides by ridges 300 or 400 feet high, and these, along with the many islands dotted over the stream, are covered with sylvan vegetation. The falls, according to Livingstone, are caused by a stupendous crack or rent, with sharp and almost unbroken edges, stretching right across the river in the hard, black basalt which here forms the bed. The cleft is 360 feet in sheer depth and close upon one mile in length. Into this chasm, of more than twice the depth of Niagara, the river rolls with a deafening roar, sending up vast columns of spray, which are visible for a distance of 20 miles. Unlike Niagara, the Mosi-oa-tunya does not terminate in an open gorge, the river immediately below the fall being blocked at 80 yards distance by the opposing side of the (supposed) cleft running parallel to the precipice, which forms the waterfall. The only outlet is a narrow channel cut in this barrier at a point 1,170 yards from the western end of the chasm and some 600 yards from its eastern, and through this the Zambesi, now only 20 or 30 yards wide, pours for 120 yards before emerging into the enormous zigzag trough which conducts the river past the basalt plateau.

Of the Victoria bridge a recent writer gives an interesting description: The bridge has been constructed at a spot where the gorge is 650 feet across at the upper level, and the depth from the top to the surface of the water below, in the dry season, is nearly 400 feet.



The Victoria Bridge Across the Chasm of the Zambesi.



The Victoria Falls of the Zambesi—Twice the Height and Width of Niagara.

The sides of the chasm are formed of an igneous rock, hard in structure, reddish brown in appearance, and well covered with vegetation. Prior to the construction of the bridge, this rock had always been thought solid, but, when the work of excavating the foundations for the abutments of the main arch was undertaken, it was discovered that the upper part of the south bank was composed of rock debris to a considerable depth. This unexpected circumstance not only caused much unforeseen labor and loss of time, but it necessitated the lowering of the level of the entire bridge by 20 feet. It is probable that the place where this debris lay was formerly the precipice over which the water fell, previous to the time when the dividing barrier between it and the present fall was removed by the erosion of water. The bridge consists of a main span 500 feet long, the arch of which it is composed being 15 feet deep at the center and 105 feet at the springing. The rise of the arch is 90 feet.

Owing to the immense depth of the chasm, the bridge was designed so that, throughout the process of its erection, commencing from opposite sides, each half is a cantilever until their ends, reaching one toward the other, join in mid-air, when it becomes an arch. This type of design made an efficient anchorage during erection a necessity. The strength of the attachment had, therefore, to be equal to the pull caused by the weight of the projecting bracket or cantilever, with a sufficient surplus for safety. The pull on the anchorage apparatus was estimated at 400 tons, and in the present case the means of attachment were provided by a series of steel wire ropes. These were secured to the top of each cantilever, and carried to a point some distance to the rear, where they entered a hole bored downward in the solid rock, through it at right angles to the bridge, and up again on the other side; thus each wire formed a loop gripping the rock, with its free ends fixed to the cantilevers.

The most difficult part of the construction of the bridge was the erection of the end spans, but when once the tall end-posts of the main span were erected, and the short spans were connected with them and the shore, affording a stable platform to start from, the work proceeded rapidly and smoothly.

Owing to the spray from the falls which descends upon the bridge during the wet season, the question of maintenance is important, and it is a feature of the design that every portion of the steelwork is accessible to the painter's brush.

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E. J. WICKSON Horticultural Editor

SAN FRANCISCO, MARCH 17, 1906.

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The Week.

Professor McAdie calls it "a polar surge," and we are glad to have a term both strong and elegant to use, because what many other people are saying about it will hardly do to print. The storm has in fact reached a point where verbal forbearance ceases to be a virtue, and each one can handle words for himself. In a general way it is, of course, a good thing to get a whole lot of water into the ground, but when the hills begin to slide down and the valleys get so spongy that the railway sleepers wake up, the farmer begins to wonder what will happen to his submerged grain fields and puddled orchards, and how his pocket book will stand prolonged idleness and horse feeding. It is a polar surge and there is no help for it.

It may be urged, however, that we are getting the thin edge of it as usual. The pole evidently slid down the backbone of the continent and has surged up a lot of inexpressible weather east of the Sierra Nevada mountains, which simply acts as a barrier so that our storm cannot escape, and so it is whirling around up and down the coast, raining from all directions and washing out things all the way from Trinity to San Berdoo. Fortunately, however, we are not getting any low temperatures, and therefore apprehensions of fruit freezing are not yet realized. There are many places, though, where the blooms are not having a fair chance, and there is reason to look for rather a streaked condition in the fruit crops, as we claimed last week. It is too soon to say what all this may amount to; many things which now look doubtful can be certified on the right side by a solar surge instead of a polar one.

The storm has not prevented the fruit shippers getting together to protest against the legal surge by which the United States Supreme Court has made it so dark for fruit distribution by giving the routing to the railways rather than to the shippers. Los Angeles dispatches tell of a meeting in that city on Monday of this week, of which the ruling sentiment was 'permanent organization to safeguard the fruit industry of California.' It was determined to form a great association of California fruit growers and shippers, having for its object the pro-

motion of the welfare of the industry. There were also adopted the following declarations:

We urge Congress to pass the Hepburn bill, because experience has shown that when cars were routed by the railroads the time of delivery was from two to eight days longer than when routed by shippers, and the loss on account of decay caused by such delay in many instances from \$100 to \$300 per car; therefore, legislation should be enacted that will restore the routing privilege to the shippers.

Manifestly the action of the Supreme Court decision will rush the Hepburn bill. Our shippers were getting into a quiet state of mind, owing to the better work done by the railways last year and were somewhat inclined to think they could get along better without stirring up the rate-regulation issue. This routing calamity, however, has destroyed all the good nature which has been generated between shippers and carriers and the former will naturally strike at any iron which seems hot. Organization is certainly the only way to hit hard.

By the way such an organization as is now proposed seems a most desirable one on many other grounds. The marketing and the growing of fruit are too far apart to be warmly covered by one organization blanket, even though a few of the same men participate in both acts. The old 'fruit growers' conventions' have nearly died of commercialism without having done enough even in that line to die for. If we can have a straight and strong organization especially devoted to the trade and transportation ends we can then follow largely the cultural and protective end at the annual conventions under the auspices of the State department of horticulture and keep the interest more than has been possible for the last few years. The present proposition may, therefore, be held to be very promising in several ways.

But there is another surge which has risen to some note, and that is the lingual surge. The California Promotion Committee reports wonderful results from talking matches which it arranged for some weeks ago at the Academy of Sciences in this city. Lectures have been given every afternoon except Sundays and holidays, and all the counties in the State have been invited to send lecturers and lantern slides to show what they have to offer the home-seeker. During the 14 weeks ending February 28, 302 lectures were given, 36 being general lectures on the industries of California and the others by various counties and cities of the State. San Joaquin county heads the list with 82 lectures delivered. Santa Clara county comes next with 71 lectures, and Stanislaus county with 38 lectures; then follow Alameda city with 27, Fresno county with 12, San Benito county with 11, Alameda county with 11, Solano county with 5 and Petaluma with 9. The total number of people at these lectures was 11,935, and many indications of effective eloquence are noted.

It would seem as though it ought to be possible to take what water is needed for irrigation out of a great flood stream like the Sacramento river without destroying its navigability. It is natural, of course, that alarm should be felt at diversion from a river which has very low summer stages, and it is also true that no one can afford to have the great waterway lessened at all as a recourse for transportation. The matter is now pending before Congress, and the McKinlay bill to permit diversion of the waters of the Sacramento river for irrigating 200,000 acres of land in Glenn and Colusa counties will be referred to army engineers with a view to seeing whether the bill could not be amended so as to prevent interference with navigation on the river and answer the purposes of the irrigation promoters at the same time. It is believed such a compromise measure can be framed by providing that the water shall be diverted only eight months in the year, the irrigation company to store sufficient supply to last through the balance of the year. There certainly ought to be some way to use and still not destroy the river.

California seems to be getting short of meat again, and certainly this ought not to be the case in a great grass and alfalfa State. The Sacramento Union has indulged in the following gossip about meat affairs at that point:

A year ago at this time the wholesale price of

mutton was 7c. per lb. Today the wholesaler pays 12 and 12½c. In something over three months mutton has advanced from 6c. to the present figure, and the upward tendency is not yet exhausted. Pork has advanced in a proportionate degree and is equally scarce. There seems reason to believe that these prices will prevail until next June at least, and perhaps until later in the summer. By that time, however, new stock, fattened by the spring feed, will become available. But dealers issue a warning that no such prices as existed last summer may be expected during the corresponding period this year.

Of course, these prices are somewhat remote from the grower, and cover the profits of several handlers, but the general drift of the discussion ought to be significant.

QUERIES AND REPLIES.

Treatment of a Weedy Lawn.

TO THE EDITOR: I wish you would give me some advice in regard to a fertilizer for our lawns, on a rather heavy soil which has become sour by continuous irrigation. At the same time, through the neglect of former gardeners, dandelion has taken such a hold—in some places completely overgrowing the grass—that a radical means has to be used. I thought of gas-lime as a remedy, as this would kill the weeds and probably the grass also; but that would not matter for one season, if said lawns could be seeded new by next year. In former years gas-lime was produced in gas works, but, since some oxide is used instead of lime, gas-lime can not be secured any more. I wish you would let me know some chemical composition of similar effect. Our peaches and apricots are also suffering from our wet soil. Would lime be a good remedy, and in what quantity?—GARDENER, San Mateo county.

The gas-lime, even if you could get it, is too dangerous an application to make to the soil, because it does not quickly lose its effect in the air, but might render the soil sterile for some years. A good application common air-slaked lime and deep plowing, or trenching, would be better, if the piece is not too large, throwing the whole surface sod and soil under as deep as possible; then let the ground lie fallow, with a shallow cultivation during the summer for the purpose of killing all weeds that start before they have a chance of going to seed, and giving the soil a chance for thorough aeration. The action of the air and of the lime, and the killing of all weeds that start, will put you in a position to get a good lawn from next fall's seeding. As for the fruit trees, the application of lime would also be desirable, but under-draining with tile is probably also necessary.

Split Buds—Whitewash for Borers.

TO THE EDITOR: Is there any direct method by which one can cross or hybridize two varieties of apples so as to make the new variety partake equally of the two old varieties except through pollenization and then experimenting with the seed? Can it be done in grafting or budding by putting in a divided bud, one-half of which is of one variety and the other half of the other variety? Would buds live after being cut in two in the center that way? Do you think that whitewashing the trunks of young apple trees helps to keep out the borers or is any particular benefit to the tree?—EXPERIMENTER, Tuolumne county.

There is probably no way by which one can combine the qualities of different varieties of apples without hybridizing and a long process of selection from the seedlings. Of course these seedlings can be fruited rapidly by grafting scions from them into old bearing trees. The claims made for success in the splitting of buds, with the idea of combining two fruits in that way, have never been substantiated. There was an orange grower in southern California who claimed to have originated new varieties by that method, but these claims have been disputed, and never successfully demonstrated. There is, however, some evidence that split buds may be made to grow together. It is an interesting line of experimentation, if you have time for it.

Whitewashing the trunks of young trees certainly protects them from borers, because the whitewash prevents sun-burn, and if sun-burn is prevented borers will not enter.

Shothole Rather Than Sour Sap.

TO THE EDITOR: I will send you a few twigs or clippings of my Stanwick nectarines. See if it is a blight, or what these small spots are. Can it be sour sap? I have got a spot of about ten trees affected. It seems the same as when it started last year. There has been more or less curl leaf on those trees every year, but that cannot be the cause,

can it? Will the bordeaux mixture be a good spray to put on after all the leaves have come out, or not?—GROWER, Kingsburg.

There may be some sour sap in your nectarine trees, but the chief trouble is the shothole fungus, which was quite troublesome on the peaches in your part of the State last year, and is appearing again this year. The best treatment is to spray with the bordeaux mixture, and it would have been better to have done this earlier in the season. You can, however, spray them after the leaves are out, and that will have the effect of protecting the young growth against the fungus. All wood which does not start well should be cut away to get rid of the diseased tissues.

Kaffir and Egyptian.

TO THE EDITOR: I would like to know if Kaffir corn is as hardy and if it will grow and mature as well here under the same conditions as Egyptian corn. Have the stocks and leaves of the Egyptian corn any feeding value as a roughage?—NEW COMER, Kings county.

Kaffir corn and Egyptian corn are brothers of the same genus; one holds his head up in the air, the other hangs his head bashfully. Growing conditions are the same for both; both are hardy against dry heat and tender against frost. The stocks of sorghum after the gathering of a grain crop are pretty poor stuff; but sorghum hay, the grain sown thickly and cut before the seed matures, is pretty good roughage and makes a good balance with alfalfa hay or pasturage.

The Canada Thistle.

TO THE EDITOR: I saw some time ago a query about Canada thistle, and you doubted if there were any in this State. I am from New York, and I know what the Canada thistle is, and I know there are a good many all the way from Arcata to Blue Lake in Humboldt county. I never saw thriftier ones in the East than where it has been logged off in the Glendale district. I also saw the oxeye daisy, the first I have seen on this coast. I am also told there are Canada thistles in the Ferndale region.—READER, Shasta county.

This seems to settle the question that the Canada thistle is in the State and that it likes a moist region, as might be expected. We presume the seed has also been scattered in almost every place, but it has been unable to live through the dry season in the hotter, drier parts of the State.

Sweet or Sour Clover.

TO THE EDITOR: I send you a few seeds of a plant that came up in my yard and would like to know what it is. It looks like alfalfa but has long bloom spikes and bloom is yellow. Please let me know what it is and if the plant is good for forage.—GARDENER, Bridgeville.

The plant which you find coming up in your yard is one of the so-called "sweet clovers" (*Melilotis officinalis*). It is very seldom eaten by stock, unless they are starved to it, and is considered a troublesome weed, as it communicates its disagreeable odor to grain and renders the flour objectionable to bakers. It is exceedingly hardy and drought resistant, and would be extremely valuable for forage purposes if it did not have such a rank flavor; as it is, the sooner you get rid of it the better. It is worse than the white-flowering species which may be of some use under certain circumstances; in fact some stock feeders favor it.

Rotting at the Core.

TO THE EDITOR: I have your valuable book 'California Fruits and How to Grow Them,' but there are questions that come up that are not answered there, so I must come to you. We have a Gifford pear tree the fruit of which last summer was rotten at the core. I noticed that if the fruit was picked before it was ripe the core would not be rotten, but would be softer than the other part of the pear. The tree appears to be very healthy and vigorous and is about nine or ten years old. Two years ago it was pruned back very severely, and since then has put out an abundance of new growth. Last year I did not cut it back—I just cut off a branch or two that crossed other branches—and this winter I have not pruned it at all. I would like very much to keep the tree; but if nothing can be done to prevent the rotting of the core, I will have to remove the tree.—GROWER, Fair Oaks.

The Beurre Gifford pear and some other pears, also, have the unfortunate habit of softness and decay at the core and have to be abandoned on that account. We are not aware that any treatment will

reach this, which seems to be a natural defect of the varieties. Possibly it may be promoted or restricted by cultural methods, and if you can retain the tree under observation and note any effect which the change in pruning may have, it will yield interesting facts which we shall be glad to know.

A Longer Catechism.

TO THE EDITOR:—Our clay sub-soil is about two feet from the top of the ground. Is that deep enough for orchard, or would it be better for grapes?

We have a 10-acre orchard three miles from town; mostly prunes, some apricots and peaches. The prune trees have made a large, fine growth, but the prunes are very small, running from 80 to 120 per pound. It is said this land at one time was an old cattle corral. Will cow manure hurt prune trees? The peaches and apricots do not go so much to wood, but raise an abundance of fine large fruit. Is cow manure good for these fruits?

If the ground is extra well plowed and cultivated, will it hurt young prune trees to raise corn between them the first five years and plow the stalks under?

Do you know anything of the Sugar prune or Tilton apricot?

Do you know of any reason why apples will not do well in the Santa Clara valley if well sprayed and cultivated?

In planting trees, should the graft be set below the ground; if so, how far?

Is root pruning with a sub-soiler a benefit to prunes or other fruit? If so, how close should I go to the trees at different ages? How often? How deep?

Are tobacco stems the only remedy for woolly aphids? If so, where can they be bought at a reasonable price?

Will the Bartlett pear stand more heat and drought than the Newtown Pippin apple? What is the best drying apple?

How are we to prevent Sugar prune trees from breaking to pieces?

Will it pay to put a tar of some kind around the trunk of prune trees to keep insects from climbing them?

Is it necessary to plow as deep for trees as for vines?—BEGINNER, Santa Clara valley.

Shallow soil over clay is probably better for grapes than for fruit trees. At least, it is as a rule very poorly adapted for fruit trees, while grapes on such soil in some parts of the State where irrigation is available, in case the shallow soil dries out too much, are successful.

Your prune trees which bear a large crop of small prunes need some irrigation. Probably one good irrigation about a month before the fruit is due to ripen will considerably improve the size. Cow manure will not injure fruit trees of any kind, unless it is applied in excessive amount. The reason why the peaches and apricots attain better size, may be found in the fact that they ripen earlier, and, therefore, have more available moisture; or else, have a smaller number of fruits on the tree, which will help each one to attain size. Possibly your prune trees are not thinned out sufficiently, having too many branches and carrying too much fruit.

Corn can be grown in your prune orchard without injury, unless too much moisture is taken by the corn, thus injuring the trees. You can do more in raising corn in a young orchard if you are able to irrigate.

The Sugar prune is being universally condemned as a drying prune. What it will amount to for shipping and other uses is not yet fully determined.

The Tilton apricot has a good record so far as being larger and a better bearer than the Moorpark, and very acceptable for canning and drying. This record is made in the San Joaquin valley. How it will behave in the coast valleys is not yet sufficiently determined.

Late apples cannot be expected to reach good size on shallow soil. It is also possible that you may have so much midsummer heat that the development of the fruit is very hastened. The Pajaro valley grows fine winter apples because of its deep soils and cool summer, due to coast influences.

On ordinary soils nursery trees should be planted out about the same depth that they stood in the nursery. It is not ordinarily desirable to put the graft or bud scar below the ground, although on deep, light, sandy soils it can be done in order to get the deeper planting which is desirable on such soils. In heavy soils this, of course, is undesirable.

Root pruning is only desirable upon trees which are making too much wood growth and are thus restrained from bearing as early as desired. Whenever this is the case, a sub-soiler for cutting roots should be run in the middle of the row, but not near

to the trees at all. There is no advantage in root-pruning trees before they have reached the bearing age.

Tobacco stems can be bought at any cigar factory and if buried in the soil at the base of the tree, will have an excellent effect in destroying woolly aphids.

The Bartlett pear will stand much more heat and drought than the Newtown Pippin apple.

The best drying apple is the one which you cannot sell to advantage in a fresh condition. There is, as a rule, no advantage in planting especially for drying purposes. The refuse of the main crop will probably supply all the dried apples that can be profitably sold.

You can prevent the Sugar prune trees from breaking to pieces by cutting back and afterward thinning out the shoots if too many start.

Experience has proved that you can use coal tar on the rough bark of the well-grown prune tree, without injury to the tree, unless the sun reaches it and burns the bark, as it is likely to do because the black color always concentrates heat.

It is necessary, either with trees or vines, to plow deep enough so that by subsequent cultivation you can maintain a well pulverized surface soil to the depth of five or six inches.

CALIFORNIA WEEKLY WEATHER BULLETIN.

Report of the U. S. Weather Service for Week Ending March 12, 1906.

ALEXANDER MCADIE, Forecast Official and Section Director.

Sacramento Valley.

Warm, pleasant weather prevailed until Saturday, when the skies became cloudy and northeast winds set in. The winds increased in force and by Monday morning were blowing at the rate of 30 miles an hour. The snowfall has been heavy in the Sierra, but there was no cold weather of any consequence. Warm weather on Thursday and Friday caused a moderate melting of the snow and a fair run-off. At the close of the week there was still more than twelve feet of snow reported at Summit, and this amount will be added to by the present storm.

Coast and Bay Sections.

The weather was clear, warm and pleasant during most of the week. Light easterly winds prevailed in the mornings and moderate westerly winds at night. Sunday was cloudy, with occasional squalls, and Sunday night and Monday morning stormy. High southeast winds were reported at all points on Sunday night and Monday morning. Velocities exceeding 60 miles an hour were recorded in Marin county. There were no frosts during the week. Rain fell in scattered showers Sunday and heavy rain early Monday morning. Temperatures exceeding 70° occurred on Wednesday, Thursday, Friday and Saturday.

San Joaquin Valley.

Clear, warm weather prevailed until Sunday, when cloudy, unsettled conditions occurred. Afternoon temperatures ranged from 74° to 76°. The seasonal rainfall at Fresno is approaching a fair average. There is considerable snow in the mountains and the present storm will add materially to this. The winds were for the most part light and from the north until Saturday night, when fresh, southerly breezes began. High south winds were blowing at the close of the week.

Southern California.

Settled weather prevailed in all counties south of the Tehachapi until Saturday. It was very warm early in the week, with temperatures ranging from 80° to 86° in the afternoon, or from 12° to 16° above the normal. The close of the week was marked by high southerly winds, generous rain and occasional thunder squalls. The wind at San Diego reached a velocity of 36 miles per hour from the northeast Monday morning. The seasonal rainfall at Los Angeles is now in excess of that of the preceding season. The rainfall during the present season has been not only generous, but remarkably well distributed.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, March 14, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.	Total Seasonal Rainfall to Date.	Total Seasonal Rainfall Last Year to Same Date.	Average Seasonal Rainfall to Date.	Maximum Temperature for the week.	Minimum Temperature for the week.
Eureka.....	1.00	23.71	35.60	.....	.....	.....
Red Bluff.....	1.20	19.10	27.95	.....	80	36
Sacramento.....	.76	13.16	16.15	15.37	74	38
San Francisco.....	.52	12.61	17.72	18.14	74	41
San Jose.....	1.03	10.68	13.93	.....	76	40
Fresno.....	.50	6.49	8.79	6.94	76	36
Independence.....	.90	4.82	2.74	3.16	72	36
San Luis Obispo.....	2.06	15.21	17.78	16.87	82	38
Los Angeles.....	3.12	14.35	15.71	12.02	86	46
San Diego.....	.80	9.27	11.93	7.75	80	48
Yuma.....	.20	5.26	7.27	2.66	86	46

HORTICULTURE.

Pollinating Varieties of Deciduous Fruits.

At the last meeting of the Oregon State Horticultural Society, there was a paper by Mr. L. T. Reynolds, of Salem, which, with a part of the discussion which followed, will be read with interest by California growers who are thinking about cross-pollination.

PEARS.—Mr. Reynolds said: We know by experience that the Bartlett pear is unproductive when planted in large blocks by itself; that it is self-sterile and must be cross-fertilized by the use of pollen from some other variety of pear. Waite, in his report of his valuable experiments on the pollination of the pear flowers, gives a list of a number of varieties which are practically self-sterile, and this includes the majority of our best market pears. His experiments also show that two or more varieties blooming during the same period in one locality may differ considerably in another. Our own experience has taught us that the White Doyenne (Fall Butter) is a satisfactory pear for cross-fertilizing the Bartlett in the Willamette valley, but there are several varieties much more valuable in the market and one of our problems to be solved is, What varieties are best for pollinizing purposes to plant with the Bartlett, selecting pears valuable for shipping, such as Comice, Bose, Beurre Clairgeau and others? This question can be determined by those having the different varieties for observation and a list of such varieties as are suitable for planting together, in an orchard in this latitude, would be of great value to those who contemplate planting pear orchards.

APPLES.—A similar question may well be asked in regard to apples. What good market apple would be best to plant with the Gravenstein, and what with the Spitzenberg? Observation of the orchards in the Willamette valley leads to the conclusion that a wise selection of varieties would have made a vast difference in the profits of many of them, considering productivity of the orchards only.

PLUMS.—It is a question worthy of consideration whether the uncertainty of our Italian prune crop is not, in part at least, because of the fact that they are planted in solid blocks and given no chance for cross-pollination.

In an old orchard we have an example of the need of cross-pollination in the case of the Washington plum. In this orchard were originally a number of rows of plum trees, the Peach plum, the Yellow Egg and the Washington being planted in alternate rows across the orchard. Some ten years or more ago these trees were all top-grafted to the French prune except one Washington plum tree, which stood near the center of the orchard and was unusually large, vigorous and productive. Since that time it has retained its unusual vigor, but stands barren and has not borne a crop of plums during the whole ten years.

CHERRIES.—That the Royal Ann cherry is far more productive when properly cross-pollinated is well known, but experience has convinced me that care should be taken in selecting the varieties to be used for such crossing. The Black Republican has, with us, very often bloomed too early to properly pollinize the Royal Ann, while the Mayduke usually has its pollen ripe when the stigma of the Royal Ann is withered. The Bing, apparently, has shown no effect as a pollinating agent, but the Deacon and Lambert appear to be very effective in cross-pollinating the Royal Ann. Please understand that this is only given as experience in the orchard with reference to trees standing in proximity where cross-fertilization would naturally be expected, and not as a result of carefully conducted experiment. The importance of securing the best cherry for crossing with the Royal Ann is increased, if, as some experiments seem to indicate, the different crosses exert a direct influence on the size of the fruit, since the value of this fruit for canning depends largely upon its size. A series of careful experiments upon this subject would be of great value.

DISCUSSION.—J. L. Carter, of Hood River, asked for information as to the best pollinizer for the Spitzenberg apple. He said that in the Hood River valley they are studying especially the effect of various apples as pollinizers of the Spitzenberg and the Yellow Newtown. The Wagener is now considered by many there about the best pollinizer for the two varieties mentioned.

Mr. Mohr said the Baldwin was recommended three years ago as a pollinizer for the varieties mentioned.

Mr. Carter said there had been changes of opinion in the Hood River valley in the past five years on this point. Observations made by Mr. Sears and others indicate that the Wagener is a good pollinizer.

Mr. G. R. Castner said apple trees are divided into two classes as to blooming—spontaneous bloomers and continuous bloomers. With the former the blooms all appear at once and the season for pollinizing is short. The Spitzenberg is a spontaneous bloomer and the Yellow Newtown is a continuous bloomer. Ben Davis is a good pollinizer for the

Newtowns. Baldwins and Spitzenbergs are good varieties to plant together. The Baldwin is self-fertilizing. It is not certain that the Newtown needs any other variety to pollinize it.

Grafting Walnuts—Selected Mission Olives.

TO THE EDITOR: I have some experience in grafting walnuts, and have found so far that 25% is about the average. As to tip scions I have learned to avoid them, as they are almost invariably too soft. Large scions of well-matured hard wood do best. I can see little or any difference in varieties, having grafted the common English, five varieties of French, and Mr. Burbank's Soft Shell, Royal and Paradox. I shall graft a lot this season about two feet above the ground, hoping that as scions take so much better in the tops of trees, that even a little above the ground may improve my chances of getting a stand.

As there seems to be a great difference in the bearing qualities of the Mission olive I would like to know if any nurseryman in California has been careful to propagate from selected trees. I understand that location and soil have much to do with the growth and bearing of olives, and have planted a number of varieties on my place to test them as to bearing and quality.

Edenvale.

H. G. KEESLING.

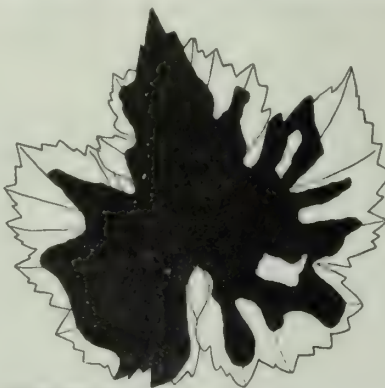
THE VINEYARD.

The Brunissure of the Vine.

Written for the PACIFIC RURAL PRESS by MR. O. BUTLER of the University of California.

In October of last year, shortly after the vintage, I observed, in a vineyard noted for its productiveness, Zinfandels and Aspirans blancs affected with the Brunissure. The Zinfandels, every vine of the three or four acres that were planted in this variety, were badly diseased; but the Aspirans were sporadically and far less strikingly affected.

On the Zinfandels the Brunissure presented the following appearance: As a whole the foliage looked curled and dry, as if it had been scorched by terrific heat. The progress of the disease had been as rapid as it was sudden, and the final stages were more



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Fig. 1. Brunissure on Leaf of Zinfandel

numerous than the first. To trace its evolution: The leaves became brown on the upper surface, the discoloration not appearing at first on the lower. This browning spread over the leaf without much regularity, but appeared to generally respect the belt. The discolored areas died with something of a fawn color,



PACIFIC RURAL PRESS

Fig. 2. Another Occurrence of Brunissure.

and a general twisting and distortion of the leaf followed. The main veins were not usually killed and a border of green frequently remained untouched round the edge of the leaf (Fig. 1 and 2).

In the Aspirans the disease was much milder, as I have already remarked, and not accompanied by foliar distortion and rapid death. The leaves were bordered with brown round the periphery, or seared in the center of the blade, the insertion of the petiole being, as it were, the nucleus of the mortification.

The Brunissure, so far as I am aware, has not been

hitherto described as occurring in California, and for this reason I note it. That it will ever prove a serious trouble in this State, or identical with the Anaheim disease, as M. Bavaz would have us believe, are questions which, for the present, must be left unsolved.

Fig. 1 and 2 are drawn from herbarium material.

THE BOTANIST.

What Douglas did for California Botany.

The name of David Douglas, hardy Scotsman and intrepid explorer, says an appreciative writer in the *British-Californian*, means little except to those who are wont to delve in highly technical works on botany. To these select few he is commemorated by the 'Douglas spruce,' a species originally discovered by Archibald Menzies in 1792, rediscovered by Douglas in 1830 and given the Scot's name as a mark of honor. With these few, too, he is a premier of exploring botanists, known more for what he accomplished than for the way he did it. His fragments in the great mosaic of science are not only of a brilliancy that stand out among those of his fellows, but his placing of them there was attended by almost insurmountable difficulties.

Douglas was the first of European scientists to make any prolonged stay in this country. This was in the late twenties and the early thirties of the last century. Even at that early date he made California his headquarters and seat of operations. A wild country it was then, inconceivably wild when we realize how little human life was valued a score of years after, when other white men came here in their search for gold. But Douglas was not a gold hunter. He came long before the argonaut, and his quest was for trees as yet unclassified. The frequent appearance of his name in all works on American sylvia tells how very well he did his work. Five species of conifers are the principal of his discoveries.

There was only one practical means of travel available to Douglas, who, as a necessity, had to get up among the mountains. This was walking, and if the great Scotch botanist were known for nothing else his feats of pedestrianism ought to cut him a big niche in the hall of fame. Facetiously, it might be said, in these days of good roads, that "it is quite a walk from San Luis Obispo to the headwaters of the Columbia river." There was nothing of humor in this statement with Douglas. With no roads at all, he walked this great distance, mostly along the foothills and up the peaks of the Sierra.

No other human being went with the scientist in his search for new conifers. He had with him as companion only a dog—a little Scotch collie, that he had brought from over the seas, and which never left him until his death. These two went together, the dog at his master's heels, through the timber forests, looking always for a new tree. 'As the crow flies' it is an easy 700 miles over their journey. But they had not the freedom of the air of the crow, and neither had they any especial destination. They were looking for new trees, and there route had as many by-paths as there were branches on the thickest foliated specimen that they found.

The man and his dog landed at Monterey in 1824. The man had a commission from the Horticultural Society of London. He was a protege of that great patron of science, Sir William Hooker, who had discovered in the young man unusual qualities of hardihood. The dog had come along for company. He was the only link between Douglas and the civilization left behind on the other side of the ocean.

They first turned southward—the man and his dog—down toward what is now San Luis Obispo county. In the Santa Lucia mountains, at an elevation of 3,000 ft., Douglas made one of his most notable discoveries. This was an entirely new species of fir, now known as the 'silver fir,' or, technically, '*Abies bracteata*.' It is classed by botanists as the most remarkable of all silver firs. Its singular cones, its massive deep-green foliage, and especially its restricted habitat, have invested it with more than ordinary interest to the man of science. The only known habitat of the *Abies bracteata* is on the outer western ridge of the Santa Lucia mountains, at an elevation of 3,000 ft. Peculiarly fortunate, then, was Douglas' discovery. An apt indication it is, too, of the kind of travel he and his dog made in crossing along the big state of California.

From the Santa Lucia mountains the man and his dog turned north again, up the slopes and rugged sides of the Sierra toward Oregon. It was a long trip, perilous and difficult beyond modern conception. Few men would have attempted it, even if a fortune had awaited them at the journey's end. But there was no fortune awaiting the hardy Scot. Nothing could come to him but a very meager taste of fame in the restricted circle of the few who are interested in sylvia. But, like every other man who attained any greatness, his work was his life, an all-absorbing thing that dwarfed the considerations of comfort which the ordinary man thinks of enormous consequence.

And finally the man and his dog came to where a great stream poured its waters into the ocean. This

was the mouth of the Columbia river. They stopped on the bank and regarded the beauty of the scene. Something floating in the water attracted the man's attention. He reached out with a stick and pulled it into shore. It was a great pine cone, 18 in. long, bigger than anything the scientist had dreamed of or seen. Nothing before in all sylvan research had been found to correspond with this cone. Deductively, Douglas figured it all out. The cone had floated down the great stream many miles. No pine immense enough to bear such a cone could be near by, nor were there indications of any within many miles.

Together the man and his dog climbed a mountain. After 15 hours of an arduous journey they reached the top. No pine could be seen there of this variety, and the outlook swept over a great stretch of country. Down the stream they came again, and day by day worked up and up, farther away from the sea, and to a higher altitude. It was a grand country, rough and rugged, and wild with primitive wildness and attended by human peril.

Indians, lurking down near the stream, stopped them time and again. Some of them were peaceable enough, and others looked menacingly, but let them go. They lived from the fish which the man caught, and the flesh of animals which he shot. Each band of Indians was shown the cone and asked, by signs, where the trees were. They pointed up the river. It was always up the river. Douglas never seemed to get any nearer than the child to the pot of gold at the rainbow's end.

But he did not despair. He kept on, and finally, after many days, reached the headwaters. There, on a mountain side, was the object of his search, the loftiest of all pines, towering 300 ft. into the air, surpassing all other pines in girth and length of stem, tossing its mighty branches far above the sylvan roof; it was a fit companion to the sequoia. There was no mistake, for on the swaying branches were immense cones, duplicates of those he had in his possession, sparkling like pendants of diamonds from their copious exuding of resin. This is the variety now most known as the sugar pine, or *Pinus Lambertiana*, the noblest of its race. The name was given it by Douglas, as a compliment to A. B. Lambert, a noted British naturalist.

It seemed almost one of the ironies of fate that danger should have threatened him just when he had reached his goal. A band of Indians descended upon him, and, from all appearances, were going to take his life. Douglas had with him a rifle, which was a weapon then unknown to these wild copperskins of the Northwest interior. Loading it carefully he fired at one of the immense cones, splitting it from its stem. Down the cone came, 300 ft. to the ground, and there, by the force of its fall, went deep into the ground. The report, the falling of the cone, and aboriginal superstition saved the Scot's life. It was a hurried departure which the redskins made, and that particular tribe bothered him no more.

Douglas gathered as many of the cones as he could carry along with him and started back toward the ocean. By frequent mishaps, owing to the difficulty of making his way through forests never before traversed by a naturalist, nor perhaps even by a white man except occasionally a trapper in the employ of the Hudson Bay Co., he lost a great part of his specimens. He saved a few cones and seeds, however, and as soon as he got back to a port again he dispatched these to England, where they were regarded with a great deal of scientific interest, not unmixed with curiosity.

While in California and the Northwest, Douglas discovered four other species of conifers, all of which were introduced with more or less success in England. This includes the silver fir of the Santa Lucia mountains. The best known of the others is the Douglas fir, which was named for the Scot, but was originally discovered by Archibald Menzies. This is from 170 to 200 ft. high, with a trunk from four to six and a half feet in diameter. It is the most widely distributed tree of western North America, and also one of the most valuable. It was Dr. Lindley who gave the tree its name. He selected it as the most suitable subject for commemorating the intrepid explorer and the eminent services rendered by him to British arboriculture and horticulture.

Other of Douglas' discoveries were the *Abies amabilis*, which is confined to the mountain ranges of Oregon and Washington and southern British Columbia, from Vancouver island to the Fraser river, and the *Abies grandis*, a lofty fir, indigenous to the plains and valleys and existing nowhere above 4,000 feet.

It seems part of the scheme of things that this hardy Scotch naturalist and explorer should have met death at last through an infuriated wild animal. After leaving California he went to the Sandwich islands to pursue his investigations. In 1834 he had caught a wild bull in a pit and was studying the actions of the furious beast. He approached too close to the pit, and, by a caving bank, was precipitated upon the fatal horns.

Beside the pit was the dog, watching a basket of the man's collections.

UNDERGROUND WATER.—The highest recorded velocity of underground water has been discovered by H. C. Wolff, of the department of mathematics of the University of Wisconsin, in the course of an investigation which he carried on in Arizona recently.

The rate of movement of underground water in gravels near Tucson he found to be 144 ft. in 24 hr., while the highest previously rated by observers was only about 100 feet.

THE FIELD.

Destroying Gophers.

Although old Californians know pretty well how to handle gophers, the hosts of new Californians need instruction. The following by Mr. David E. Lantz, of the Biological Survey of the U. S. Department of Agriculture, will be found helpful:

POISONING.—Pocket gophers may be destroyed by poison, by traps and by the use of carbon bisulphide. Poisoning with strychnine is the most effective means known for killing pocket gophers, and, as it involves the least expenditure of money and labor, the Biological Survey recommends it for general use. As a rodent poison to be used by farmers, strychnine has several advantages. Its action is sure, its deadly character is known to most persons, and its bitter taste is an additional safeguard against mistaking it for a harmless drug. Strychnia sulphate is the most convenient form of the poison, since it is freely soluble in hot water and in the natural juices of vegetables used as a bait. To disguise its bitterness so that rodents may not be deterred from eating the baits, sugar is often employed, or the strychnine may be mixed with its own bulk of commercial saccharine. A sugar syrup poisoned with strychnine may be used with excellent results. It is prepared as follows:

Dissolve an ounce of strychnia sulphate in a pint of boiling water. Add a pint of thick sugar syrup, and stir thoroughly. The syrup is usually scented by adding a few drops of oil of anise, but this is not essential. If preserved in a closed vessel, the syrup will keep indefinitely.

The above quantity is sufficient to poison a half bushel of shelled corn or other grain. The grain is steeped in hot water and allowed to soak over night. It is then drained and soaked for several hours in the poisoned syrup. Before using, cornmeal may be added to take up the excess of moisture.

Dry crystals of strychnine also may be used. They are introduced, by means of a knife, into small pieces of potato, carrot or sweet potato, or into entire raisins or dried prunes. A single large crystal, or several small ones, is enough for each bait. Raisins are especially recommended, because they are easily handled and contain enough sugar to disguise the bitterness of the poison.

The prepared baits are introduced into the underground runways of the gophers and are conveniently handled with a spoon. A stout dibble is used to make holes into the runways. This consists of a spade-handle shod with a metal point and having a strong bar for the foot of the operator about 15 in. from the point. Having located the runway by use of the dibble, it is moved from side to side to make the soil firm about the hole, and then withdrawn. A piece of poisoned potato or raisin or a teaspoonful of the poisoned corn is dropped into the hole, which is left open. Some farmers prefer to cover the holes, but the experience of the writer is against the practice.

By this method but little labor is necessary, and the operator soon acquires skill in finding the runways. The bait should be placed in the main runways and not in the short laterals near the mounds. If placed in the laterals, the animals are likely to cover it with soil or throw it out without finding it. A skillful operator can go over 20 to 40 acres of badly infested land in a day, and, if the work is carefully done at a time when the pocket gophers are active, all the animals should be destroyed by the first application of poison.

TRAPPING GOPHERS.—Trapping is a successful method when followed intelligently and persistently. It is especially adapted to small fields, orchards and gardens, where only a few gophers are present; but in the case of large areas that are badly infested the method involves too much labor.

For trapping gophers an ordinary No. 0 steel trap may be employed; but there are a number of special gopher traps on the market that are better adapted for general use.

In using the ordinary steel trap, the first step is to make an opening into the main gopher tunnel. The trap should then be sunken so that the jaws are level with the bottom of the runway and lightly covered with green clover or alfalfa or grass, or even loose soil, care being taken that these do not clog under the pan, or trigger. No bait is required. The hole should be just large enough to receive the trap and should be covered so as almost to exclude the light.

Beside the ordinary steel trap, special gopher traps have found favor with farmers. Several traps are on the market whose main advantage lies in the ease and simplicity of operation and in the fact that they kill the animals instantly. All of them have been found to be excellent, but the simple ones have advantages over those with closed sides. These special traps should be set in the laterals leading into the main tunnel of the gopher, or at the entrance of open burrows where fresh earth is being thrown

out. The trapper should choose the freshest of a series of mounds and dig along the lateral until it is found clear of soil.

CARBON BISULPHIDE.—Carbon bisulphide has been employed for killing pocket gophers, and under favorable conditions its use is recommended. If the burrows are extensive or the soil dry, the gases are dissipated so rapidly that a large quantity of the liquid is required to kill the animals, and the method becomes too expensive. If, however, the burrows are simple and the soil moist, bisulphide may be used successfully. For pocket gophers an ounce of the liquid for each burrow is sufficient. The carbon bisulphide is poured over a bunch of cotton, rags, or other waste material, and this quickly pushed into the burrow, which should be closed at once.

THE POULTRY YARD.

Poultry for Profit in California.

Mr. W. H. Arps, in 'American Barred Rock Club Catalogue,' says that it takes soil, sunshine, and rain to raise good fruits, and as we have these qualifications there is nothing that can prevent anyone who has a little capital and the necessary knowledge to make a success with poultry. One must have money to make a success in any business, and to those who have no means at all I would not advise them to venture into poultry breeding on a large scale. It would only be an up-hill game, with no doubt, failure in the end. One cannot put up poultry houses, buy incubators, brooders, and other necessary buildings for nothing, to say nothing about feeding and keeping the young stock and one's self until the plant is put on a paying basis. And, as above mentioned, unless one has a means of support until the fowls bring in an income, they had better not go into it largely. It does not require as big an outlay to equip a poultry plant here as it would in the far East. Poultry houses are built on a much cheaper scale, our mild winters not necessitating their being put up storm proof. Double wall or lined houses are something unknown. Houses simply built of rough boards, with the cracks battened, are amply sufficient for all purposes; and when one considers that it requires a good many buildings to house a large flock of birds, the difference in this respect is quite an item. Feed is no dearer here than in any other part of the country; if anything, it is cheaper. Owing to our fertile soil and milder climate, one can raise green feed all the year round, and we all know that green stuff is most essential in the rearing and keeping of a flock.

The two most popular varieties bred here are the Plymouth Rock and the Leghorn. The latter predominates, and, when one studies the conditions as they exist here, it can easily be seen why. San Francisco, the metropolis of the Coast, is the natural market for both eggs and fowls. Here it is where the prices are made and to where most of the farmers ship to commission houses. Strictly fresh ranch eggs in this market bring better prices the year round than anywhere in the United States. People insist upon having them and are willing to pay for them. In consequence most of our farmers cater only to the egg trade, which I assure you is enormous. Not only do we consume all our home breeders produce annually, but also millions of dozens that are sent in from the middle West. One reason why the Leghorn is the most extensively bred is on account of laying a white-shelled egg. City folks here, like in other large cities, have their likes and dislikes, and one of their dislikes is a brown egg. Why it is so I cannot tell. The brown egg is certainly the equal, if not better than the white one. This prejudice is hard to overcome and is quite a handicap for breeders of the larger varieties who wish to cater both for market and eggs. But people are getting enlightened. In talking this matter over with a prominent San Francisco marketman, he informed the writer that he is building up a good trade in brown eggs, and said that if the poultrymen would only select and pack the brown ones by themselves he could pay as much as for the white ones. This was certainly encouraging, and, by making further inquiries, I found that the average California breeder had better take a few lessons from the Eastern brethren and learn how to prepare and ship eggs and fowls to market. I found that Eastern fowls, after being days in a car on the road, came in better condition and brought better prices than the average farmer here received.

This might seem unreasonable, but it is, nevertheless, a fact. I found that the average California poultryman, catering for the egg trade, had entirely overlooked the market side of the ledger, and, as a rule, when he did ship fowls, they were cast-offs—hens that had seen their best days as a laying proposition, and young roosters that were not properly fattened. The upshot of it all is that less middle West poultrymen who make it a business get better prices than our home producers.

I do not wish to leave the impression that this is the fact in all cases. There are some breeders that know how to get big prices for their stock, and do get them. They do not send in scrubby birds along

with the good ones, to have the scrubs offset the fine qualities of the good ones. When they ship they put nothing but selected and fattened fowls in a coop, even in size, and when their returns come in the prices they have realized on the shipment fully justify the businesslike method they employ. To my mind there are no fowls that will bring in a better return than a coop of young Plymouth Rocks. Commission men inform the writer that whenever they receive such a consignment, they would have to hide it, so as to dispose of the rank and file first, and so save the good ones for their more select trade, claiming he had much difficulty in getting enough of this class of fowls to fill the demands made upon him. To my way of thinking, there is a big future here for live poultrymen—those who know their business, both for the fancy and the market. The fancy is spreading; new fanciers are getting into the fold every year by hundreds. Our leading poultry shows are equal to any in the United States, with the exception of a few, both as to quantity and quality, and to me the business looks to have a bright future.

What to Feed Squabs.

The organism of pigeons is every bit as delicate as that of mankind and their food should be given them with the same taste and judgment as that served to man. They should have a variety of good food, the very best is the cheapest, and do not make them live upon one grain, as some do. I know of some who feed their birds nothing but corn the year round, but their success as squab raisers is in question.

Pigeons like a change the same as mankind, and those so fed will thrive and breed better, even though the cost is a little more for feed. It pays in the end. The self-feeders in which are put a variety of grains and seeds are a source of much sickness and disappointment.

Supposing a mixture of wheat, corn, peas, hemp seed and buckwheat are put in the feeders, the consequence is the birds will first pick out the hemp and peas, then throw the wheat and corn around and make it foul, unfit for feed. I believe in feeding what they eat up clean. Feed the wheat separate from the corn, likewise the other grains, but let the wheat and corn be staples, with an occasional treat of other seeds such as hemp, etc.

As all know, corn is a very fattening grain, hence it is invaluable as a food for pigeons rearing squabs, but there are few who understand how to feed it. It is very rich in carbohydrates and must be fed very carefully in summer. Every other afternoon is sufficient. When fed to pigeons having young, it should be fed cracked, not so fine but rather coarse cracked. Never feed it in connection with anything else. Feed a whole meal of it alone, as it does not work well with other grains.

Some breeders are afraid to feed corn at all, claiming it produces canker in the squabs, but this disease is due to a peculiar miasma in the atmosphere and has nothing to do with the feed. In buying corn see that it is perfectly sound, never use too new corn. Also see that it is not moldy. There has been lots of such corn sold the last few years and it has caused any amount of trouble to poultrymen. The yellow variety the birds like better than the white. Get the dealer to supply it well sifted, as the birds will not eat it if too fine.

As a treat a little buckwheat may be given, likewise rape, canary, millet, etc. Hempseed is exceedingly rich and should be given very sparingly. Birds are very fond of it, but one must be careful and not let them have their fill of it or they will have a lot of dead birds. It is an excellent thing for birds out of condition, but a little goes a great way. A small amount once a week is sufficient. In winter when the nights are extremely cold, corn should be fed every afternoon, and more hemp can be used, but in summer they require less of these grains.

THE VETERINARIAN.

For Alfalfa Bloat.

TO THE EDITOR: I have seen in the PACIFIC RURAL PRESS of a late date an inquiry for a remedy for bloat that affects cows when feeding on clover or other green feed. I will here give recipe that is safe and sure: Put one tablespoonful of saleratus in a bottle, fill with water, shake it and pour it down the throat. In less than three minutes the cow will be safe. If the cow is in the last stage thrust a knife through the side between the second and third ribs on the left side. JOHN FERRY.
San Francisco.

White Scour Among Calves.

TO THE EDITOR: Referring to your full account of the disease in your last issue, I will state that at our Home for Orphans, at Vallejo, we have about 30 cows in our dairy for home use. We have been losing most of our calves from what is termed 'white scour.' I have been hunting for a remedy. It, no doubt, is by way of prevention. It is such a violent form of diarrhea that little can be done by way of medical treatment. The various means of preven-

tion that I have heard of are too complicated to be of much practical value. I wanted something more simple and certain. The trouble, I think, comes from microbes that live on decaying vegetable matter, and it is difficult to deprive these microbes of food about a cow barn or cow yard. The calf must be dropped where there is no decaying vegetable matter. That place is found out in the field or pasture, entirely away from stables and yards. We adopted that plan. We have kept the calves out there for about three days and thus far the plan has been entirely successful. Thinking this suggestion may be of some practical benefit to others, I write this.
R. THOMPSON.

Vallejo.

THE APIARY.

Queen Raising.

By HENRY HEIDORN at the convention of the Central California Bee Keepers' Association in Hanford.

VALUE OF A GOOD QUEEN.—I have no doubt but what all bee keepers who are extensively engaged in bee keeping, and more especially those who make bee keeping a success through their efforts, instead of simply making money out of bees because of an unusually good pasture in a favorable season, will agree with me that queening and re-queening has much to do in keeping the apiaries in healthy, strong and profitable condition, for health and vitality and the making of good opportunities are necessary in the acquirement of success in any line. It therefore behooves every bee keeper to look into and become familiar with the art of raising his own queens, instead of being always dependent upon what others should do for them, or to do without what he should have.

But before I say anything on this subject let us consider one other point which may prove to be of some consequence, namely, order and system. No banking institution, railroad corporation or government is without an orderly system, which enables it to transact and maintain tremendous institutions with success. Order is heaven's first law. How many of our bee keepers keep order—such as enable them to reap a benefit from it? I think there are some. When I first started to raise bees, and inquired concerning queens, having been much disappointed, I was referred to a man in southern California, who was said to be quite successful. I learned that he kept a record book, and raised his own queens, but not for the market. Having obtained several queens from him I tried my own skill, and in 1899 I adopted the book system. I numbered all of the hives, began to raise from the two queens imported a goodly number, and in discarding the old ones introduced and recorded the young queens. Time offered opportunities to observe their usefulness, disposition and their several distinctions, and as the season advanced this book showed me the year during which the greatest number of queens were raised, which queen they were raised from, their color, size and general appearance and indicated their relation, if any. This information enables me to trace usefulness, disease and worthlessness in all instances. It enables me to avoid in-breeding when selecting queens for breeding; gives me the age of all queens, by which I avoid that indolent and inactive disposition associated with feeble bees superseding when retarded by adverse conditions; it avoids many instances where a disorderly hive would go to pieces, or if able to hold on, would raise an inferior queen or encourage the appearance of laying workers. Knowing a queen, when failing, to be three years old, I can act with safety, accordingly. If but two years old I look for a cause. In this way, by observation, I have gained some remarkable experience. Unruly, rank, indolent and unskilled bees can more easily be traced and checked when opportunities present themselves. I need to worry but little about the yearlings during swarming season, when work is so plentiful, but during that time I can watch the two-year-olds, and in case there be extra good queens, such as I would not like to lose, I can swarm them off, which will render a valuable queen, which, perchance, you might have lost while being busy elsewhere. I am able, if occasion requires, to find a superseding queen among the three-year-old bees that are ready and fit to do good work in building queen cells.

How to RAISE THEM.—This brings us to the consideration of raising queens. Many are the ways and methods adopted by the different queen breeders, as treated in the magazines and instruction books, known everywhere. I think there is but little to be said at this time on any special method. A swarm in good condition, preparing to swarm, will do good work. If the queen does not suit, take unhatched eggs from your good queen and place a number of cells in a broodless hive, and when started transfer the cells to the swarm before mentioned, and if more suitable, transfer this larvæ into newly started queen cells of the same hive, destroying the rest not wanted. This work should be done before any cells are found capped in the hive. If you are obliged to resort to forcing cell building, by removing or caging a queen, give but one set of cells, and when completed restore

order. It is not profitable to give them a second hatch, after removing the cells when completed, neither should a new swarm, having lost its queen in swarming, nor a remaining swarm in a mother hive, having a young queen, be given brood to raise its own queen, nor any swarm having lost its queen. These we will class as disorderly hives; all are incapable to do good work. A laying queen should be given to them and the swarm restored to order as soon as possible. Among these three classes are to be found the various stages of demoralization, all more or less connected with danger threatening the queens to be introduced into such hives. For this purpose I use the queens which for any reason are next in order to be discarded. This is a satisfactory method of saving any uncertain swarm. Even if found quite reduced it takes much work off your hands and puts these rambles to work again, giving them time and assistance, if need be, to recuperate, after which they receive, in turn with the rest, a young queen.

All young queens should be given to orderly swarms only, so as to insure their safety and to give them a fair opportunity to exhibit their ability in as short a time as possible. And for another reason—in giving a No. 1 queen to demoralized bees they will find themselves incapable to provide for the brood, which is neglected and in time decays, while the queen is retarded and disgusted, nor could this condition be overcome until enough young bees are matured to resume the work, and the result would be altogether unsatisfactory. A few of the yearlings may prove poor, some of the two-year-olds show signs of failing, and all of the three-year-olds are to be replaced by young queens as the season advances, using the superseding swarms for cell building, giving them the smallest number possible, say from one to three, under construction at one time, when they can be transferred, cell by cell, to the hives to be superseded.

I will not go into the details of the process, but call your attention to the fact that you are gaining considerable time in this way. By taking the matter in your own hands the young queen will be ready to lay before all of the eggs in the hive have hatched.

WHY VALUABLE.—Now, a few words in regard to the value of a good queen. Those that gather the most honey are not the most valuable in my estimation, but a queen having the greatest number of desirable qualities. Some years ago I raised a queen, which I called a Taylor queen. She was a great honey gatherer, but her bees were cross. I found among her third generation, a queen superseding, when but a little over one year old, which attracted my attention, and an examination of the Taylor queen, in the different apiaries, found them all in the same mood. I raised from another queen of good habits, color and form requiring two supers for two seasons, and found that all the young queens were absolutely useless. This I state to demonstrate what it would have meant to me if they had been allowed to remain. Both of the mother queens were very good in one way, and very poor in other ways. A third queen, of bright color, excellent form and good disposition, was hardly ever found laying in the super. The combs were built smoothly and were filled in less time than any other in her locality. She was certainly more valuable than the two before-mentioned queens, taken together. I had been disappointed in both, lost an opportunity while raising and trying the young queens and on finding them worthless, the old queens had also ceased to be, while the young queens, from the last one mentioned, were mostly raised, cell by cell, while superseding.

I feel certain in saying that I gathered over two tons of honey last summer, and have no doubt that there will be a fair stock to improve upon during the coming season. I trust that in selecting and relating these personal experiences the value of a good queen will be more fully realized, yet, without a proper system of management, these points cannot be successfully brought out, nor should we forget that making greater demands on the queen, under certain conditions, their vitality is exhausted in a shorter length of time, than if left to themselves, and their health is often impaired. We should therefore learn to raise good queens, ever to raise the standard of health, and never to allow any condition to prevail that will bring on a decline, as would have been the result had I allowed those undesirable queens to spread through the apiaries.

The Central Convention.

While the attendance at the convention of the Central California Bee Keepers' Association, held March 7 in Hanford, was not very large, the *Journal* says the proceedings were very interesting and much was learned from the various addresses made. We publish in this issue the paper by Henry Heidorn. Among the business transacted, a committee consisting of F. E. Brown, Joseph Flory and F. M. Hart was appointed to wait upon the board of county supervisors, to ask that the present appropriation of \$100 to be used by the inspector in the pursuit of his duties be raised to meet the growing needs.

The closing business was the election of officers. as follows: Henry Heidorn, president; F. E. Brown, secretary; B. P. Shirk, treasurer.

Agricultural Review.

Butte.

PACKING ORANGES.—Oroville *Register*, March 8: The Earl Fruit Co. sent out its first carload of late oranges today. From this time on about two carloads a day will be shipped. The manager says there will be about 25 carloads shipped. The pack consists of Malta Bloods, Mediterranean Sweets, Washington navels and St. Michaels. The fruit is consigned to Boston.

KILL BLUEJAYS.—Oroville *Register*, March 8: Last night ended the first week of the bluejay killing contest, and there were nearly as many birds killed as during the whole season last year. During the week 390 birds were killed.

TO RAISE BERRIES.—Chico *Record*, March 2: Dr. A. J. Landis has determined to test the capabilities of this section in berry culture and has secured a thousand plants of choice blackberries, dewberries and loganberries, which he has had placed between the rows of his almond trees. He is confident that under the shade of the trees the vines will thrive, while they will assist in keeping the soil around the almond trees comparatively moist. Berry raising has not been a success in this locality, except where irrigation has been provided, but Dr. Landis is confident that he will establish the fact that they can be successfully raised, and that there is a profit in them.

Humboldt.

EUCALYPTUS FOR TIMBER.—Arcata *Union*, Feb. 28: Jacob Zehndner, who purchased a place on Dows Prairie for the purpose of raising Eucalyptus trees for timber, has received 5,000 more. This makes 7,000 trees which have been purchased for the place.

Kings.

GRAPES FOR CORCORAN.—Hanford *Sentinel*, March 1: John P. Schalk shipped 54,000 Muscat grape cuttings to Corcoran Thursday, which is part of a shipment of 200,000 that he will send down there. That number will set about 400 acres.

Merced.

LIVE STOCK RATE.—The county assessors of the San Joaquin valley met in Merced last week for the purpose of fixing the uniform assessment rate on live stock, as is the yearly custom. The personnel of the meeting was as follows: H. P. Dalton of Alameda, H. T. Jones of Contra Costa, C. L. Ortmann of San Joaquin, C. F. Bonner of Madera, C. P. Pratt of Mariposa, J. F. Campbell of Stanislaus, J. M. Jamison of Kern, G. W. Murray of Kings, Arthur Crowley of Tulare, G. W. Cameron of Fresno, and A. G. Clough of Merced. A discussion was held and the following rates were agreed upon for the counties represented: Sheep, imported, \$5; sheep, common, \$2.50; spring lambs, 50c.; fall lambs, \$1.50; poultry, per dozen, \$2.50; American cows, \$25; calves, \$5; stock cattle, \$12; beef cattle, \$25; goats, \$1; hogs, per pound, 3c.; beehives, \$1.

Napa.

NEW CANNERY.—Napa *Register*, March 2: The Foster Bros. Co. are now prepared to erect a cannery. Within a few weeks contracts will be let for buildings which will have a floor space of 30,000 sq. ft. Machinery will be installed later and the company will be prepared to make a full pack this season of 1,000,000 cases of cherries, peaches, apricots, Bartlett pears and tomatoes. Plums and blackberries will also be handled to a great extent. It is the purpose of the company to promote the planting of beans, asparagus, peas and such vegetables as ripen out of fruit season, thus keeping the plant employed as long as possible. If the acreage of olives will justify the move, machinery will be put in to handle olives and make olive oil during the winter season. Local fruit will be given the preference.

San Bernardino.

BET ACREAGE EXTENDED.—Chino *Champion*: The 10,000-acre mark has been passed in beet acreage for the Chino factory. This is a record acreage and promises the biggest sugar campaign that the Chino factory has ever had. Planting is going ahead vigorously, there being now planted 4,000 acres. Of this, 600 acres are at Chino. This is an exceptionally early planting. One year ago the acreage planted was only 457 as compared with nearly 4,000 acres this year at the same date. This will mean the opening of the sugar campaign by the first of July. Of the acreage planted 200 are reported up sufficiently to be called a good stand. Thinning will be commenced in about two weeks.

TWENTY ACRES FOR \$17,000.—San Bernardino *Sun*, March 7: E. F. Van Loven, secretary of the San Bernardino

County Fruit Exchange, has bought 20 acres of bearing orange orchard in Ontario, for \$17,000. One-half of the orchard is in navels, the other half in Valencia. Most of the trees are 12 years old, and in good bearing. The price paid, \$850 per acre, tells something of the value represented.

San Francisco.

DAIRYMAN PUNISHED.—San Francisco *Examiner*: At the meeting of the Health Board this morning the license of Benjamin Mozetti was revoked on account of the filthy condition of his establishment. The case of Joseph Kennel for selling adulterated milk was continued.

REPORT ON MILK SUPPLY.—Berkeley dispatch to Oakland *Enquirer*, March 3: M. E. Jaffa and A. R. Ward, of the university, who were appointed by the San Francisco authorities to investigate the milk situation in that city and county, have filed their report with the Board of Supervisors. The investigators state they examined 86 dairies and 9,199 cows, confining themselves to dairies located within the city and county, and on the lines of the California Northwestern and North Shore Railways. In 55 per cent of the dairies the cows were found to be afflicted with one or another sort of ailment, the cattle at the other establishments being above criticism. Forty-three per cent of the dairies were found unobjectionable as to cleanliness, while in 33 per cent the cattle were dirty. In the remaining establishments other causes for objection were found. Of 33 milk depots examined the majority were in fairly good shape. The investigators tested 549 samples of milk and cream for boracic acid and other adulterants of more or less objectionable character, finding only four samples of cream and one of milk containing borax, three of these being labeled according to law. No other adulterant searched for was discovered. Of the \$1,428.65 allowed for the investigation all but \$196.35 was reported as having been expended, while against the balance named further claims aggregating \$150 are still pending, leaving a net surplus of \$46.35.

San Joaquin.

LINEN FACTORY.—Merced *Sun*, March 2: The idea of a linen factory is suggested by the experience of P. T. Kitz, who has been farming in the Rotterdam colony. During the past five years he has been experimenting with flax culture. He has raised some on his Rotterdam property, and has also had some cultivated on Bear creek land. These samples he sent to Germany, for expert opinions, and has been informed that the flax grown on Bear creek is of very fine quality. Last week Mr. Kitz went to Stockton to learn what he could about flax culture in San Joaquin county. At French Camp, near Stockton, 1,000 acres were devoted to flax last year, the quality of the product being very fine. Similar experiments have also been made by the State University, with great success, the flax growing about 36 inches high and producing 12,000 lb. of fiber to the acre, beside 16 to 22 bu. of seed to the acre. At present there are no factories near at hand to work the fiber into linen, but the Stockton bankers and farmers are considering the building of such a factory, the idea being that a home market for the fiber would encourage extensive cultivation of flax. Dr. Justin Kay Toles, of Stockton, is at the head of the company that proposes building the factory. Dr. Toles claims to know that the fiber from California flax is better than that from Belgium, Holland, and Germany. Also that the San Joaquin valley is the best place in California for the growing of flax. He says it is a product that needs close attention, like all garden crops, but that when it receives that attention it beats all others, for profits.

FROST NIPPED BUDS.—Lodi special to Sacramento *Bee*, March 1: The fruit growers who built smudges about their orchards last night escaped the damage by frost, which was quite heavy here. A number of fruit men ignored the warnings sent out by the Government, and almond and apricot buds were nipped badly.

Santa Clara.

TREES NOT INJURED.—San Jose *Mercury*, March 2: Frosts were felt throughout the valley Wednesday night. Inquiry of orchardists at Berryessa, Saratoga, Los Gatos, Campbell and Morgan Hill showed that the frosts did little or no damage to the fruit and only in several instances were smudges burned in the orchards.

POULTRY SHOW.—San Jose *Herald*, March 8: It was decided yesterday by the Santa Clara Valley Poultry and Pet Stock Association that the sixth annual poultry and pet stock show would be held November 12 to 17, inclusive. The November poultry show will be the first one of its kind for the year 1906. Between 1,000

and 1,200 birds are expected to try for honors. The entries will be confined to thoroughbred poultry. Arrangements for pet stock will be made later. Following the transaction of business a discussion was held. The hatching of eggs of unnatural formation was first taken up. Next the raising, feeding and handling of poultry in general was taken up. The preservation of eggs is engrossing the attention of the fanciers at all times, and many plans were given during the meeting.

FARMS SOLD.—San Jose *Mercury*, March 7: The Bond place was sold to Lester brothers, of the Willows, for \$45,000. The property contains about 80 acres, all of which are under prunes, and is near Santa Clara. The buyers are well-known fruit men, and the purchase shows that experts have faith in the future of the prune industry. The Wayland ranch, which is laid out in alfalfa and has an area of 75 acres, was sold to Henry Boeretti, of Santa Barbara, for \$20,000.

Shasta.

ENGINE DESTROYS SHEEP.—Antioch *Ledger*, March 3: Eighty sheep out of a band of 3,000 were killed and 50 crippled by a freight train at South Cottonwood. The sheep belonged to Barry Brothers, who will claim \$750 damages.

Sonoma.

FIVE THOUSAND CHICKS.—Petaluma *Argus*, March 3: The largest single shipment of chicks from this city was made by the Must Hatch Incubator Co. last Friday, when 5,000 White Leghorn chicks were shipped to various California and Arizona points. The birds were placed in specially constructed boxes—100 chicks to the box. Four men counted and boxed the little birds.

HORSES RECEIVED.—Santa Rosa *Press-Democrat*, March 3: A couple of carloads of horses arrived from Idaho Friday afternoon for J. W. Seawell, of Healdsburg, and one carload Saturday from Nevada for Jack Sibbald.

WILL PLANT MORE HOPS.—Santa Rosa *Press-Democrat*, March 2: William P. Slusser will add 20 acres of hops to the yard this year. This will give an acreage of 45 acres.

WINE SHIPMENT.—Santa Rosa *Republican*, March 2: T. L. Orr states that he has just completed the shipment of 75,000 gal. of wine, and will make another shipment in a few weeks.

CHILDREN HONOR BURBANK.—Santa Rosa *Press-Democrat*, March 8: In nearly all of the 140 school districts in Sonoma county, where school was in session on Wednesday, the birthday of Luther Burbank was celebrated as Arbor Day. Children were taught some valuable lessons about the man and his work. It was the endeavor to plant in the school yards some one of Burbank's creations. The flower most used on this occasion was the Shasta daisy. In Alameda county schools Burbank's birthday was also observed in a similar way.

FIFTEEN THOUSAND DOLLARS FOR RANCH.—Healdsburg *Enterprise*, March 3: J. B. Wainright, of New York, has purchased the Dan King ranch of 46 acres. It is a fine property and is planted to small orchard, and most of the remaining land is in alfalfa. The purchase price is said to have been \$15,000.

Sutter.

GROWERS SATISFIED.—Sutter County *Farmer*, March 9: The J. K. Armsby Co. has leased the cannery of the Sutter Preserving Co. at this place. As the five-year contracts with the Cannery's Association have expired the growers will now be at liberty to make the best terms possible.

Tehama.

SHEEP SHIPMENT.—Sacramento *Union*, March 8: A train of 30 cars loaded with sheep left here for Los Angeles, a new market in the mutton business, which has been opened to Tehama county. In the consignment there were 3,500 sheep. The two men in charge, expect to realize a dollar per sheep on the venture.

NEW ALMOND ORCHARD.—Corning *Observer*, March 1: J. E. Bettler, of Florida, has purchased 50 acres of land two miles southwest of town and is preparing to plant the entire 50 acres in almond trees.

Yolo.

WOOL GROWERS TO FORM ASSOCIATION.—Davisville dispatch to Sacramento *Bee*, March 2: The first steps toward the organization of a Wool Growers' Association were taken at Davisville, when a number of sheep owners gathered to discuss the matter. There were present G. K. Swingle, J. A. Harby, G. W. Pierce, W. O. Russell, Miss L. Schmeiser, Geo. Dalton, Wm. Oeste and W. S. Wright. The object is to have a salesday for the combined output of wool similar to the

methods followed by the Marysville growers. Such an organization is all the more necessary here as the individual flocks are small.

Yuba.

CATTLE SHIPPED.—Marysville *Democrat*, March 5: J. A. Evans shipped nine carloads of cattle last Thursday. The animals were prime beef and were bought by the Western Meat Co. A deal was recently closed by which a lot of land formerly owned by the late J. D. Carr, in Modoc county was sold to the Government for reservoir sites. Mr. Aiken, the owner, has 10,000 acres of the land and is said to have made a profit of \$120,000 on the deal.

TO CAN ASPARAGUS.—G. W. Shannon, superintendent of the Gridley cannery, will go to Antioch to take charge of an asparagus packing plant. He will return to Gridley in time to begin the pack of peaches. Mr. Shannon is considered an expert at putting up asparagus.

Tulare.

TULARE'S CREAMERIES.—The *Register* gives the figures representing the amount paid out by the two creameries in Tulare for butter fat for the first months of 1905 and of 1906. In January, 1905, the two creameries paid to our home people \$11,040.82, and in January, 1906, they paid \$17,488.10, an increase of more than 50%, and this in face of the fact that much of the time in January of this year the feed was poor.

Yuba.

RESERVES COMBINED.—Grass Valley *Union*: The Yuba and Tahoe forest reserves have been combined, with Superintendent D. B. Sheller in charge. The office of the Tahoe reserve has been at Sonora, but it is believed that Grass Valley will be made the permanent headquarters of the two. Mr. Sheller met the stockmen desiring permits at Graniteville on Saturday and is arranging for a meeting at Downieville next week.

INSPECTING DAIRIES.—Marysville *Appeal*, March 1: At a meeting of the Board of Health it was decided that all dairymen who distribute milk within the limits of Marysville, must take out a license. Beside this all of the milk will be tested to establish whether or not it is up to a certain standard.

NEVADA SHEEP BARRED OUT.—Reno *Gazette*: Forty-seven thousand sheep belonging to Reno and Western Nevada sheep men have been barred from the Yuba range in Sierra and Yuba counties. This action upon the part of the forestry officials will work a severe hardship upon the sheep industry in this section.

Patrons of Husbandry.

How to Do It.

TO THE EDITOR: The present outlook is that California will have a big grain crop this year, and as usual, the "big four" of San Francisco, who neither toil nor sweat in its production, will fix the price at which it shall be sold. Is it not time that the farmers got together and did a little business for themselves? Were more of them active members of Granges they might get closer together. Kingsburg.



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The Home Circle.

The Shamrock.

When April rains make flowers bloom
And Johnny-jump-ups come to light,
And clouds of color and perfume
Float from the orchard pink and white,
I see my shamrock in the rain,
An emerald spray with raindrops set,
Like jewels in Spring's coronet,
So fair, and yet it breathes of pain.

The shamrock on an older shore
Sprang from the rich and sacred soil,
Where saint and hero lived of yore
And where their sons in sorrow toil;
And here, transplanted, it to me
Seems weeping for the soil it left;
The diamonds that all others see
Are tears drawn from its heart bereft.

When April rain makes flowers grow
And sparkles in their tiny buds,
That in June nights will overblow
And fill the world with scented floods,
The lonely shamrock in our land—
So fine among the clover leaves—
For the old springtime often grieves;
I feel its tears upon my hand.

—Maurice Francis Eagan.

A Marching Song.

With us, the fields and rivers,
The grass that summer thrills,
The haze where morning quivers,
The peace at heart of hills,
The sense that kindles nature, and the
soul that fills:

With us, all natural sights,
All notes of natural scale;
With us, the starry lights;
With us, the nightingale;
With us, the heart and secret of the
worldly tale;

The strife of things and beauty,
The fire and light adored,
Truth and life-lightening duty,
Love without crown or sword,
That by his might and godhead makes
man god and lord—

These have we, these are ours,
That no priests give, nor kings;
The honey of all these flowers,
The heart of all these springs;
Ours, for where freedom lives not, there
live no good things.

Rise, ere the dawn be risen;
Come, and be all souls fed;
From field and street and prison
Come, for the feast is spread;
Live, for the truth is living; wake, for
the night is dead.

—Algernon C. Swinburne.

Reading the Milestone.

I stopped to read the milestone here,
A laggard schoolboy, long ago.
I came not far; my home was near,
But, ah, how far I longed to go!

Behold a number and a name,
A finger, westward, cut in stone;
The vision of a city came,
Across the dust and distance shown.

Around me lay the farms asleep
In hazes of autumnal air,
And sounds that quiet loves to keep
Were heard, and heard not, every-
where.

I read the milestone day by day;
I yearn to cross the barren bound,
To know the golden Faraway,
To walk the new Enchanted Ground!

—John James Piatt.

Too Busy.

I don't want to run the kentry
It's more pleasant, I allow,
To set here in th' grocery
An' tell th' other fellers how,
An' say, "Dad gum 'em! things air
wrong!"
An' I kin tell ye why!"
I don't keer to run the kentry;
I'd ruther speechify.

Ef I wuz up in Washington
A runnin' things, by gee!
Hank Watters 'ud be settin' yere
An' findin' fault 'ith me!
An' now no one finds fault 'ith me
Exceptin', mebbe, Sue
Cause I don't work, but, dern it all,
I got too much to do.

—E. J. Sparrow.

Kelly's Promotion.

Old Tom Kelly had worked for the X railway for nearly 50 years. Tom's earliest recollection was one of the 'choo choo' cars whizzing past the window of the shanty which served as his home and that of Thomas Kelly, Sr., section hand on the Panhandle division.

When Tom was old enough to run errands his father succeeded in getting him into the division superintendent's office as a messenger. That was ages ago, and now Tom had been depot master of the X for 15 years at one of its most important western terminals, and few strangers ever came in or went out of the terminal to register any kick. But time had laid its hand heavily upon Tom, and he had grown totally incompetent to perform the duties which fell to his lot. He was, however, a favorite with the general passenger agent, and even the president had a kindly feeling toward the old man. The general passenger agent had spent several bad half hours over Old Tom's case. He had finally put off the evil day when summary action would become necessary, by giving the old man a young and able assistant. This worked well for the time being, but traffic increased to a point where it became absolutely necessary to have an efficient depot master.

One day the president sent for the general passenger agent and told him that affairs at the depot would have to move more smoothly.

"I would gladly make some changes there and at other places," replied the general passenger agent, "if you would only supply me with means of pensioning a few old employees."

"You can't pension anyone on this road," snapped the president, "and the sooner you get that idea out of your head the better it will be for the service."

"What shall I do with some of the old men I have?" persisted the general passenger agent, "turn them out to starve?"

"The X railroad," said the president, "is not an eleemosynary institution. The president, directors and management of the road owe a very high duty to the stockholders and bondholders of the road. That duty, sir, will not permit of our giving away money where there is no return."

"That's all very well," persisted the general passenger agent, "but what am I to do with the old—"

"That is not my business," interrupted the president. "You will be expected to get the work of your department done properly, and it's up to you to find the way. Beside that, you must understand that the X railroad owes no duty to a man who has been employed by it for years and who has not been provident enough to make some provision for the future."

"That don't sound like the president," muttered the general passenger agent as he left the office. "But I guess it's all up with old Tom." That afternoon old Tom responded to his chief's summons with the same cheery face that had endeared him to fellow employees and to the public. The unsuspecting old man began to speak of former times and the general passenger agent's pluck oozed out of his finger tips.

"Tom," he said, "how are you fixed?" "Bully," replied Tom. "We're getting along famous at the depot, and I don't know how things could be better."

Little by little the general passenger agent learned that all old Tom had in the world to keep himself and wife from starvation was his salary and a board cottage on a bleak portion of the Atlantic coast near Salem, Massachusetts.

"You've been working long enough, Tom," declared the general passenger agent. "The president has suggested that you retire on half pay. Could you live on the beach at that price?"

Old Tom was the happiest man alive. Half pay and life in his seaside cottage had been his dream for some time. Several months after Tom's successor had been appointed the president chanced to note Tom's absence from the depot. He had misgivings and hastily sent for the general passenger agent.

"Where's old Tom Kelly?" he demanded.

"Well, you know what you told me the other day about pensions and getting the work of my department done at any cost. I remember you said the sooner the men understood that the road didn't want fellows who were looking for pensions in their old age the better—"

"Oh, I know all about that, but where's old Tom Kelly? I haven't seen him about the depot of late."

"Tom had become entirely incompetent and I had to supersede him."

"You don't mean to tell me," demanded the president angrily, "that you have fired old Tom Kelly? Why, man, he was

working for this road when I was a boy. He was too good a fellow to ever save a cent, and he never refused to help any man who needed help and many who didn't. How in thunder did you dare to fire the old man?"

"I did not say that I fired him."

"What did you do with him, then?"

"Well, as there was no pension system on this blamed old road, I promoted him."

"What's old Tom doing now?" asked the president as a smile of satisfaction stole over his face.

"I have promoted him to the position of advertising representative of the X road for the town of Salem, Massachusetts."

"Oh, you did, did you?" grunted the president in satisfaction. As the general passenger agent was about to close the office door the president called to him:

"By the way, old Tom was just the man for that job."—Chicago Record-Herald.

Lincoln's First Dollar.

"Did you ever hear how I earned my first dollar?" inquired President Lincoln of Secretary of State Seward at a Cabinet meeting one day.

"No," rejoined Mr. Seward.

"Well," continued Mr. Lincoln, "I belonged to what they called down South 'the scrubs.' We had succeeded in raising, chiefly by my labor, sufficient produce, as I thought, to justify me in taking it down the river to sell."

"After much persuasion I got the consent of my mother to go, and constructed a little flatboat large enough to take a barrel or two of things that we had gathered, with myself and a little bundle, down to the southern market. A steamer was coming down the river. We have, you know, no wharves on the western streams, and the custom was, if passengers were at any of the landings, for them to go out in a boat, the steamer stopping and taking them on board."

"I was contemplating my new flatboat and wondering whether I could make it strong or improve it in any particular when two men came down to the shore in carriages with trunks, and looking at the different boats, singled out mine and asked, 'Who owns this?' I answered, somewhat modestly, 'I do.' 'Will you,' said one of them, 'take us and our trunks out to the steamer?' 'Certainly,' said I. I was very glad to have the chance of earning something. I supposed that each of them would give me two or three bits. The trunks were put on my flatboat, the passengers seated themselves on the trunks and I sculled them out to the steamboat."

"They got on board and I lifted up their heavy trunks and put them on deck. The steamer was about to put on steam again when I called out that they had forgotten to pay me. Each of them took from his pocket a silver half dollar and threw it on the floor of my boat. I could scarcely believe my eyes when I picked up the money. You may think it was a very little thing, and in these days it seems to me a trifle, but it was a most important incident in my life. I could scarcely credit that I, a poor boy, had earned a dollar. The world seemed wider and fairer before me. I was a more hopeful and confident being from that time."

To Become Beautiful.

Eat fruit for breakfast. Eat fruit for luncheon. Avoid pastry. Shun muffins and crumpets, and buttered toast. Eat whole-meal bread. Refuse rice pudding. Decline potatoes if they are served more than once a day. Do not drink too much tea or coffee. Walk four miles every day. Take a bath every day. Wash the face every night in warm water. Sleep eight hours a night.

Would the woman aid her digestion, clear up a muddy skin, and secure all round health, let her become an apple eater. Pears are health aids, but better when cooked. Peaches are calculated to beautify, and grapes are declared the healthiest of all fruits. Cherries, an authority says, frequently restore health and strength to the weak. Strawberries, though a cold fruit, have the virtue of healing rheumatism. Pineapples are said to be the best cure for dyspepsia known. Oranges are an excellent cure for dyspepsia, and lemons serve as a fine fruit tonic.

Salt Bad for Bright's Disease.

Excessive use of common table salt is dangerous, especially if one has an affection of the kidneys. It has been demonstrated by well-known physiologists that only small amounts of sodium chloride (common salt) are essential for the well-being of man. Bunge claims that a person using a mixed diet requires only from

one to two grammes (15 to 30 grains) daily; however, most people consume excessive amounts—from 10 to 20 grammes (150 to 300 grains). Refraining from a too strenuous life and the avoidance of excesses, particularly in diet, alcoholic drinks and common salt, will do much toward the prevention of diseases of the kidneys.

Roosevelt a Weakling as a Boy.

The fight for robustness was far from won at the time he entered Harvard. "When I was introduced to Roosevelt, at the opening of freshman year," said a college friend, "he seemed physically undeveloped, but well developed in other respects. He weighed little more than 130 pounds, but his face appeared mature. He wore side-whiskers."

His classmates are frank to say that they did not prophesy great things of Roosevelt. "His love of natural history impressed me most," said one. "He was the sort of chap who keeps snakes and toads and other live things about him. He was one of the last men in the class I would have picked out as a coming great man. If I had prophesied at all it would have been that Roosevelt would be the head of the Smithsonian Institution."

He was studious, and was not ashamed of it. Even in his college days he did not waste time. "He didn't seem to care to loaf," said one classmate. "He would enter a roomful of fellows, greet them all heartily, take up a book—preferably one on natural history—and become dead to the world. You could fire off a gun near him and he wouldn't look up." Said another: "I remember him coming into my room one day, picking up a book, and losing interest in everything else. I fooled around awhile, went out to a recitation, came back, and there was Teddy, still buried in the same book."—From "Theodore Roosevelt: An Outdoor Man," in January McClure's.

To Keep Blue Wash Goods From Fading.

Much trouble is experienced in washing blue dresses, gingham, percales, etc. Every shade of blue, excepting indigo, fades in spite of the utmost care. Sugar of lead is used with the most satisfactory results. Place one ounce of sugar of lead in a painful of hot water and stir with a stick till dissolved and allow to cool. When just a little warm, put in the dresses, allowing them to stay for an hour. Take them out with sticks, allow them to drain, then hang up to dry. When dry, rinse through four waters and put in the wash. The dresses will not fade, though washed a number of times. Sugar of lead is poisonous, hence the care with which the goods are rinsed. No harm results from careful rinsing.

Chaff.

"When I get married," said little Mollie, "I am going to marry a minister: then it won't cost anything for a wedding fee." "When I get married," replied little Dollie, "I'm going to marry a lawyer, and then it won't cost anything to get a divorce."

"Do you want me to tell you the secret of success in life?" asked the serious-minded man. "What's the use?" asked the frivolous woman. "I couldn't keep it."

We read the other day of an elderly farmer who had this criticism to make of his wife: "I've spent enough on that woman to buy three farms, an' yet she'd ruther go off to some meetin' than stay at home and help me dress a hog!"

A traveling man received the following telegram from his wife: "Twins arrived tonight. More by mail." He went at once to the nearest office and sent the following reply: "I leave for home tonight. If more come by mail, send to dead letter office."

"Women are hard to understand," said the callow philosopher. "Not at all," answered Mr. Meekton. "Henrietta has never yet spoken her mind to me without making herself perfectly clear."

The ladies were picking up the dishes after a Sunday school picnic. Several slices of cake were found which they did not wish to carry home. One said to a small lad who was already asthmatic from gorging, "Here, boy, won't you have another piece of cake?" "Well," he replied, taking it rather listlessly, "I guess I can still chaw, but I can't swallow."

The Humane Dentist—And will you have gas, madam? The Cautious Patient—Well, you don't suppose I'm going to let you tinker about in the dark, do you?

Domestic Hints.

RHUBARB PIE.—One and one-half cups sliced rhubarb, one egg, one and two-thirds cups sugar. Mix together and bake with two crusts. Much better than plain rhubarb pie.

CREAMED EGGS.—Boil six eggs hard and cut in halves. Arrange them on a dish and pour over one pint of cream sauce made after the usual rule, using half each of cream and milk.

CORNERED BEEF BALLS.—Grind cold boiled cornered beef and season with pepper and butter. To this add a beaten egg, and, dipping the hands in flour, shape in balls and brown in oven. Serve hot.

GINGER CAKE.—Put two cups baking molasses in a bowl, stir in it one cup melted lard, two teaspoons soda, two of ginger, one of salt, one cup hot water; stir all well and add enough flour to make a soft dough; roll out and bake.

ORANGEADE.—Beat one egg until very light. Mix the juice from one orange with two teaspoonfuls of sugar and add the beaten egg, then two-thirds of a cupful of water or milk, stirring well. The addition of finely-chopped ice makes a cool and refreshing beverage.

FRUIT SALAD.—One pint nice mellow apples, cut in dice-shape, one pint celery, one cup English walnuts. Dressing for the above: Yolks of two eggs, eight tablespoonfuls butter, sugar, red pepper to taste, pinch of salt, vinegar to taste, whipped cream. Have tried this and I know 'tis fine.

PRUNE PIE.—Stew half pound of prunes as for sauce. When quite soft, remove the stones, sweeten, beat up and gradually fold in the whites of two eggs. Line deep pie tins with crust and bake 20 minutes. Then turn in the prune mixture; spread smoothly on top and pour over this a layer of well sweetened and well flavored apple sauce. Place in oven and bake 20 minutes longer. Serve hot or cold.

OYSTER SHORTCAKE.—Make a shortcake by the following rule: Sift two cups of flour, four level teaspoons of baking powder and a saltspoon of salt. Rub in one-quarter cup of butter and mix with a scant cup of milk. Roll or pat half out to fill a pan, then brush with melted butter and lay on the other half. Bake and tear apart, and butter lightly. Lay on a hot platter, pour on some creamed oysters and serve at once.

ORANGE FLOAT.—Dissolve two table-spoonfuls of cornstarch with a little cold water and one pint of boiling water. Stir and cook for 10 minutes. Add a pinch of salt and half a cupful of sugar, stir until thoroughly dissolved, then remove from the fire. Add the juice and pulp of one large lemon. Place the pulp and juice of three oranges in a glass dish, pour over the cooked mixture and set away to cool. Serve with sugar and cream or with whipped cream.

CHICKEN AND POTATOES, SOUTHERN STYLE.—Cut a two-pound spring chicken in large pieces. Stew in just water enough to cover, adding a teaspoonful of salt, a saltspoonful of pepper and a tablespoonful of butter when first put to cook. Scrape and boil a dozen small round potatoes, being careful to keep them whole. Mix one beaten egg and a tablespoon of flour with a quart of milk, add to the chicken when tender, boil up, then add the hot drained potatoes and serve very hot. Add a half teaspoonful of salt and a couple of dashes of pepper before putting in the potatoes.

CHANGED TO ALFALFA.—Sutter Independent, Feb. 23: A large amount of the Hatch & Rock lands is to be changed from fruit to alfalfa, as the owners believe that alfalfa will pay better. In one block 3,000 Bartlett pear trees were dug out. In another block there will be 5,000 almond trees taken out and in another part of the orchard 8,000 almond trees will be removed. The entire almond orchard in the last section is not being taken out, but simply every other tree, owing to their great size. On the land where the pears were growing and where the 5,000 almond trees are standing, alfalfa will be planted.

GOLDEN CAKE.—Well beat one egg, then mix it with a teacupful of fresh milk, and, having blended these, add a table-spoonful of orange marmalade. Mix together six ounces of sifted pastry flour, six ounces of castor sugar, half a teacupful of cream of tartar and half a teacupful of carbonate of soda. Having thoroughly blended the dry ingredients, put them into a basin. Make a well in the center and pour in the liquid mixture. Stir and beat them well together. Pour into a well-greased soup-plate, smooth over the top with a knife dipped in milk and bake in a moderate oven. Turn out when baked and sprinkle with castor sugar before serving.

Hints to Housekeepers.

Dishcloths should be scalded and washed daily.

Salt dissolved in alcohol will often remove grease spots from clothing.

Cucumber juice as a flavor to whipped cream makes an agreeable sauce for fish.

A faded dress can be made perfectly white by washing it in boiling cream of tartar water.

By adding a few drops of vinegar to the water when poaching eggs they will set more quickly and perfectly.

A mingling of clove and lemon flavors in the afternoon tea is delightful. Drop a whole clove into each cup just before serving.

To prevent knots in cotton while sewing always thread your needle before cutting the length of cotton from the reel. This will prevent both knots and twisting.

If a child should swallow any dangerous substance, immediately slip down its throat the white of an egg, which will form a curd around it, and thus prevent serious effects.

A soft varnish brush with a string or wire through the handle to hang by is a desirable utensil in every pantry to be used for brushing bread, rolls and pastry with melted butter.

Stewed prunes will taste much nicer if a few minutes before they are done a very little corn flour is mixed with cold water and stirred in. It thickens the syrup slightly and greatly improves it.

A children's exchange is a novel expedient devised by two mothers, who do not keep nurses, but who like to have an afternoon off once in a while. One afternoon a week all the children stay with one mother.

It seems odd that most women choose Monday as washday, when Tuesday is preferable, from the fact that it gives the housewife a whole day to sort out the laundry, to remove stains that would become set in washing, and to mend and darn any rents and holes in linens and stockings.

For chilblains or blisters on the hands, first soak the members in hot water, then rub with spirits of turpentine. Nothing is better for a cold on the lungs than equal parts of turpentine and lard mixed and applied warm. Many sharp pains in the side or chest can be relieved by applying cloths wrung from hot water in which is one tablespoon of turpentine to the quart.

Bathing.

While the great majority of women have neither the facilities nor the time to take a full bath every day, nearly all can take a sponge bath, which is all that is necessary for cleanliness. A basin, a sponge, and a cork mat, comprise the essentials, and five minutes application a day will keep the pores of the skin open and the body in a healthy condition. Some people require more bathing than others. Brunettes, as a class, and fat people in particular, are apt to need more baths and lotions to dispel the secretions and perspiration that defile the skin. In order to live up to the ideal, a woman should be exquisitely and habitually clean, and rather overstep than fall short of the so-called hygienic standard. It is advisable to be suspicious of neatness, if necessary, in order to perfect it.

Pin Up in Your Kitchen.

Without cleanliness and punctuality good cooking is impossible.

Leave nothing dirty; clean and clear as you go.

Haste, without hurry, saves worry, fuss and flurry.

Stew boiled is stew spoiled.

Strong fire for roasting; clear fire for boiling.

Wash vegetables in three waters.

Boil fish quickly; boil meat slowly.

A good cook wastes nothing.

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Agent of N. D. Rideout, Administrator of the Estate of H. J. Glenn, at Chico, Butte County, California

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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, March 14, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday	78 3/4 @ 77	79 1/4 @ 77 3/4
Thursday	77 3/4 @ 76 3/4	78 1/4 @ 76 3/4
Friday	76 3/4 @ 76 1/4	77 1/4 @ 76 1/4
Saturday	77 3/4 @ 76 1/4	78 @ 76 1/4
Monday	78 3/4 @ 77 1/4	78 3/4 @ 77 1/4
Tuesday	78 3/4 @ 76 3/4	78 3/4 @ 77

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday	43 3/4 @ 43 1/4	43 3/4 @ 43 1/4
Thursday	43 3/4 @ 43 1/4	43 3/4 @ 43 1/4
Friday	43 3/4 @ 43 1/4	43 3/4 @ 43 1/4
Saturday	42 3/4 @ 42 1/4	43 @ 42 1/4
Monday	43 3/4 @ 43 1/4	43 3/4 @ 43 1/4
Tuesday	43 3/4 @ 43 1/4	43 3/4 @ 43 1/4

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	May, 1906.	Dec., 1906.
Wednesday	1 26 3/4 @ 1 26 1/4	1 26 @ 1 25 3/4
Thursday	1 26 3/4 @ 1 26 1/4	1 26 1/4 @ 1 26
Friday	1 26 3/4 @ 1 26 1/4	1 26 1/4 @ 1 26 1/4
Saturday	1 26 3/4 @ 1 26 1/4	1 26 1/4 @ 1 26 1/4
Monday	1 26 3/4 @ 1 26 1/4	1 26 1/4 @ 1 27 1/4
Tuesday	1 27 @ 1 26 3/4	1 27 1/4 @ 1 27

Wheat.

The wheat market is dull and depressed; very little wheat has changed hands, and prices remain unchanged despite depressing Eastern advices and poor news from foreign sources. There seems to be no rallying powers in either spot or futures, and buyers are generally well filled up or are disposed to await developments. Milling interests, too, are content to wait, and only purchase in small lots according to their needs or when they can get low quotations. Conditions in the north do not lend any encouragement to the situation, where cables are weaker and the milling demand cannot take away the surplus stock, owing to the poor export demand for flour. In this regard it may be said that the Chinese boycott has shown no improvement and the export mills still remain idle. It is known that there are large holders of wheat in the north who held on to their wheat last fall expecting higher figures. It is now an interesting question what they will do in the face of a steadily declining market. Thus far they have shown no disposition to let go, but it is doubtful if they will hold on many more weeks if the market continues to decline. In the meantime, it is not known at what day the market will react. At present everything conspires to keep down the market, but damage to the growing crop or a change in the foreign demand would put a different face on the matter.

California Milling	1 32 3/4 @ 1 35
Cal. No. 1 shipping	1 27 1/4 @ 1 30
Northern Club	1 30 @ 1 32 1/4
Northern Bluestem	1 33 3/4 @ 1 36 1/4
Northern Red	1 25 @ 1 27 1/4

PRICES OF FUTURES.

Tuesday, at the forenoon session of Exchange Dec., 1906, wheat ranged from \$1.26 to \$1.25 1/4.

Flour.

The flour trade continues dull and unsatisfactory to most millers, and no improvement can be reported from either China or Japan. The north has seen a fair demand in the past few weeks for Vladivostok, and possibly 15,000 tons was the aggregate of orders placed there. This was confined principally to two milling concerns. The volume of business with others has been very small. Most exporting mills have been receiving cables during the week, but it was difficult to obtain bids which were not entirely out of the range of vision of sellers. Notwithstanding the decline in the wheat market, millers were not inclined to purchase any of the offerings. It looks as if foreign buyers are in a position where they can afford to drop out of the market and wait till things come their way. While stocks have gradually decreased during the past month, the amount of flour carried by millers and dealers is excessive and more than sufficient to meet the requirements of the trade for some time. The slightly improved demand from retailers has cut down the supply to some extent, but not enough to make any appreciable difference in stocks. There is no change in Central and South American markets, and the monthly shipments go on.

Patents, California	4 @ 85
Second Patents, California	4 @ 80
Straights	3 @ 25
Superfine No. 1	3 @ 25
Superfine No. 2	3 @ 20
Oregon Bakers	3 @ 25
Washington Bakers	4 @ 40
Eastern Patents	5 @ 40

Barley.

The barley market has been quite inactive lately, with light trade and no selling pressure. May has been at times a little weak, then strong again, and holders of

these contracts seem disposed to 'stand pat' at present, awaiting events. Spot goods come in very light, and are readily sold at current figures, and no reserve stocks of any consequence appear in sight. A full cargo of barley clears from the North this week for foreign ports. Feed barley is not in abundance there, where buyers are using corn freely as a substitute. Stocks held in the interior in the Northwest on March 1 were about 12,000 tons. Brewers are in the market for some extra choice chevalier, but aside from this there is no essential change. Offerings are small, and, according to estimated receipts, a still smaller supply seems to be in prospect.

Brewing	1 25 @ 1 27 1/4
Feed, No. 1	1 17 1/4 @ 1 20
Feed, fair to good	1 15 @ 1 17 1/4
Chevalier, No. 1 to choice	1 30 @ 1 35
Chevalier, common to fair	1 20 @ 1 25
December	96 1/2 @ —

Oats.

The local market has not experienced any change in prices this week and local interest in oats is very small. In the North, however, there has been a slight advance, owing to the discovery that some of the large stocks have been found to be rapidly shrinking, and it is expected there that the old crop will be gone before the new one makes its appearance.

White oats	1 50 @ 1 65
Black oats	1 30 @ 1 75
Red oats	1 45 @ 1 70

Corn.

Corn is in a very firm condition this week and advances in several quotations are noted. The advance is ascribed to limited supplies and to the fact that Eastern shipments have fallen off or have been diverted to the North, where it is widely used this year as a substitute for barley. Large yellow is now quoted at a 2 1/2 c. advance; Egyptian brown has advanced five cents, and Kaffir is now quoted at \$1.30 to \$1.40, an advance of from 10 to 15 cents.

Large White, good to choice	1 20 @ 1 25
Large Yellow	1 20 @ 1 25
Small Yellow	1 50 @ 1 55
Egyptian White	1 38 1/2 @ 1 40
Egyptian Brown	1 27 1/4 @ 1 35
Kaffir	1 30 @ 1 40

Rye.

Rye continues at last week's quotation and remains firm at the slightly advanced price. Supplies on hand, however, are limited and no speculative demand exists. The movement is moderate and is for local consumption only.

Good to choice	— @ 1 55
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Buckwheat.

There is no activity in buckwheat this week. Though stocks are very limited they are deemed sufficient for the needs of consumers until the new crop makes its appearance.

Good to choice	1 50 @ 1 65
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Beans.

The bean market continues weak. There is little demand either among local consumers or from the East, and business in this line is almost at a standstill. Pinks have shown considerable weakness and are now quoted at \$1.75 to \$2.

Small White, good to choice	2 90 @ 3 25
Large White	2 25 @ 2 60
Pinks	1 75 @ 2 00
Pinks, damaged	1 00 @ 1 25
Bayos, good to choice	3 30 @ 3 50
Red Kidneys	2 50 @ 3 75
Reds	2 00 @ 2 25
Limas, good to choice	4 50 @ 4 65
Black-eye Beans	4 25 @ 4 50
Cranberry	3 20 @ 3 35
Garbanzas, small	3 10 @ 3 25
Garbanzas, large	5 50 @ 5 85
Horsebeans	1 25 @ 1 50

Dried Peas.

Dried peas are considered stronger this week. The discovery of light supplies on hand has made holders feel more secure and less disposed to rid themselves of their holdings. An advance is quoted in Niles peas, which are now \$1.90 to \$2.25.

Green Peas, California	2 15 @ 2 50
Niles	1 90 @ 2 00

Hops.

The hop market is dull. A decline in prices is noted and 9c. is the top-notch figure. Some of the holders around Sacramento have been letting go during the last week, but most of the stock has been of inferior grade and has been selling for about 6c. Prime to choice will bring the highest quotations, but there is little of it left.

Medium to fair	5 @ 6
Good brewing	6 @ 7
Prime	7 @ 8
Prime to choice	8 @ 9

Wool.

The wool market has been more active this week and spring wool is becoming more a feature of the situation. Prices have not changed materially, but dealers report a very active demand locally and from the East for the spring clip, and wool growers will realize a good profit this season on the spring clip.

FALL.

Humboldt and Mendocino	15 @ 16 1/4
Northern, free	14 1/4 @ 16
Northern, defective	11 @ 13
Middle County, free	10 @ 14
Middle County, defective	8 @ 10
San Joaquin and Southern, free	8 @ 10
San Joaquin and Southern, defective	7 @ 9

SPRING.

Oregon, valley	23 @ 25
Eastern Oregon	15 @ 17
Nevada	15 @ 19
Southern	12 @ 15
Middle County	15 @ 17
Northern free	17 @ 21

Hay and Straw.

In spite of the fact that shipments of hay to market have increased during the past week, the total showing 3,550 tons, in comparison with 2,940 for the week preceding, the local situation seems to have improved somewhat. Last year there was a decided weakening in the market during the month of February, and as stocks were quite plentiful throughout the country this year, many buyers anticipated a similar state of affairs. Many buyers kept off the market during February, expecting a decline; they are now convinced that prices will go no lower, and are coming into the market and buying freely at the established range of prices. Crop prospects are promising and, although there may not be as much hay as last year, with the continuation of present conditions the quality will be much superior. Because of the plentiful supply of grass, alfalfa is somewhat neglected; all other grades continue as before.

Wheat, choice	14 00 @ 16 00
Wheat, other grades	8 00 @ 13 50
Wheat and Oat	8 50 @ 12 00
Tame Oat, fair to choice	8 00 @ 12 00
Wild Oat	8 00 @ 9 50
Barley	7 00 @ 9 50
Alfalfa	9 00 @ 11 50
Stock hay	7 50 @ 8 50
Straw, 3 bale	30 @ 50

Millstuffs.

Millstuffs are weaker this week, owing to a falling off in the demand. The growth of green feed is responsible for the reduced demand, and large business in millstuffs is not looked for from now on. A decline of \$1 a ton is quoted on bran.

Alfalfa Meal, 3 ton	21 00 @ 22 00
Bran, 3 ton	18 50 @ 20 00
Middlings	27 50 @ 29 00
Shorts, Oregon	20 00 @ 21 00
Barley, Rolled, choice	25 50 @ 26 00
Commeal	27 50 @ 28 50
Cracked Corn	28 00 @ 29 00
Oleicake Meal	39 00 @ 40 00
Cocoon cake or meal	24 50 @ 25 50

Seeds.

The seed market continues quiet with little demand for most varieties. Flaxseed, however, is firm at the present quotation. Alfalfa is weaker and a further decline is quoted this week. Alfalfa now ranges from \$12.50 to \$13. There are no transactions in mustard seed at present.

Alfalfa	12 50 @ 13 00
Flax	3 25 @ 3 50
Mustard, Yellow	3 75 @ 4 25
Mustard, Trieste	4 50 @ 4 75
Canary	8 @ 8 1/2
Rape	2 1/2 @ 3
Hemp	6 @ —
Timothy	5 1/2 @ 6

Honey.

There are no new developments in honey and quotations are unchanged. It is too early to make any predictions regarding the coming season, but the general impression is optimistic. As soon as another week of sunny weather comes beemen will be able to tell with some certainty what the season will bring from the hives.

Extracted, Water White	4 1/2 @ 5
Extracted, White	4 @ 4 1/2
Extracted, Light Amber	3 1/4 @ 4
Extracted, Amber	3 @ 3 1/4
Extracted, Dark Amber	2 1/2 @ 3
Extracted, Hawaiian	10 @ 12 1/2
White Comb, 1 frames	9 @ 10
Amber Comb	9 @ 10

Beeswax.

Beeswax quotations remain as last quoted. The demand is small and transactions are very few.

Good to choice, light 3 lb.	27 @ 28
Dark	25 @ 26

Live Stock and Meats.

Live stock and meats continue in a very firm condition, with considerable buying pressure. Beef has advanced 1/4 c., mutton 1 c. and spring lamb is now quoted at 14 to 15c. It seems that even the high prices last quoted have not prevented dealers from going even higher. The truth is that the supply is hardly sufficient to meet the demand. The hog market has not changed during the last week. The high prices continue and packers have not yet discovered anything which will justify them in looking for easier prices.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net 3 lb.	6 @ 7
Beef, 2nd quality	5 1/4 @ 6

Beef, 3rd quality	4 1/2 @ 5
Mutton—ewes, 9 @ 10c; wethers	11 @ 12
Hogs, hard grain, 150 to 250 lbs.	6 1/4 @ 6 1/2
Hogs, large, hard, over 250 pounds	5 1/2 @ 6 1/2
Hogs, small, fat, under 150 lbs.	6 @ 6 1/2
Hogs, soft	5 @ 5 1/2
Veal, large, 3 lb.	8 @ 9
Veal, small, 3 lb.	8 @ 9
Lamb, spring, 3 lb.	14 @ 15

Hides, Skins and Tallow.

The hide market is weaker, and as generally anticipated by the trade there has been a material decline in prices in the East, particularly on light hides. The local market is still paying better values than are now being offered at other points in the United States, and it is probable that there will be a reduction here soon. Operators are inclined to hold off in anticipation of a lower market, but no serious decline is expected by the majority of the trade. Receipts have been of a rather large character owing to good price, and it is not expected that the decline will greatly reduce receipts, as some are looking for a further decline.

Nothing but select hides, clean and trimmed, will bring full figures. Culls of all kinds either from grubs, cuts, hair slips, side brands or murrain, are not always readily placed at the lower figures.

	Sound.	Culls.
Heavy Steers, over 56 lbs.	13 @ 13 1/2	11 @ 11 1/2
Medium Steers, 48 to 56 lbs.	12 @ 12 1/2	10 1/2 @ 11 1/2
Light Steers, under 48 lbs.	11 1/2 @ 12 1/2	10 1/2 @ 11 1/2
Heavy Cow Hides, over 50 lbs.	11 1/2 @ 12 1/2	10 1/2 @ 11 1/2
Light Cow Hides, under 50 lbs.	11 1/2 @ 12 1/2	10 1/2 @ 11 1/2
Stags	7 @ 8 1/2	7 1/2 @ 8 1/2
Wet Salted Kip	12 @ 12 1/2	12 @ 12 1/2
Wet Salted Veal	13 @ 13 1/2	13 @ 13 1/2
Wet Salted Calf	14 @ 14 1/2	14 @ 14 1/2
Dry Hides	10 @ 10 1/2	10 @ 10 1/2
Dry Kip and Veal, 11 to 16 lbs.	20 @ 20 1/2	18 @ 18 1/2
Dry Calf, under 4 lbs.	24 @ 24 1/2	22 @ 22 1/2
Pelts, long wool, 3 skin	1 50 @ 2 00	1 50 @ 2 00
Pelts, medium, 3 skin	90 @ 1 25	90 @ 1 25
Pelts, short wool, 3 skin	50 @ 75	50 @ 75
Pelts, shearing, 3 skin	20 @ 40	20 @ 40
Horse Hides, salted, large prime, each	3 25 @ 3 50	3 25 @ 3 50
Horse Hides, salted, medium	2 75 @ 3 00	2 75 @ 3 00
Horse Hides, salted, small	2 25 @ 2 50	2 25 @ 2 50
Horse Hides, dry, large	1 75 @ 2 00	1 75 @ 2 00
Horse Hides, dry, medium	1 50 @ 1 75	1 50 @ 1 75
Horse Hides, dry, small	1 25 @ 1 50	1 25 @ 1 50
Tallow, good quality	4 @ 4 1/4	3 1/2 @ 3 3/4
Tallow, poorer grades	3 1/2 @ 3 3/4	3 1/2 @ 3 3/4

Bags and Bagging.

Owing to the prevailing high prices of bags, consumers are not disposed to buy except for immediate needs. This was the case last year also, so that at present no one has a large supply on hand, and such bags as are bought are bought out of necessity. While buyers are very cautious, dealers are confident that prices will not lower, but on the contrary they expect an advance later in the season. The sole reason ascribed is the present heavy demand for jute material of all kinds from all parts of the world, so that mills working at their fullest capacity cannot supply the needs of consumers. The present movement is chiefly in wool sacks.

Bean Bags	6 @ —
Fruit Sacks, cotton, No. 1, 8 @ 8 1/2; No. 2	7 1/2 @ 8
Fruit Sacks, jute, as to quality	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 22 @ 35, spot	7 1/2 @ 8 1/2
Wool Sacks, 4 lb.	35 @ 38
Wool Sacks, 3 1/2 lb.	32 @ 33

Poultry.

Receipts of poultry this week have been rather light, both from Eastern and local sources, but the demand has not been strong enough to affect prices materially, and, while quotations have changed in a number of cases, there is no noticeable tendency up or down. Game is in very light receipt and there has been an upward tendency in this variety. Turkeys are stronger this week and an advance on live turkeys is quoted. Fancy poultry is in good demand and will bring the top notch figures.

Turkeys, dressed, 3 lb.	17 @ 21
Turkeys, choice Young, 3 lb.	16 @ 17
Turkeys, live gobblers, 3 lb.	16 @ 17
Turkeys, live hens, 3 lb.	16 @ 17
Hens, small, 3 dozen	5 00 @ 5 50
Hens, large	6 50 @ 7 50
Roosters, old	4 50 @ 5 50
Roosters, young (full-grown)	6 50 @ 7 50
Fryers	5 50 @ 6 50
Broilers, large	4 50 @ 5 50
Broilers, small to medium	3 00 @ 4 00
Ducks, old, 3 dozen	5 00 @ 7 00
Ducks, young, 3 dozen	6 00 @ 7 00
Geese, 3 pair	2 00 @ 2 50
Goosings, 3 pair	2 50 @ 3 00
Pigeons, old, 3 dozen	1 00 @ 1 50
Pigeons, young	2 00 @ 3 00

Butter.

Butter is much firmer this week and an advance of 2c. is quoted on creamery of all grades and on select dairy. Receipts have been as heavy as last week, but there has been a large quantity shipped north, and this is responsible for the advanced prices. Dealers are manifesting considerable caution, as it is not known how long the northern shipments can continue.

Creamery, extras, 3 lb.	28 @ 29
Creamery, firsts	27 @ 28
Creamery, seconds	26 @ 27
Dairy, select	24 @ 25
Dairy, firsts	23 @ 24
Dairy, seconds	22 @ 23
Mixed Store	18 @ 20

Cheese.

Cheese is weaker this week. Little or no demand has been noticed at the present quotations, and it appears as though there would be a lowering of prices.

California, fancy flat, new.....	13 1/2 @ 14
California, good to choice.....	12 @ —
California, fair to good.....	11 @ —
California, "Young Americas".....	13 @ 13 1/2
Eastern, new.....	15 @ 16

Eggs.

The egg market is very firm at the present time. Last week's sunny weather allowed storage operations to get a good start and trading in eggs was very active and spirited, resulting in a material advance in quotations. Owing to the advanced prices and to the damp weather, storage operations have temporarily been suspended and a decline in eggs is expected soon. Storing cannot go on at the present high prices, as Eastern eggs can be laid down here at a much lower price, and it is not thought that the increased price of California storage eggs will be compensated for by the name. At present, however, there are no Eastern eggs on the market and quotations on these are nominal.

California, select, large, white and fresh.....	19 @ 20
California, select, irregular color & size.....	18 @ 18 1/2
California, good to choice color.....	16 @ 17 1/2
Eastern firsts.....	— @ —
Eastern seconds.....	— @ —

Potatoes.

The potato market has not shown any improvement during the last week. There are still large stocks on hand and the action of the authorities in making jobbers move their stock off the wharves has made the situation even worse, as potatoes stored away always get the reputation of being 'rejects.' For the best varieties, however, there is a fair demand. Sweet potato arrivals are light and the quotations have advanced.

River Burbanks, # cental.....	50 @ 75
Salinas Burbanks.....	1 10 @ 1 40
Oregon Burbanks.....	80 @ 1 25
Tomatoes.....	90 @ 1 00
Sweet Potatoes.....	1 65 @ 1 75
Early Rose, Oregon.....	1 35 @ 1 50
Early Rose, California.....	1 25 @ 1 35

Vegetables.

Heavy arrivals of asparagus was the feature of the vegetable market at the beginning of this week, and the moderate demand of local consumers served to beat down the price to from 4 to 6c. But at this point the asparagus market was held up by the liberal buying of canners, who now deem prices low enough to commence operations. Some of the river canneries have also started up and this will effectually diminish the volume coming into this market. Considerable quantities were re-packed and shipped north by steamer, so that, on the whole, the market may be considered to be in a fair way to recuperate, or at least to go no lower. Artichokes have declined somewhat this week, also because of large receipts. No. 1 is selling this week for 60 to 70c and No. 2 for 35 to 50c. Onions now seem to have entirely recovered from the slump into which they recently fell and the large stocks on hand have disappeared. Yellow Danvers are no longer quoted. Oregon onions have experienced a further advance and are now quoted at \$1 to \$1.50. Other varieties remain as last quoted, except that cauliflower is stronger and the larger varieties are quoted at 75 cents.

Celery, # dozen.....	40 @ 50
Radishes.....	10 @ —
Lettuce.....	10 @ 20
Asparagus, # lb.....	4 @ 6
Rhubarb.....	1 00 @ 1 25
Green Peppers, southern.....	20 @ —
Cucumbers, hothouse, # dozen.....	75 @ 1 50
Summer Squash, southern.....	2 00 @ —
Turnips, yellow.....	1 50 @ —
Turnips, white.....	1 20 @ —
Cauliflower, # dozen.....	40 @ 75
Beans, String, # lb.....	20 @ —
Cabbage, choice garden, # 100 lbs.....	85 @ 1 00
Egg Plant, # lb.....	10 @ 15
Garlic, # lb.....	4 1/2 @ 5
Onions, Oregon, # ctl.....	1 00 @ 1 50
Onions, Australian, # ctl.....	3 50 @ —
Peas, Green, # lb.....	8 @ 10
Tomatoes, # box or crate.....	1 50 @ 2 00
Artichokes, No. 1.....	60 @ 70
Artichokes, No. 2.....	35 @ 50
Carrots, # sack.....	80 @ 1 00
Hubbard Squash, # ton.....	25 00 @ —

NOTE.—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top, with hand holes in the ends, and weigh when filled from 50 to 60 lbs gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 35 lbs gross.

Fresh Fruits.

Apples have been firm this week, although no change in quotations are noted. The advanced prices of last week remain and a good demand exists in the face of it. The best grades are limited in quantity and a further advance is probable. The outlook for cherries and apricots is not so good as it was. Reports from various sections indicate that the bloom has been light in the case of both varieties, and small crops are now anticipated. Apricot trees, and particularly Moor-parks, appear to have suffered severely

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Apples, choice to select, # 50-lb bx.....	1 50 @ 2 50
Apples, good to choice, # 50-lb box.....	75 @ 1 25
Apples, common.....	40 @ 50
Pears, Winter Nelis.....	2 75 @ —

Dried Fruits.

The dried fruit market is very firm. The smaller varieties of prunes are fast cleaning up, while apricots are now very scarce, especially the larger grades. It seems that reports from apricot districts show that the blossoms failed to mature for some reason this year, and, between this and frosts in other localities, the apricot crop for next year will be extremely small. However, there has been no speculation because of limited stocks, and consequently the prices remain as last quoted. Other varieties are strong, and figs are now quoted at one-half cent advance.

EVAPORATED OR BLEACHED.

Apples, 50-lb boxes, rings, pressed, good to choice.....	8 1/2 @ 8 3/4
Apples, extra choice to fancy, 50-lb boxes.....	9 @ 9 1/4
Apricots, Royal, good to choice, # lb.....	8 1/2 @ 9 1/4
Apricots, Royal, fancy.....	9 1/2 @ 10
Figs, 10-lb box, 1-lb cartons.....	55 @ 62 1/2
Nectarines, White and Stanwick, # lb.....	8 @ 8 1/4
Nectarines, red, # lb.....	— @ 8
Peaches, unpeeled, good to choice.....	8 1/4 @ 8 3/4
Peaches, unpeeled, fancy to extra fancy.....	9 @ 9 1/4
Pears, standard, # lb.....	— @ 8 1/2
Pears, choice to fancy.....	10 @ 12
Plums, Black, pitted.....	7 @ 8
Plums, Red, pitted.....	5 1/2 @ 6 1/4
Plums, Yellow, pitted.....	6 @ 8
Prunes, Silver, good to fancy.....	5 1/2 @ 8 1/4
Prunes, in bags, 4 sizes, — @ 40-50s, 5 1/2 @ 5 3/4 c;	
50-60s, 4 1/2 @ 5 c; 60-70s, 4 1/4 @ 4 1/2 c; 70-80s, 3 3/4 @ 4 c;	
80-90s, 3 1/4 @ 3 1/2 c; 90-100s, 3 @ 3 1/2 c; small, 2 3/4 @ 3 c.	

COMMON SUN-DRIED.

Apples, sliced.....	5 @ 5 1/4
Figs, White, in bulk.....	3 @ 3 1/4
Figs, Black.....	3 @ 3 1/4

Raisins.

The raisin market has not changed during the last week. The demand continues to be of a steady and sustained character and no speculative interest is discernable.

(Fresno delivery except otherwise specified.)

London Layers, 2-crown, 20-lb box.....	1 50 @ —
London Layers, 3-crown, 20-lb box.....	1 60 @ —
Fancy Clusters, 4-crown, 20-lb box.....	1 75 @ —
Dehesas, 20-lb box.....	2 00 @ —
Imperial, 20-lb box.....	2 50 @ —

CAPITAL INCREASED.

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Notice to Stockholders of Century Mercantile Company.

Notice is hereby given, that in pursuance of a resolution and order by the Board of Directors of the Century Mercantile Company, a corporation organized and existing under the laws of the State of California, unanimously adopted at a meeting of said Board, duly and regularly called and held on the 1st day of March, 1906, at the office of said corporation, No. 14 Sansome St., in said City and County of San Francisco, State of California, all the members of said Board being present and acting, a special meeting of the stockholders of said Century Mercantile Company is hereby called and will be held at the office of said corporation, No. 14 Sansome St., in said City and County of San Francisco, State of California, said place of meeting being at the principal place of business of said corporation, and at the building where the Board of Directors usually meet, on Wednesday, the 16th day of May, 1906, at 10 o'clock A. M. of said day, for the purpose of considering and acting upon the proposition to increase the capital stock of said corporation from \$20,000.00, divided into 2,000 shares of the par value of \$10.00 each, to \$100,000.00, divided into 10,000 shares of the par value of \$10.00 each.

By order of the Board of Directors of Century Mercantile Co.
Dated March 1st, 1906.

J. H. CONGDON,
Secretary of Century Mercantile Co.
ALBERT C. AIKEN, Attorney-at-Law, No. 802 Mills Bldg., Attorney for said Corporation.

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4-Crown Standard.....	5 1/4 @ —	Lemons, California, good to choice.....	1 25 @ 1 75
Seedless Thompsons, 50-lb boxes.....	4 1/4 @ —	Lemons, California, standards.....	60 @ 1 00
Seedless Sultanas.....	4 1/2 @ —	Grape Fruit, # box, new.....	1 00 @ 1 50
Seedless Muscatels.....	— @ —	Grape Fruit, seedless.....	2 00 @ 2 50
Fancy, 16-oz. Seeded.....	6 1/4 @ —	Limes, # box.....	3 50 @ 6 00
Choice, 16-oz. Seeded.....	6 1/4 @ —		
Fancy, 12-oz. Seeded.....	5 1/4 @ —		
Choice, 12-oz. Seeded.....	5 @ —		
Fancy Seeded, bulk.....	6 1/4 @ —		
Choice Seeded, bulk.....	6 @ —		

Oltus Fruits.

Oranges remain very firm and steady, and a good demand for all varieties is experienced. The early week saw large consignments arrive, but they were quickly taken away under conditions favoring the seller. While the greater trade is in smaller varieties, the large sizes bring fancy prices. Fancy 96s to 126s are quoted at \$3.25.

Oranges, fancy.....	2 25 @ 2 75
Oranges, choice.....	1 75 @ 2 25
Oranges, standard.....	1 25 @ 1 50

The nut market is firmer this week than it has been for several weeks and there is an improvement in the character of the demand. However, there has not been any inquiry from the East and dealers are confirmed in the belief that the East has been supplied.

Peanuts, fair to prime.....	4 1/4 @ 5 1/4
Cal. Walnuts, No. 1 soft shell.....	— @ 13
Cal. Walnuts, No. 2 soft shell.....	— @ 9
Cal. Walnuts, No. 1 hard shell.....	— @ 12 1/2
Cal. Walnuts, No. 2 hard shell.....	— @ 8 1/2
Almonds, IXL, # lb.....	12 @ 13
Almonds, Ne Plus Ultra, # lb.....	12 @ 12 1/2
Almonds, Nonpareil, # lb.....	12 @ 13
Almonds, Languedoc, # lb.....	8 1/2 @ —
Almonds, Golden State, # lb.....	9 @ 9 1/4
Hard Shell, # lb.....	5 @ —

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In accordance with your request as to how I make silage from clover, would say I cut the clover when fully matured, and stack it as fast as cut. It will not damage the silage if it should rain while cutting or stacking. I build my stacks 20 by 40 ft., the larger the better, and put two feet of straw on top when finished. The clover must not be left to wilt much before stacking, as that would prevent the packing. I cut and stack about the 20th of July and commence feeding the first of January. I stack in the field where it is cut. About a foot on the outside of the stack will be waste. It is on the same principle as canning fruit. Exclude the air and the fruit is preserved. One-third of the coarse ration of all my stock during winter and spring consists of this silage. All the animals seem to eat it ravenously and prefer it to the best of hay. I believe from experience this will be the future clover silage system. The calculation is that four tons of silage will occupy the same space as one ton of hay. The silage as it comes out of the stack is a dark green color, packed as solid as a plug of tobacco. You could not penetrate it two inches with a hay knife. Exclude the air and all will be well. From the above you will perceive it is not run through a feed cutter, nor put in a silo.

THE GARDEN.**Growing Cassava.**

Our experience has been that cassava does not take kindly to California conditions, as we have often said. Possibly this observation needs revising, for Mr. G. P. Hall of San Diego gives this account:

We secured from the Lake City Agricultural Experimental Station in Florida a box of cassava cuttings and planted them, and have eaten some of the tubers that have grown from the plants, and unhesitatingly pronounce them most excellent and palatable food. The tubers we have raised are not so large as those described in the Florida catalogues, but are the size of ordinary-sized sweet potatoes and look something like them, only a darker brown. The thin skin is easily scraped off, just as it is from new potatoes, and removes just as easily. We boiled the tubers and then fried them, just as you would Irish or sweet potatoes, and our judgment is that they are a far better substitute for Irish potatoes than sweet potatoes. They are very dry and mealy; nothing salty about them, and they can be used in many ways that potatoes cannot, by grating the roots and making batter cakes, fritters, and especially puddings. Many uses can be made of the cassava that neither the sweet nor the Irish potato can be put to. It is an excellent fattening food, containing a large proportion of starch, and a fine quality of starch is obtained by soaking the grated root, which is much like coconut in appearance when grated. In Florida it is used for fattening beef and swine and is considered the food par excellence for that purpose. It will grow best in deep, loamy soil, just as any tuberous-rooted plant will. It can be grown anywhere in the season between March and October, or where there is from seven to eight months without frost. It is very sensitive to cold and will match the tomato in this respect.

It is raised from the cuttings made each season of the stalks that grow above ground. These are cut up into lengths of about four inches, and after deep plowing you plant these pieces about as you would corn, as to distance apart, and then cultivate just about the same; you cannot go deep, as you would disturb the growing tubers. It requires a long season such as it can get in any of our warm valleys, and it is not over-avaricious about water; does not require as much as Irish potatoes, but soil must not dry out. We believe it can be raised where potatoes can be raised.

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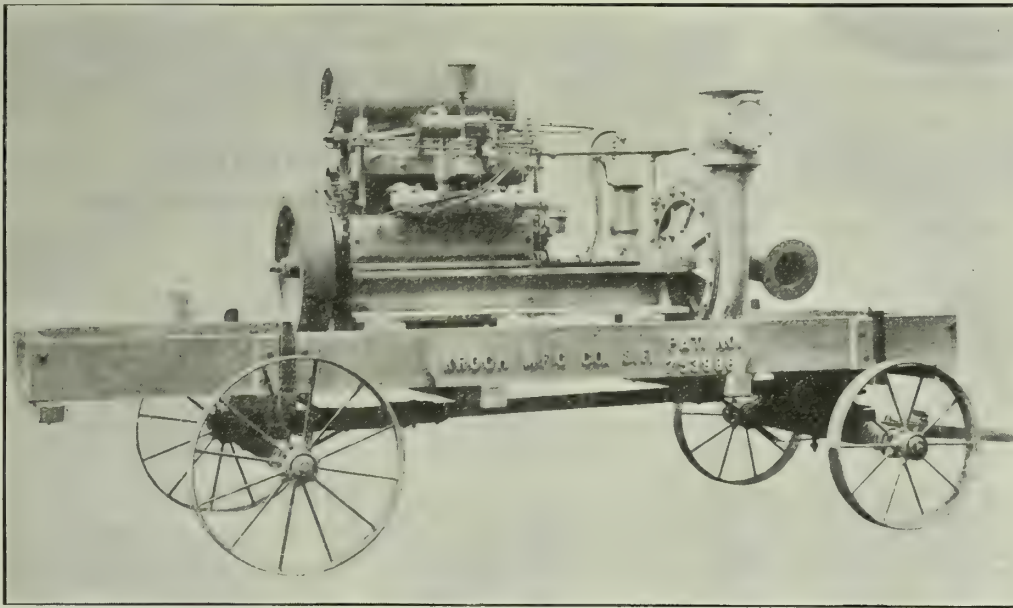
Portable Power Pump for Irrigation.

This portable pumping outfit, as shown in the illustration, has been designed by the Krogh Manufacturing Company, 519 Market street, San Francisco, to meet the requirements of a large number of farmers whose land would be benefited by irrigation, but the limited acreage of which

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where water cannot be had in sufficient quantities from one well without having to lift it from so great a depth that it would make pumping un-economical, these portable outfits can be moved to various wells in different portions of the field where water can be had at a minimum lift, and does not have to be conveyed through long pipes or ditches. This, of course, does away with the costly delivery pipes and costly ditches, as well as great loss of water by seepage, if conveyed in ditches.



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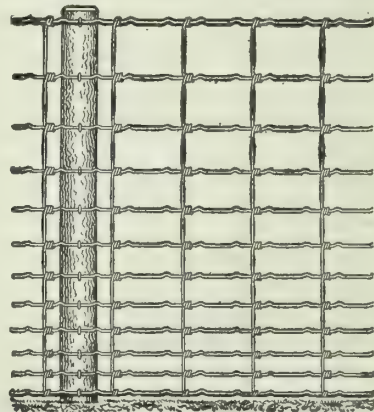
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ENTOMOLOGICAL.

Fumigation of Nursery Stock.

A recent Farmers' Bulletin of the United States Department of Agriculture gives the following interesting compilation:

The inspection laws of most States require that nursery stock should be fumigated with hydrocyanic-acid gas, and prescribe the conditions under which fumigation should be done. This treatment has been found so effective against San Jose scale, other scale insects, and other insect pests which may be disseminated on nursery stock that practically all nurserymen have realized the importance of fumigation, and have erected fumigating houses according to plans dictated by past experience. In such fumigating houses, not only all deciduous fruit trees one, two, three, or more years of age are treated, but also buds and scions removed from trees on the nurserymen's premises and intended for sale. In short, fumigation has come to be recognized as one of the necessary parts of the general routine of nursery work. The history of the use of this method is so generally known that it is not necessary to discuss the matter in this connection.

Recently a considerable number of complaints have been made by fruit raisers and nurserymen that fumigation injures the trees subjected to the process. In some localities this fear of injury from hydrocyanic-acid gas has become so widely distributed that fruit growers prefer to take chances of getting infested trees rather than have them submitted to fumigation. On account of this attitude of fruit growers and nurserymen it seemed desirable to investigate anew the effect of hydrocyanic-acid gas upon nursery stock.

Quite elaborate experiments were carried out by Lowe and Parrott, of the New York State Station, to gain information on the effect of the gas on fruit buds. In these experiments from 0.18 to 0.3 gram of cyanide was used per cubic foot of space on apple buds. Of the treated buds 80.6% lived, while 84.3% of the untreated buds set successfully. Similar experiments with cherry, pear, peach, and plum buds indicated a slight advantage in every case in favor of the untreated buds. The dif-



ference, however, except in the case of peach buds, was not great enough to indicate any decided injury from the gas. In all the experiments under discussion the conditions under which the buds were placed after fumigation were so unfavorable as to allow part of the percentage of loss to be attributed to these conditions. In the case of peaches the use of 0.22 gram of cyanide per cubic foot of space during the fumigation period of one hour did no harm whatever; in fact the percentage of treated buds which lived was greater than those of the checks. When, however, 0.3 gram of cyanide per cubic foot was used there was considerable injury, only 70% of the treated buds living, as against 82.8% of the checks. The growth of the treated peach buds, however, was in nearly every instance equal to that of the untreated buds.

During the past winter Burgess, in Ohio, Symons, in Maryland, and Phillips, in Virginia, undertook experiments independently to determine the effect of fumigation upon ordinary nursery stock. The conclusions reached by these investigators were almost identical and, since the work of each man was carried on without knowledge of the existence of other similar experiments in progress, the results served to corroborate one another. The principal conclusion was that fumigation, as recommended and carried out by nursery inspectors, does not injure well-matured nursery stock.

In Maryland 3,000 nursery trees were fumigated, one-half in the fall and one-half in the spring. These trees were apple and peach. The amount of cyanide used varied from a quantity below the normal to six times the amount usually recommended for fumigating nursery stock. In order to test the effect of the time of exposure, one-half of the trees were fumigated for 30 minutes and the other for one hour. The results obtained from these experiments indicate that no injury was caused dormant apple and peach nursery stock two years or more of age even with a strength of gas and period of exposure considerably greater than that commonly prescribed by inspectors. Since these experiments were carried on in fumigating houses at the nurseries where the trees were dug, it appears that there is no danger of injury to nursery stock by fumigation at the nursery. By the use of excessive strengths of cyanide it was shown that there is apparently more danger of injury in fumigating in the fall than in the spring. In the fumigation tests carried on in the fall peach trees appeared to be more resistant to the effect of the gas than apple trees. A slight difference in the resisting power of different varieties of apples was noted, the Yellow Transparent being most resistant, while Winesap, Ben Davis, Maiden Blush, and York Imperial were apparently more likely to be injured.

The injury in any case, however, from fumigation, even with excessive strengths of cyanide, was so slight that, taken in connection with the unfavorable conditions surrounding the trees at fumigation, Mr. Symons is disposed to disregard it entirely. At a recent meeting of the Association of Official Horticultural Inspectors similar testimony was presented from other States. Mr. Webb, of Delaware, stated that he had never seen any injury from fumigation in the several hundred thousand trees which had been treated with hydrocyanic-acid gas, in Delaware. Judging, therefore, from evidence thus far obtained by investigators at experiment stations and elsewhere, there seems to be no occasion to fear serious injury to nursery trees from fumigation with hydrocyanic-acid gas.

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PEARS.

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Columbia
Duane's Purple
Grand Duke

Peach Plum
Shropshire Damsen
Yellow Egg

PRUNES.

We predict that in two years from now Prune trees will be in bigger demand than Peaches were this year. The stock which we have to offer is exceptionally fine, and if you contemplate planting, now is the time to get in your orders, for we are in the position to make you prices which will surprise you. We have a very heavy stock of French Prunes on Almond, Peach and Myroblan; we also have a surplus of Hungarian, Imperial, Epineuse, Robe de Sargent and Sugar. Don't delay, but let us figure with you if you are in the market for any of this stock.

FIGS.

You already know that we are the leaders and the only firm offering the Calimyrna Fig tree. Our sales this year have been heavier than ever, but we still have some trees in surplus, however, and it will pay you to correspond with us. Remember, none are genuine without our seal.

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A Movement for Better Roads.

At a convention recently held in Sacramento under the auspices of the Sacramento Valley Development Association, State Highway Commissioner Nathaniel Ellery pointed out the value of hard, well-constructed roads for our system of transportation, since lack of them is immediately detrimental to all business, as is evidenced by differences in freight rates, due to various methods of transportation employed. Thus a ton cost of \$1.25 for five miles on a country road represents a ton haul of 200 miles by macadamized town road and 500 miles by water.

The common road, which is expensive in construction and maintenance, is a necessity to all business interests, yet has in late years been partly lost sight of.

He referred to the awakening to this fact and to the advance made in several States to the State-aid plan, which he approved, and to the fact that in New York alone in 1904 over \$1,000,000 was given by way of State aid, and her people voted \$50,000,000 for road expenditure, so well are they convinced of the advantage of the improvement.

He referred to other large expenditures by States on the aid plan which have proved its value, and said: "The contention that the State-aid plan would eventually extend to the West is being gradually worked out, and the great State of California should be foremost in the matter of such development. California transports 10,000,000 tons of freight annually over country roads at \$5.12 a ton, or a total of \$50,000,000 per annum, not mentioning any return farm supplies. A saving of three-fifths of this cost can be made with improved roads, or \$30,000,000 a year. This State has about 45,000 miles of road, maintained and slightly augmented in mileage at a cost of \$2,250,000 a year—a strong argument for Eastern methods.

"It is estimated that southern California receives through tourist travel expenditure \$25,000,000 a year—that is a commercial asset to be considered in internal development.

"I think good roads can be made with oil if properly placed. But I believe that the failures have been due to the fact that oil has not been properly applied.

"The State, under the present system, has not enough money to follow up its beginnings. At the present rate we are putting money into the roads without results, and I think the State-aid plan, modeled upon the law of New York, is the best solution of the road question."

The following resolution, presented by A. R. Sprague, was adopted:

"Resolved, That this convention heartily approves of the road-building plans now in use in so many Eastern States known as the State-aid plan, and to this end this convention recommends that each county here represented petition the State Legislature to adopt a similar law."

Commissioner Ellery then explained some of the methods used in construction of State highways, and a resolution favoring the use of wide wagon-wheel tires was adopted.

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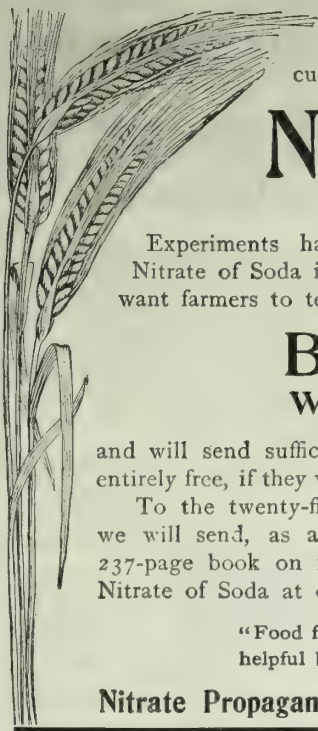
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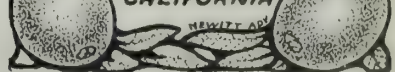
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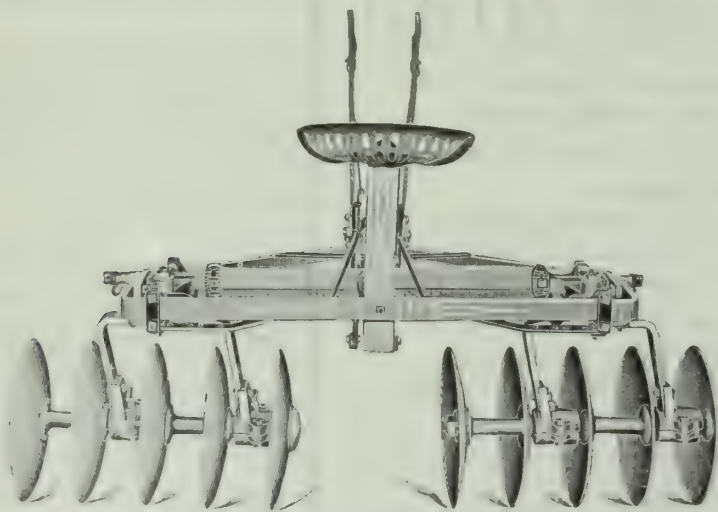
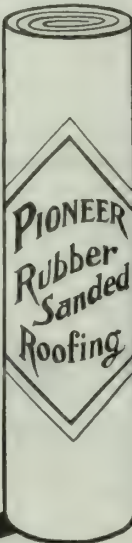
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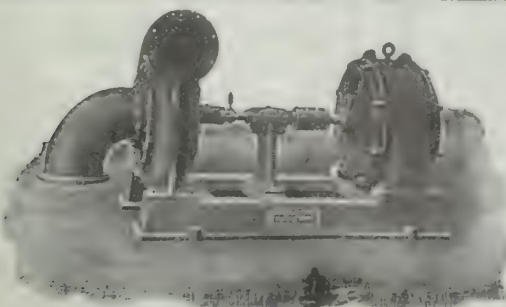
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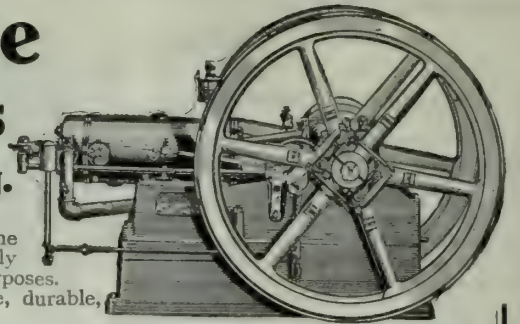
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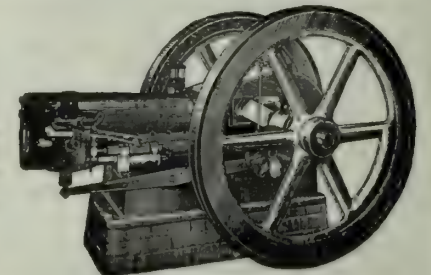
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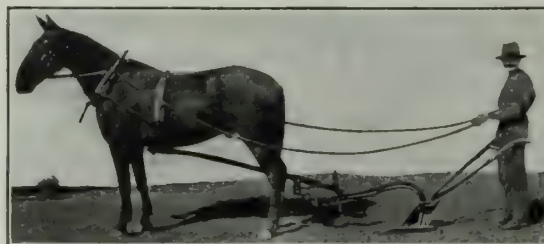
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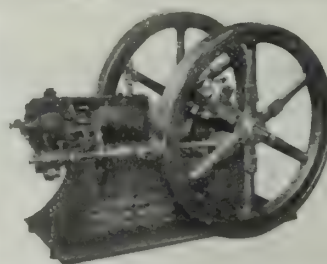
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THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 12.

SAN FRANCISCO, SATURDAY, MARCH 24, 1906.

THIRTY-FIFTH YEAR.
OFFICE: 330 MARKET ST.

Other Lives Than Ours.

Although there are hardships and dangers on the surface of the earth where our constituents struggle and conquer or struggle and fail, there are greater casualties and calamities to those who go down into the sea in ships or go down into the earth in mines. It may tend to promote content and the thankful spirit of those who think the skies are sometimes leaden and the air harsh, if they should look for a moment upon those who live other lives, out of the sunshine, out of the free air and always in imminent peril. This week's theme is suggested by the recent disaster in a French coal mine. The chief facts, as told by the telegraph, are that on the morning of March 10 a terrific explosion of fire-damp occurred in Northern France, in the department of Pas de Calais. Here are huddled small hamlets of the mine-workers, who operate the most productive coal mines in France. The subterranean chambers form a series of tunnels. Six of the outlets are near Lens and others are at Courrieres, Verdun and other points.



Timbering a Coal Face.

The output of these mines is particularly combustible, and is largely used in the manufacture of gas and in smelting. About 2,000 miners work the group of mines, and with their families make a population of from 6,000 to 8,000 souls. The explosion took place shortly after 1,795 men had descended into the mines in the morning. There was a deafening explosion, which was followed by the cages and mining apparatus being hurled from the mouth of the Courrieres mine. Men and horses near by, outside the mine, were either stunned or killed. The roof of the mine office was torn off. Immediately following the explosion, flames burst from the mouth of the pit, driving back those who sought to enter and dooming those within. Most heroic attempts at rescue of survivors were made, but in spite of them it was finally ascertained that there were over 1,200 victims of the explosion, or more than two-thirds of all who went into the mine on the fatal morning.

We omit the harrowing details of the catastrophe. Our purpose is rather to use the occasion to

show something suggestive of the way these people lived — a way of life so different from that our readers choose to follow. There was in the *Mining and Scientific Press* of March 17 a timely article by



Women Preparing the Safety Lamps.

Mr. Donald F. Campbell, who visited the locality recently. The photographs suggest the conditions under which the miners work.

Mr. Campbell speaks of the mines where the disaster occurred as most lavishly equipped from a min-



Dinner Time Underground.

ing point of view. On first approaching one of these large pits, the high walls and heavy gates tell at once of the frequent strikes and the substantial

means adopted for the protection of the splendid machinery and structures. When once inside the company's sacred precincts the cleanliness of the yards, the substantial nature of all the buildings and the enclosed pithead frames cannot but strike the visitor as remarkable. The sumptuous surroundings here far excel the older Belgian coal basin which is situated a little further east. It is indeed difficult to imagine how this terrible accident could have occurred in such a district as this, where almost unlimited sums seem to be available for the highest grade of equipment, where the best educated and most experienced of French engineers vie with one another to attain the greatest state of efficiency, where each department is also under the control of a man especially trained in his particular branch of engineering; in such a community it seems almost impossible to conceive how so great a number of men could have been within the danger zone arising from any one catastrophe. Ventilation was carried to an unusual degree of perfection, though in this department the French cannot rival American practice.



Safety Chain at the Top of an Incline.

This great disaster is, of course, appalling to all who do not know mining, but Mr. Campbell holds it appalling also from a miner's point of view. He writes: To every miner, and especially to those acquainted with this locality, the extremely hazardous nature of his calling, and the uncertainty of what he may be pleased to consider satisfactory working conditions, will be deeply impressed on his mind when he reads of the occurrence of such an appalling disaster in one of the most progressive mining districts of Europe; while the engineer will be at an entire loss to understand how an explosion could affect so extensive an area in a mine where a high standard of engineering and organization is maintained.

A WHOLE trainload of hops left Wheatland for Galveston to be shipped from there to New York by water and thence to London. The train consisted of nine cars and carried 3,654 bales of an average weight of 190 lbs., or a total weight of 694,260 lbs. They weighed when green about 2,777,040 lbs. It is the largest single shipment ever made from California.

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E. J. WICKSON Horticultural Editor

SAN FRANCISCO, MARCH 24, 1906.

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The Week.

The weather is still performing pranks which are not commendable for many agricultural purposes, although they do add to the total rainfall, and, since the temperature has risen, grass and grain are growing rankly on all soils which do not become waterlogged. It is too soon to tell what will be the influence upon the fruit crops of too frequent and prolonged drenching of the blossoms. The earlier regions, however, seem in fair condition for most fruits except the apricot and almond, which are conceded to be short. It is proving a great spring for setting up alfalfa in the interior, where the rains have been fewer and lighter than on the coast. The planting season, too, will be prolonged, which will help out the very large acreage of grape cuttings which is being planted. There is a suspicion that it may prove to be a better year for planting than for fruiting, but that is not settled yet. It will, however, be wise to look out for people who predict an immense fruit crop "because there has been so much rain;" that does not necessarily follow.

In spite of the rains there was held last week the usual blossom festival in the Saratoga district of the Santa Clara valley, and accounts say that more than 1,000 visitors from San Francisco, Oakland and other bay cities and Eastern tourists attended. A local writer says: "The sky was overcast, and scattered patches of snow showed white against the deep blue of the Santa Cruz mountains, but there was no rain, and occasionally the sun shone through the clouds, lighting up the many miles of prune blossoms, stretching across the valley and far up the foothills." Addresses, free rides for the guests and an open-air lunch were the features of what seems to have been a very satisfying and successful event. It is fortunately not often that the blossom festival does have a snowy back-scene. It may be picturesque, but not otherwise desirable.

We are willing to take our punishment along with the others whom Mr. Felix Gillet raps on the knuckles with his heavy pen holder in the excellent article which we print upon another page of this issue. The mix-up about the old grafted tree at Campbell certainly presents a dramatic situation which it will be well for Mr. Payne to explain. We catch it ourselves in the condemnation of the California black walnut, and our only retort at the moment will be that we doubt if Mr. Gillet has seen enough of the growth of this tree in

the valleys on deep loam soils, where it assumes forest sizes and carries a new top-grafted head of the English walnut, grand both in size and in bearing. In the Vaca, Sacramento and San Ramon valleys, and we doubt not in other rich valleys also, there are miles of top-grafted roadside California walnuts which know no more die-back than do the wild trees at Walnut Creek and Walnut Grove, which are named because of the conspicuous thrift, size and beauty of the native trees. It is possible that Mr. Gillet is growing this tree in a situation which does not suit it well and that his correspondents on the dry hillsides in southern California have been doing the same. His observation that the American black walnut is better than the California black is therefore very interesting and important, and may be of great value to planters in shallower, tougher and drier or wetter soils than those deep, well-drained loams of the valleys, where our native walnut does so well. It is by such comparative observations that we can all get wiser. His experiment with the New Mexico walnut is exceedingly interesting. Every walnut grower, actual or intending, should read Mr. Gillet's article carefully, for although we do not agree with him on his analogy between the die-back and the phylloxera, we get so much pleasure and information from his letter that we warmly commend it. One of the best things about a snowy winter in the foothills is that Mr. Gillet gets storm bound and takes to writing for our columns.

There seems to be much justice in the measure which the United States Forest Service is trying to get through Congress for the payment of 5% of the income from forest reserves to the counties in which such reserves are situated. This is intended to re-imburse the counties for any disadvantage under which they may be placed in consequence of the loss of taxation involved. The proposition will warn the people in a number of counties toward the Forest Service and help them to bear the burden of having their incomes curtailed by closing out the free grazing. It is certainly hard to maintain a county government and lose a chance to tax for it. Mr. Pinchot's recompense for this will help him in his work by winning the good will of the people.

Another measure before Congress, which has a strong side, is the abolition of the free distribution of common field and garden seeds. It is always a question whether much use is made of what one obtains for nothing, and it is also a question whether all the people should be taxed to pay about a million dollars for seed and handling and delivering it to comparatively few people who may not much care for it or make any good use of it. It is desirable for the Government to spend money wisely to secure seeds of new and promising plants from all parts of the world, but such seeds do not enter into the congressional distribution, which are common seeds, bought by bids at the lowest price possible, so that Congressmen may have enough to present their compliments to preferred lists of their constituents. The Grangers and other farmers' organizations have invariably passed strong resolutions against this measure. When the National Grange last met at Portland, Ore., resolutions of the strongest kind (representing 800,000 Grangers) were passed, denouncing this appropriation as a reckless waste of public money and of no practical value. It is a good thing to write to your Congressman about.

Another thing at Washington needs carefully looking into. There is a large sum of money in the national irrigation fund derived from the sale of public lands, and which is to be expended in the promotion of irrigation of the arid lands. It is reported that the Senate recently passed a joint resolution to divert \$1,000,000 from the future receipts of reclamation fund for the construction of drainage works in the Red River valley of North Dakota. Another resolution has been introduced to expend \$3,000,000 for draining Dismal swamp. In the near future it is not improbable that Congress will also be asked to consider a proposition to reclaim tidal flats along the Atlantic coast by utilizing reclamation funds.

QUERIES AND REPLIES.

Liquid Manure, Bermuda Onions and Campbell System.

TO THE EDITOR: Has liquid manure (urine) any special value as a fertilizer? I can easily arrange to save a considerable quantity, as our barn is constructed on a hillside. How should I plant and cultivate the Bermuda onion? I put out one pound of seed as an experiment. I drilled it in a bed during the month of October last, transplanting to the field when about six inches high, watering each plant as it was set out. The plants are now about one foot high, mostly top—only a small bulb. Will they produce 'sets' this season? I had expected to harvest a crop of onions in April, but they are not 'materializing' very fast. Some advise pruning the tops off to induce the bulbs to form. Please advise what to do with them and wherein I have erred.

What is the Campbell system of dry culture? Has it been practiced in this State, and with what success?—GROWER, Paradise Valley, San Diego county.

The liquid waste from the stable is a desirable fertilizer, providing you use some sort of dry material to absorb it, and you do not use it on the plants in too great quantity, nor in too great strength. You will have to experiment to guard against danger along that line.

As for Bermuda onions, you will simply have to give them more time. Certainly removing the top will not improve the bulb; after they get over their rank top growth the bulb will probably enlarge. They should make onions, not sets. Bermuda onions, however, are not largely grown in California, although many experiments have been tried with them, and they may be ill adapted to this climate.

The Campbell system consists in firming the soil below while it is kept loose on the top, and there are special cultivators contrived to do that. The firm soil below is to raise the water by capillary action, and the loose on top is to reduce the loss of it by evaporation. We are not aware that it has been used to any great extent in this State, although there are propositions now pending concerning it, and there seems no question that it is well adapted to California use, especially in the semi-arid parts of the State.

Probably Bad Soil Conditions.

TO THE EDITOR: I send you some orange cuttings out of my orchard for your examination. The trees have not been doing well for the last three years, the leaves most of the time being of a yellow cast. The trees are dying slowly. They have been planted out about 12 years. The ground is cultivated every season and manures added.—GROWER, Butte county.

Your orange trees are not afflicted with any disease or pest, so far as these specimens show. The die-back of the twigs and the smallness and bad color of the leaves are probably due to some trouble in the soil. Is it possible that the soil is not well drained and that the water accumulates during the irrigation season, or is it possible that they do not get enough water during the summer time? Either too much water or too little will bring trees into this condition, the dying back being due to the failure of the roots. In some cases holes have been dug alongside of trees in this condition and it has been found that the lower soil, say at a couple of feet from the surface, was full of standing water and the trees were perishing because the roots were trying to live in mud and slush. In such a case a drain must be dug so that the surplus water can be drawn off below. Surface cultivation and fertilizing will not help trees unless they have enough free soil to extend their roots in, and this is usually the condition when trees get to looking as your specimens indicate.

Almond Setting.

TO THE EDITOR: These almonds were sticking tightly to the trees. Where a thrifty tree is heavily laden with nuts of this size, will they stick or will they drop? The trees that bore these nuts have been blooming six weeks and are blooming still. The trees are four years old, made a thrifty growth and are of IXL variety. Any enlightenment you can give in regard to the above will be very much appreciated.—NUT ENTHUSIAST, Capay Valley.

The little almonds are about the size of peas, with the bloom-cap still in place. Ordinarily it would be unsafe to say what a young fruit in this stage would do. In this case it seems likely that these will not stick, because all we cut through are discolored around the embryo kernel, which usually indicates

injury by frost. It is too soon to say just what such immature fruitlets will do.

Clearing Out Old Vines.

TO THE EDITOR: Some time since I wrote to you relating to a phylloxera spot in my vineyard. After careful consideration of everything I was able to learn in relation to the matter, I have concluded to destroy the diseased vines and next year plant resistant ones in their stead. Now what I want to know is, can I saw off these vines below the surface, bore a hole in them and put in a tablespoonful of salt or some other chemical that will forever kill the roots? I have seen many cases in this State where grapevines will persist in coming to the surface, although dug out carefully. It is a deep, rich soil, all level, near Napa City. The vines are about eight years old.—VINE GROWER, Napa.

We never have seen reason to approve any of the chemicals for quick killing of stumps. You can use salt or sulphuric acid or arsenic enough to kill the vine and to make the soil sterile indefinitely afterward. We know nothing better than pulling out vine stumps with suitable appliances. To cut them off is to invite continual trouble from sprouting and wrecking of plows, etc. To leave them in the ground even if you did succeed in killing them, and prevent sprouting, would be to have the soil full of decaying roots, which would be a menace to new planting of trees or vines. The way to destroy old vines is to get them out of the ground just as completely as you can.

For Heavy Land, Wet in Winter.

TO THE EDITOR: A piece of land that may be called the high land of the valley floods in winter—water standing several days a few inches in depth; soil rather clayey, no hardpan, or, if any, below five feet; adjoining higher land, red loam; with some expense, can be ditched and irrigated. What grass or grasses would do well on this land? Would any kind of fruit or nut trees do there? I do not like to try grapes, as I think they would be hard to cultivate, even if the land were drained.—SUBSCRIBER, Galt.

You can get a good summer and winter growth of Australian rye grass if you can arrange to flood occasionally in summer. Winter water will not hurt it and a rougher style of summer irrigation than alfalfa requires will keep the grass roots alive through the summer. We do not know any other way to get as much feed with as little outlay. Such land will also carry alfalfa, although lighter soils are generally chosen. Winter submergence will not hurt alfalfa unless the winter temperature is high enough to keep it growing. Dormant alfalfa is not hurt by water, which will injure it when growing. Pear trees will stand the conditions best of the fruit trees.

Cassaba Melon.

TO THE EDITOR: In your last issue you published an article on the Cassaba melon. Now it seems to me that Mr. Adams has made a pumpkin pie and left the pumpkin out. We became very much interested in the melon, as he described it, but could not find his address or the address of any firm to whom we could apply for seed. Will you kindly furnish the necessary information?—READER, San Juan.

It was not necessary for Mr. Adams to say more than he did. The Cassaba melon seed can be furnished by any of our leading seedsmen. It has been grown in California for the last 25 years, and in southern California especially is becoming an important commercial crop. It is listed by name upon the menu cards of the Los Angeles restaurants and hotels, and should be given more attention as a winter fruit in all our towns and cities, as well as in home catering.

It is Not Rust.

TO THE EDITOR: Under separate cover I am mailing you a few samples of early grass grown wild here, and commonly known among the farmers as 'foxtail.' The samples sent you seem to be affected as if by rust, which did so much damage to the grain and grasses throughout California last year. The rust first appeared last season on the same kind of grass—foxtail—and later spread to the wheat. I would like to know if this is rust again appearing, or is the damage from some other cause? The rust question is a matter of vital importance to this farming community, and I would be pleased to hear from you at an early date.—GROWER, San Miguel.

The indications of disease on the foxtail which you sent are not the rust of grain, but a different fungus, which is quite common on wild grasses, but only occasionally does any damage to them. So far as this appearance goes, then, it has no relation to the rust

of grain. The appearance of that disease will depend upon whether the weather favors it, as it did last year.

Bisulphide Disinfection.

TO THE EDITOR: I would like to have your opinion regarding the treatment of plants, grape vines and grape cuttings with carbon bisulphide. Can grape vines or cuttings live after being exposed for 24 hours to a saturated atmosphere of carbon bisulphide?—ENQUIRER, San Diego.

This subject was quite fully discussed in the PACIFIC RURAL PRESS of December 23, 1905. It is dangerous to use the bisulphide vapor too strong, or to make the exposure of it too long. It is amply sufficient for the disinfection of vine cuttings to use an ordinary saucerful of bisulphide to a box or tank holding 200 gallons, and the length of exposure should be from 45 to 90 minutes. It is possible to expose seeds for the destruction of weevils, etc., over night, but we should consider such treatment very dangerous for plants or cuttings.

Growing Eucalyptus Seedlings.

TO THE EDITOR: I have secured some eucalyptus seed from a seedsman, but have no directions for growing. Can you supply them?—AMATEUR, Auburn.

The best way to grow eucalyptus seedlings is to sow the seed in boxes of light, sandy loam not disposed to bake or crack; cover the seed very lightly and then keep moist, but not wet, regulating the sunshine by a lath cover, or something of that sort. Either sow very thinly, or sow thickly and then prick out seedlings at greater distances in other boxes when they are in second leaf. Such little seedlings placed about two or three inches each way will grow in the boxes until about a foot high, and can then be put out in place, cutting with an old carving knife, or something of that sort, so as to give each little tree a block of soil which the roots will hold together until set in its new place. One soon gets the knack of growing these seedlings by experience, the main point being to have moisture enough and yet not too much, also to guard carefully against drying out while the seedling is very small.

Fumigation of Nursery Stock.

TO THE EDITOR: Please give information regarding the use of cyanide in fumigating nursery stock, also carbon bisulphide, hoping you will answer through the columns of your valuable paper. In addition, I wish to ask for the best way to treat the oyster-shell scale.—M. W. RUSSELL, Deputy Hort. Insp for Yakima county, Washington.

The use of cyanide was fully discussed on page 174 of our last issue and the use of carbon bisulphide in the issue of December 23 last. The oyster-shell scale does not count for much in this State. We should try either the winter wash of lime, salt and sulphur or a summer spray of the resin wash.

Rose Rust.

TO THE EDITOR: Some of my rose bushes were damaged last season by something like a rust, that killed the leaves, and I notice that even now some of the old leaves are again affected by it. If you can, advise me as to a remedy.—GARDENER, Sanger.

The trouble with your rose bushes is what is known as 'rose rust.' Fortunately, it does not often attack the young foliage, but generally appears rather late in the season, after the rose is past its best blooming. We should remove the old rusty leaves, if that is not too great an undertaking, then allow the bushes to go on and make the spring bloom without any interference; then spray after that with the Bordeaux mixture. Fortunately, this rust does not attack tea roses, banksians or Bengals, but is bad on the hybrid perpetual varieties particularly.

Blue Gum Lumber.

TO THE EDITOR: I am contemplating the planting of a grove of eucalyptus for timber. I see by the twenty-second report of the Agricultural Experiment Station (1904) that *E. globulus* seemed to be the most satisfactory for growth. How would it be for lumber?—PLANTER, San Jose.

You are right that the *Eucalyptus globulus* is the most rapid grower of its kind. It has not, however, been used to any extent for lumber as yet, although there is reason to believe that it may become popular. Mr. C. H. Rodgers of Watsonville finished the interior of his house with eucalyptus grown on his farm and it produced a very beautiful result.

Fig Wasps or Blastophaga.

TO THE EDITOR:—Where can I get the fig wasp, as I have a Smyrna fig that requires fertilization? I bought it of our nurseryman and he cannot supply the wasp. Last year the figs all fell off the tree. I have one Capri fig tree for the wasps to remain in. How do I handle the wasps and do I have to supply them every year? I understood from the nurseryman from whom I bought the trees that the wasps will remain in the tree from year to year.—GROWER, Longbeach.

Fig wasps should be furnished by the nurserymen who sell the trees, and they can get them from the large propagators, if they will take the trouble. It is expected that the wasp will establish itself in the fruit of the Capri tree, and that later introductions will not be necessary.

Gum Arabic and Catechu.

TO THE EDITOR: Will you kindly favor me with any information you may possess regarding the cultivation of acacia trees in the United States for the extraction of gum arabic and the drug catechu?—INQUIRER, Redlands.

The gum arabic of commerce does not come from the Australian acacia, which is comparatively hardy, but from the Arabian *Acacia vera*, which is a very tender plant, and from some experiments which were made in its introduction a decade or more ago it seems very doubtful whether it can be successfully grown in California. We have no knowledge about the *Acacia catechu*, which is an Indian tree, except what you can find in the encyclopedias.

CALIFORNIA WEEKLY WEATHER BULLETIN.

Report of the U. S. Weather Service for Week Ending March 19, 1906.

ALEXANDER MCADIE, Forecast Official and Section Director.

Sacramento Valley.

Stormy weather was the rule throughout the week. High southerly winds blew Monday, Tuesday and Wednesday, reaching at times a velocity of 30 miles per hour or more. On Thursday and Friday winds blew with moderate velocity from the north and there were intervals of clear weather, with morning temperatures not much above the freezing point. Frost warnings were issued 24 hours before the frosts of Friday morning. At no time during the week did the temperature exceed 56°.

Coast and Bay Sections.

Squally weather prevailed nearly all of the week. High southeast winds prevailed from Monday until Friday. Moderate north winds, with light frosts, prevailed at the close of the week. The rainfall, except on the coast south of San Francisco, was in the nature of showers and not especially heavy. Some snow fell on the mountains of the Coast Range.

San Joaquin Valley.

Unusual weather conditions prevailed during the week. In the vicinity of Fresno rain fell every day except Sunday. The precipitation was unusually heavy throughout the valley and in the foothills. Moderate floods prevailed at a number of places in the valley and much damage has resulted. All water courses were full and most streams overran their banks. Light frosts occurred Sunday and Monday mornings. The temperature ranged from 36 to 62°.

Southern California.

The week began with stormy weather and continued, although moderating, until Sunday. A thunderstorm was reported at Los Angeles Monday morning, with 1.60 in. of rain in 24 hours. In 48 hours more than 2.50 in. of rain fell. At San Diego a maximum wind velocity of 34 miles per hour from the southeast occurred. At the close of the week the weather cleared, with light frosts on Monday morning. At San Diego the total seasonal rainfall to date is .82 in. above a normal value. At Anaheim the seasonal rainfall now amounts to 13.49 inches.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, March 21, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.	Total Seasonal Rainfall to Date.	Total Seasonal Rainfall Last Year to Same Date.	Average Seasonal Rainfall to Date.	Maximum Temperature for the week.	Minimum Temperature for the week.
Eureka.....	.50	27.75	25.81	37.46	60	34
Red Bluff.....	2.32	21.32	20.44	21.23	56	32
Sacramento.....	.44	14.44	19.91	16.10	58	42
San Francisco.....	.95	13.58	19.34	18.95	57	41
San Jose.....	.14	11.10	14.43	.....	64	36
Fresno.....	1.11	8.15	9.96	6.35	64	38
Independence.....	.60	5.22	3.62	3.31	60	28
San Luis Obispo.....	1.61	17.44	19.34	17.70	62	40
Los Angeles.....	.61	14.98	17.65	12.77	72	40
San Diego.....	.19	9.46	13.46	8.13	68	44
Yuma.....	.00	5.35	8.53	2.72	80	46

HORTICULTURE.

The Walnut in California.

TO THE EDITOR: In a paper on the walnut, read by Mr. Luther Burbank at the California Fruit Growers' Convention held last November at Santa Rosa and published in the PACIFIC RURAL PRESS in its issue of Feb. 10, I read the following passage under the heading of:

A GREAT WALNUT RECORD.

I hold in my hand a record and also a photograph of one of the Santa Rosa walnut trees, grafted as I recommend, on the black walnut, in 1891. This was handed to me by the owner, George C. Payne of San Jose. The record may be of interest to you: Dimensions (1905)—spread of top, 66 ft.; circumference, one foot above ground, 8 ft. 9 in. No record of nuts kept till 1897, which amounted to 250 lb; 1898, 302 lb.; 1899, 229 lb., and so on to 1905, which amounted to 269 pounds.

On the other hand, looking over numerous letters written to me on the walnut for the last 30 years and put away for future reference, I find one from the same Geo. C. Payne, the owner of the big grafted tree described by Mr. Burbank, which reads as follows:

CAMPBELL, Cal., Feb. 13, 1900.

Mr. Felix Gillet—Dear Sir: Would it be possible for me to get about 20 or 30 ft. of Mayette scions, also one foot of Mammoth? I want to get the very best Mayette possible, from trees that have a record. The scions are for an old California black walnut. (I couldn't supply then Mr. Payne with the scions he wanted.—F. G.) It might interest you if I would tell of a California black walnut we have grafted. The tree was about 16 years old when grafted. The grafts are now about nine years old. It is grafted to true Santa Barbara soft-shell seedling (the words "true Santa Barbara soft-shell seedling" being underlined by Mr. Payne himself—F. G.), not of the so-called varieties of which this county is flooded. In 1897 it produced 253 lb; 1898, 302 lb.; 1899, 229 lb. Most of these walnuts were sold to families for eight cents per pound, and we have always turned away many orders. But I consider the Mayette a gilt-edge nut, hence my inquiry. Yours respectfully,

GEO. C. PAYNE.

Your readers will see at a glance that the tree referred to in the above letter is the same one as referred to in Mr. Burbank's paper, and that, according to Mr. Payne himself, in 1900 it was the "true Santa Barbara soft-shell seedling" that had been grafted on the big California Black, and in 1905 it turns out to be Mr. Burbank's offspring, the "Santa Rosa soft-shell." I admit that there might be very little difference between the two 'Santas,' one the great standard variety of Southern California, the Santa Barbara, and the other the Santa Rosa, originated by Mr. Burbank. Still, the Santa Rosa is not the Santa Barbara variety; but I will let your readers draw for themselves their own conclusions.

PROPAGATING THE WALNUT BY GRAFTING.—While on the subject, I might tell about my 36 years' experience with the walnut, and the best way of propagating and fruiting it. Since the early life of your paper, as its files will show, that is for the last 32 years or so, I have been a constant advocate of the propagating of the walnut by grafting; and as grafting the walnut, especially with young stock, is very difficult, and, consequently grafted trees were, and are yet, scarce and high-priced, I have, as a substitute and as the next best, encouraged the planting of second generation seedlings, or trees grown from first generation nuts; that is, nuts borne on grafted trees, themselves grafted from the original.

My reasons for advocating the grafting of the walnut were: first, to obtain a uniform product, or nuts of similar form and size; and second, of securing the chief characteristics of the variety grafted, as, for instance, hardness and lateness in budding out and fertility. I advised people desirous of having a grove of grafted walnuts, first, to plant as 'mother trees,' from which to get budding and grafting wood, the very varieties wished to be propagated by grafting; then to plant the stock to be grafted, whether California or American Black or English walnut, and not to be too hasty in doing the grafting, as nothing would be gained by it; rather wait patiently that the trees be of a fair size before undertaking the great grafting operation. Of course the simplest and quickest way of securing a grove of grafted trees is as you suggested very aptly in an editorial in your issue of Feb. 10, in which you said: "We believe the nursery is the place to grow and to graft all kinds of trees which are to be planted on a large scale." That is true for any class of trees but the walnut, the very species under discussion, for it has been impossible for nurserymen, so far, to meet even a one hundredth of the demand for grafted walnut trees. People are therefore compelled to adopt another method, the one that I have been constantly advocating, that is to have the growers themselves do their own grafting and do it the best they can.

DIFFICULTY IN GRAFTING THE WALNUT.—I could give you right here numerous instances of the difficulty in grafting and budding young walnut stock, say one and two-year old trees. The last instance that came under my notice, being that of a prominent

citizen of the Santa Clara valley much interested in walnut planting and grafting, and a good all around judge, too, who last spring budded 5,000 young California Black walnut trees and didn't succeed with a single one. Another party in Sonoma county, several years ago, grafted at the bench 700 two-year-old trees and succeeded with but 11. The same party last year succeeded with 20% of the grafts in nursery rows, likely on larger stock. A correspondent from Whittier, Los Angeles county, wrote to me last July: "One man in this county put in 10,000 buds one spring—not one bud grew; another put in 100 and three buds grew."

I know but one successful way of grafting one-year-old stock; it is by the Treve process in greenhouse, and still I do not myself succeed more than 12 to 20%. I do not know of anybody else grafting with success yearling walnut trees at the bench. Grafting by approach succeeds well, however, but is a slow mode of grafting, for it takes two years for soldering well, and but a limited number of trees may be so grafted. It might be, therefore, provoking to the nurseryman to be told that the nursery is the place to grow and graft walnuts, which are to be planted on a large scale. One after another have tried their hand at it, with no better success. However, grafting older stock or older trees is more successful, more particularly when using ring or annular budding, though the scarcity of budding wood of the proper size is a great impediment to the general use of that way of budding, for such wood has to be of the size of the medium finger, surely not any smaller than the forefinger. The same for shield budding, the buds to have a chance to take having to be two inches long and as broad as possible. As a general rule with walnut budding, the buds have to be removed without the least particle of wood sticking to them.

PROPAGATING BY BUDDING.—It will be quite in place to describe here how, in France, they propagate their groves of grafted trees, which is the same mode as first employed with the Mayette, Franquette and Chaberte ever since these varieties were originated over 160 years ago. The very first thing they do is to secure 'mother' trees of the kind they desire to propagate by grafting, so as to have large roots to give them, by pruning them back every year, the budding wood of the proper size they will need when ready to do their budding. Then they plant seedling trees, generally grown by them, but which are also obtainable in nurseries, with the tap root severely cut back, to make them grow lateral roots, the very life of the tree; and they do not undertake to bud before the trees are of the proper size, say not less than six inches in diameter, as nothing, I repeat it, is gained by being too hasty in budding or grafting walnut trees.

The trees to be so top-budded are first cut back before spring, only a few side limbs, to be subsequently cut off, being left to shade the trunk and as a valve for the escape of the rising sap; this pruning back causes the throwing out of young and vigorous shoots. Such shoots are also produced where branches have been cut back for grafting, and when the graft fails to grow, they may be utilized for budding. Quite a number of shoots, after the top is cut back, will start around the remaining stumps, but after having become woody enough, a certain number only, the straightest and nicest ones, are allowed to stay, all others being removed. When ready to bud, say from July to August, rings of bark containing a bud are, on the preceding night, and at a table in the house, taken from the scions, the best ones being those right at the base and where the wood is perfectly round (indeed, they are the only ones fit to be used), being very careful in removing the ring of bark not to bruise in any manner the cambium layer and surely not to disturb the corule, which corresponds exactly with the eye proper, otherwise the budding would be blind. The rings of bark are put back on the scions, which are wrapped up in a wet cloth till next day's operation, thus saving much time and rendering more perfect the removing of the rings of bark. The larger the shoots, the better. The ring of bark to be inserted is applied on a portion of the shoot well spaced between two buds, but as near the base as possible, and the knife run horizontally above and below it, and a vertical cut made back of it, the ring of bark being then taken from the stock and the one containing a bud being inserted in its place. It is a very simple operation that every intelligent person can perform without the aid of a skilful grafter. If the ring of bark inserted is too small to reach all around the stock, a strip of bark is left on the latter; in that case it may be called plate, instead of ring, budding. If the shoots so budded are of the proper size, and above all the rings of bark adroitly removed from the scions, five buds out of six should succeed. It is more safe, if shoots are too long and too heavy, and so as to prevent accidents, to cut them back to two or three feet. The ensuing spring the shoots are cut back right above the budding and the cut waxed. When the bud grows up too rank, it may be tied to a stake, itself tied to the stump, to prevent breaking off as is often the case; the same with grafts.

Ring budding and budding by approach may be regarded as the very strongest ways of propagating

by budding or grafting the walnut; no danger of the grafting breaking off afterward under the weight of the nuts or from other causes: not so with cleft-grafting.

LONGEVITY OF WALNUT TREES.—This ring budding mode has been employed by the French for centuries, and in the Department of Isere, where almost all walnuts are grafted, are trees of Mayette, Franquette and Chaberte, grafted on French walnut root (*Juglans Regia*), for no other stock is used in that country for grafting purposes, that the oldest inhabitant cannot tell the age. Huge walnut trees, three to four feet in diameter, may be seen all over the southeast and southwest of France, worth a great deal of money for the wood. A gentleman from Oregon, who a year ago came to California to investigate the walnut, and who last summer went to France, right in the walnut district of Isere, to continue his investigations, wrote to me from Grenoble that he saw a tree there that bore 2,000 lb. of nuts that had been sold for \$240 for lumber; but it was, he added, 200 years old; and still we hear of some people in California claiming that newly originated varieties in this State are more long lived than French walnuts!

I quote from the Oregon gentleman's letter: "The trees in Isere are headed high, nine and ten feet, the ground being cultivated about 12 in., and formerly they did not cultivate. The trees grow in a very gravelly soil, very much like the gravelly soil I have seen in Clarke county, Washington. Different kinds of grain were growing amongst the trees and were planted very close up to the trees. The price of the 1905 crop (Grenoble or Mayette) was 13c. per lb. landed in New York, and the California growers usually fix their price one cent lower than the French price."

BEST STOCK FOR GRAFTING THE WALNUT.—This is a most important and delicate question to decide in a country like California, where walnut culture, young as it is, has already to contend against serious diseases or affections of the tree itself and its crop of nuts, such as blight or bacteriosis, die-back or root rot, sunburn, and I do not know what else, and it is well for everyone starting a walnut grove to be acquainted with these drawbacks to walnut raising on the Pacific coast. Though directly interested myself from a financial point of view in the planting of walnut trees, I think that I owe it to our people, since I have constantly advocated the planting of walnut trees all over the coast for 36 years, to tell all that I know against, as well as for, walnut culture here.

Some 30 years ago, at the time I was first advocating the grafting of the walnut, it was claimed by most nurserymen and walnut growers themselves in southern California that the walnut did not require to be grafted; that it came true from the seed, and so they kept on planting seedling trees, without any regard to generations, and with the natural results to have their varieties of Santa Barbara soft shell so deteriorated that they had finally to make three grades of the nut: first grade, for exportation East and in opposition to imported nuts; second grade, for home consumption, and culls; the latter fit only to be shelled for confections and cakes. Finally blight broke out among the walnut groves of southern California, spreading out more or less all over the State, which all worked admirably toward my former advice of propagating the walnut by grafting, the idea now being, besides that of obtaining a more uniform grade of nut; to redeem through it the blighted trees with new or old varieties known to be about immune from blight, and, I may add, also from frost in districts where there is much danger of late frosts in the spring. So the grafting notion, almost a fad, spread like wild fire all over the State and the demand for grafted trees increased in proportion. To my knowledge large tracts of land in Santa Clara Contra Costa, Napa and other counties are being planted to California, and American black to be afterward grafted to this or that variety. Now, whenever my advice has been sought I have recommended to plant the American black in preference to California black, or, at least, to plant one third of each California and American black and ordinary English, and graft the three kinds, and when those grafted trees would have grown to a fair size, that is the size at which die-back or root rot is liable to break out in a walnut grove, they would be able to decide which stock does the best in their soil. People would lose nothing by following that advice; but I say: Beware of California black! For trees grafted on that stock and also on English walnut root are liable to be attacked by die-back, a disease of the walnut peculiar to this State, and which I regard as entirely distinct from the blight or Bacteriosis, the latter being caused by a germ as clearly described by the United States pathologist stationed at Santa Paula, Mr. Newton B. Pierce. When recommending to plant the American black in preference to the California, I do not mean to say that the former is immune from the disease, nor is the butternut, for I know only the pecan and hickory to be entirely immune from it.

The first tree that I grafted on California Black, 32 years ago, grew to a fine size, six to eight inches in diameter near the ground, but it had to succumb to the fatal disease, and so on every tree I subse-

quently grafted, and so did the California Black seedling itself. I have seen trees affected the same way in various parts of this State, in Nevada, Placer, Santa Clara, Sonoma counties, and know by correspondence that the disease exists a little all over the State. In Ventura a correspondent wrote to me 14 years ago, asking my advice in regard to that "die-back" that had broken out badly, especially amongst his Los Angeles or Hard shell walnut trees; and when, lately, I inquired how the trees had been doing since, the reply came: "Dead long ago." The same occurs in Santa Barbara; a grower in the upper part of that county inquired of Prof. E. J. Wickson in 1899 what the trouble could be with his trees, that in a plantation of about 500 trees, all of them had the die-back, more or less, except a few. Since 15 years I have not used at all California Black for stock, only American Black, and so far I have had no trouble with it.

This die-back of the walnut, which I call root rot, may be called phylloxera of the walnut, though the same disease affects also the chestnut, but not before either is of a fair, large size; I notice that a similar disease affects the medlar, hawthorn, pear. Now I think that a walnut or chestnut tree affected by that disease, whatever name given to it, is doomed; the chances, at any rate, are that in nine cases out of ten, the tree will die. When the top of a tree, be it walnut, chestnut or pear, is affected by die-back, as commonly called, be sure that the roots are affected. The die-back, in fact, is the affect of a cause residing right in the effect of a cause residing right in the ground, and which starts the rotting of the roots; and by digging away from the trees when the disease is just breaking out, you will find that the fibers are attacked, then the smaller roots, and last the large roots will follow exactly in the same manner as the grape vine roots attacked by phylloxera.

When a walnut tree shows signs of die-back to the very tip of the top, surely the tap root is affected—and I have an idea that the disease starts right there—but when the whole top is attacked all the roots are in a decaying condition. Whenever a tree of whatever species shows on its top signs of decay, look at the roots and in most cases you will find the cause of the disease to reside there, whether started by insect, fungus or something else. Some trees, however, might get over the trouble in this way: When the tap root is gone and the large lateral ones in a decaying condition, the tree may in the meantime grow lateral roots near the surface and save the tree. As I said, I know only the pecan and hickory to be entirely immune from that disease, and it might be advisable to try grafting the walnut below the ground on pecan root; though I am afraid the English walnut would outgrow the pecan too much—still it might be tried. The same in the Gulf and Southern Atlantic Coast, and where pecans do so finely, it would be worth a trial, especially since the English walnut roots are attacked there by root knot, the very reason why they won't in the South the English walnut on American black.

JUGLANS RUPESTRIS.—At present I am experimenting on a new stock, the Juglans Rupestris from the Pecos valley, New Mexico. In the spring of 1899 the Department of Agriculture sent me one-year-old seedlings of that variety for me to experiment upon as a stock for the English walnut. As the trees did not have enough roots on to be grafted by the Treve process in the propagating house, I planted them in nursery row, two feet apart, and finally let them grow up to bearing size to find out more about their growth. I must say that this Juglans Rupestris is the best rooted tree of the whole nut family, even beating on that score the pecan and hickory, so hard to take up when of a good size. The foliage of the Rupestris is exceedingly ornamental and most elegant; indeed, the tree might very well be planted simply for its foliage. It goes to bearing early, growing clusters of very small nuts, smaller than marbles, with the shell hard and furrowed, and of no account whatever. This spring I intend to try it as a stock for the English walnut, having quite a number of yearling trees with fiber enough to permit its grafting in greenhouse.

That question of stock for the walnut is a very important one, and all interested parties should give it their most careful attention, and not follow too blindly the suggestions of this or that party, but do some experimenting of their own, and use various sorts of stock to find out which does the best with them.

IMPORTANCE OF THE WALNUT TRADE.—Before closing this rather long letter, I would like to say something on the present prospects of the walnut industry, which, with all its drawbacks, I regard as decidedly good, and with a fine market for whatever the whole Pacific coast might raise. Since this State, or rather the southern part of it, is producing such large quantities of walnuts, amounting yearly to millions of pounds, walnut growers down there were prone to claim that the imports of walnuts from abroad were getting to be less and less every year. Such claims, of course, were made at random, and based on no figures whatever. So let us see:

In 1902 the imports of walnuts were as follows: Shelled, 9,702,558 lb.; shelled, 2,224,879 lb.; total, 11,927,437 pounds.

In 1903—Not shelled, 8,936,438 lb.; shelled 3,035,970 lb.; total, 11,972,408 pounds.

In 1903—Not shelled, 19,456,012 lb.; shelled, 3,591,941 lb.; total, 23,033,953 pounds.

In 1904—Not shelled, 19,456,012 lb.; shelled, 3,379,941 lb.; total, 23,033,953 pounds.

In 1905—Not shelled, 16,312,138 lb.; shelled, 3,579,941 lb.; total, 20,490,147 pounds.

As these figures were obtained through the courtesy of Mr. O. P. Austin, a very obliging official and chief of Bureau of Statistics, Department of Commerce and Labor, at Washington, they must be regarded as correct; and still the California output is far from being small, for it was roughly estimated at 17,140,000 lb. in 1902 and 11,000,000 lb. in 1903. (I have not the figures for the last two years, but the output was considerable, notwithstanding the ravages of the blight.) I say that such figures are encouraging and should stimulate our people in planting walnut trees on a commercial basis, that is, on a large scale; for it will take many years, indeed, before the walnut, almond and filbert industry will be overdone, as has been the case with the prune. You will notice the increase of the imports in 'shelled' walnuts, all used with a considerable portion of the unshelled ones for confections and cakes, the use of which is growing more and more popular every year in this country. Now, if you want to know from which countries the walnuts were imported, say in 1904, when the imports amounted to the enormous figure of 23,033,953 lb., I hereby give it to you:

IMPORTS INTO THE UNITED STATES OF WALNUTS
DURING THE YEAR ENDING JUNE 30, 1904.

Countries From Which Imported.	Pounds.	Value.
Austria-Hungary	113,805	\$ 4,971
Belgium	191,191	14,544
France	17,123,083	1,325,146
Germany	87,849	4,420
Greece	46,664	5,406
Italy	3,084,689	210,311
Netherlands	2,738	148
Portugal	33	2
Russia and Black Sea	1,445	36
Spain	335,222	23,932
Turkey in Europe	27,231	1,649
United Kingdom	245,891	11,532
British North America	835	118
Mexico	477	24
Chile	1,938,322	103,647
Chinese Empire	8,478	285
Hongkong	30,000	1,577
Japan	6,320	354
Turkey in Asia	416,503	20,966
Egypt	9,985	308
Total	23,670,761	\$1,729,378

I will close by giving you figures on the imports of other nuts during the year ending June 30, 1904, also obtained from the Department of Commerce and Labor:

	FREE.	Quantity.	Value.
Cocanut in shell			\$ 970,918 46
Cocanut meat, broken, lb.		9,803,985	273,143 00
Cream and Brazil, bu.		215,168	462,802 00
Palm			1,663 00
Total, free			\$1,708,526 46
	DUTYABLE		
Almonds—			
Not shelled, lb.		2,724,745	\$ 180,325 09
Shelled, lb.		6,063,210	1,020,463 99
Filberts—			
Not shelled, lb.		8,042,692	343,649 70
Shelled, lb.		695,316	71,746 00
Cocanut meat (dissicated), lb.		2,485,228	115,386 00
Olive nuts—			
Ground			5,726 00
Peanuts—			
Unshelled, lb.		3,337,378	100,898 55
Shelled, lb.		1,147,141	46,927 15
All other nuts (less walnuts), lb.		7,442,944	226,183 60
Total dutiable (including walnuts)			\$3,764,779 95
Duty collected, \$1,664,883 85.			

Nevada City, March 12. FELIX GILLET.

Pruning and Grafting.

The following suggestions were recently given out by C. N. Tharsing, Shasta county's horticultural commissioner:

"A question was asked me in regard to pruning prune trees. By long experience I have found that it requires good judgment. For the last two years the prune crop has been small and the trees do not require much pruning this year, provided they were properly pruned in 1904 and 1905; only take out the old wood and some of the hanging limbs. The trees are set, very strong, and there is a good prospect for a big crop the coming year.

"The prune crop is a strong feeder, and when there is a full crop exhausts the soil to such an extent that it is hard to repeat the next year, let the season be ever so favorable. It must be borne in mind that a full crop of prunes means three tons, dried, to the acre, which many orchards around Anderson have produced. Such a crop takes from the soil 50 lb. of nitrogen, 26 lb. of phosphoric acid and 75 lb. of potash.

"Many inquiries have been made as to what time is proper to graft. A season such as this has been, one could have commenced three weeks ago, but it is a good time for the next two or three weeks. The proper and only way to renew and graft old trees is to cut them off the first year to the height you want to start the graft, but leave one limb to hold the growth and life in the tree. The next summer rub off the sprouts not wanted to graft on the coming winter. Rub while the sprouts are tender, before the wood gets hard, so as to throw all the strength into the remaining limbs to graft on. They will grow together and make proper joint, and in a few years the graft will not show, nor will the limb break off when it comes into bearing as they do when grafted on old stock, the old way."

AGRICULTURAL SCIENCE.

The Pear Blight Conflict.

Mr. M. B. Waite, Pathologist of Diseases of Fruits of the United States Department of Agriculture, favored us with a call before his return to Washington last week and at our solicitation prepared a statement in the office of the PACIFIC RURAL PRESS concerning his idea of the present standing of the conflict which he has been waging against pear blight in co-operation with Prof. R. E. Smith of the University of California Experiment Station. He said:

We are not entirely satisfied with the results achieved in the eradication of pear blight in California. Our hope has been to completely exterminate the blight in this State, just as the foot-and-mouth disease was exterminated in New England. Our ambition is to stamp out the disease along the same lines in which pleuro-pneumonia was stamped out of existence in the United States. Perhaps we should be satisfied with control, even if we cannot accomplish complete eradication. In my recent trip over the most infested districts, it has certainly been a pleasure to find the thoroughness with which the work has been done in certain orchards. One of the best worked orchards in the State is that of Mr. Howard Reed, near Marysville. Mr. Hayward Reed, of Sacramento, has several large blocks of Bartlett pears, aggregating 25,000 trees, which have been very well treated. The work of Mr. Henry Brink, between Vacaville and Winters, has been strictly first-class and is remarkable in that he followed the blight well down onto the roots and eradicated the same after digging away the soil. In the Vacaville district there are a number of very well worked orchards; on the other hand, there are a number of large orchards there containing numerous cases of hold-over blight. Altogether, there is more hold-over blight in the Vacaville district than anywhere else in the State. The large pear district south of Sacramento has had more good work done in a connected series of orchards than elsewhere in the State. Most of the orchards in this district have had each tree inspected by the Government, State and county experts. Certainly more than 90% of the orchards along the river, below Sacramento, have been well handled. Doubtless, nearly as large a per cent of the trees north of Sacramento have had the same careful treatment, but the pear blight experts have not been able to reach them all in the final inspection. Possibly the force of men engaged in this work should be satisfied with the first year's efforts. Pear blight is such a new thing to the California orchardist and to the laborer employed in the orchard that all of us are working at a great disadvantage. A great deal of the time of the men employed has been spent in instruction work and in finding and correcting the mistakes that are made. In the future we hope to have the majority of the California orchardists as experts in pear blight eradication, so that the labor can be properly supervised and instructed. Ultimate success in control or in complete eradication will ultimately depend on the thoroughness, intelligence and skill with which the orchardists themselves carry out this work.

The increased interest that has developed as the campaign proceeded is one of the very satisfactory phases of this work, and gives a hopeful outlook for the future.

The results of this winter's work will begin to appear upon careful examination of the blossom clusters about two weeks after the petals fall. Upon close looking, the shriveled and blighted flower clusters may then be found. By the middle of May the spread of blight in the twigs and branches will have occurred so that no one could fail to observe it.

The amount of blight which spreads from the hold-over, which has either been accidentally missed or carelessly or purposely left in the orchard, can not be predicted. It varies greatly according to the weather conditions. Last year it was much less in the Suisun valley and in the river districts south of Sacramento than elsewhere in the State. It is to be hoped that the spread will be moderate this year and that the results of eradication will show so distinctly that renewed confidence will come to the grower in his fight against this disease.

SPRING AND SUMMER CUTTING.—I have been asked repeatedly during the last few days whether the growers should keep on cutting out blight during the spring and summer. We think it desirable not to attempt eradication of last year's hold-over during the blooming of the pear. It is especially not desirable to dig up the trees which have the blight running down into the roots, as the chances for infection of the blossom will be increased. Cutting out of new blight on the flower clusters and the twigs will do some good, however, depending entirely on the distance below the blight that the cut is made. In winter cutting on the dormant tree, one can cut three to four inches below the disease. In summer cutting, one to two feet on small twigs and even three to four feet on large branches below the slightest discoloration is necessary for success. There are two causes

of failure in summer cutting: First, the failure to get below in all cases the advancing margin of the blight; and, second, the new infections which have not discolored the tips of twigs sufficiently to be seen. These develop a few days after the trees have been gone over into well-marked cases. Summer cutting of blight, therefore, is apt to result in discouragement. Some of the cases are reached and headed off; others are not.

CULTURAL METHODS.—Something can be done toward checking the blight where it appears abundantly in blossom clusters by practicing moderation in the spring and summer cultivation, and even on moist land along the rivers and sloughs by withholding all cultivation. I saw one orchard on the Feather river bottom which made over four feet of growth last year without even plowing.

Where irrigation is used, as in the foothill orchards of Placer county, if blight appears abundantly in a given orchard, the amount of water used should be reduced to the smallest quantity necessary to maintain the health of the trees.

I regret to say that only a few orchards have been thoroughly sprayed with the thickened lime-sulphur-salt wash as recommended. While this is secondary to the main treatment, and does not remove blight from the tree which is sprayed, still it is a very important method of holding the blight in check during the critical blooming period. It is, therefore, worthy of more attention than it has received in this State. It enables the orchardist to temporarily seal up the blight concealed under the rough bark on the bodies of the trees and prevent its getting out on the blossoms.

THE POULTRY YARD.

Crude Oil for Vermin.

W. E. Baumert, of Camp Meeker, writes that while he is not an old poultryman he has found out some things of value, and one is the use of crude oil as a preventive against vermin of all kinds.

Mr. Baumert, says the *Jubilee Poultry Journal*, paints his poultry houses inside and out with a coat of crude oil, and is never troubled for a single moment with mites or lice. When painting the outside of the houses he adds about three pounds of Prince's Brown Metallic to each gallon of crude oil, giving a considerable body to the paint. When shakes are applied to the roofs they are painted on both sides with a good coat of crude oil, with the result that they are pre-

served against the weather, will not warp and curl, and vermin is unknown.

This is not a brand new discovery, it is, however, another witness to the value of crude oil, and it is worth trying, worth a test.

What Is a Reasonable Estimate?

Assuming, says the *Produce Weekly*, that San Francisco holds one-fourth of our population, that its people use \$2,000,000 worth of eggs during the year, and allowing for a smaller use of eggs throughout the country than in the city, probably \$7,500,000 will be a reasonable valuation for the egg production of California. This is conservative figuring, and if we consider that in the county of Sonoma the shipments of eggs to this market aggregate fully \$1,000,000 in value, the remaining 55 counties will produce enough to confirm this estimate. It would not be extravagant to claim \$10,000,000 as the value of all the eggs shipped to market and consumed on the farm and in the homes where poultry is an adjunct.

THE APIARY.

How More Honey Can Mean More Money.

TO THE EDITOR: I notice your little comment on the article which appeared over my signature in the March 3d number of your paper. Yes, I will agree with you that the plea with most bee keepers, not alone in your community, but most everywhere, is for more money rather than more honey. I wonder if you realize just what the trouble is. In my opinion, honey is one of the most neglected food articles now on sale. Statistics show that the consumption of honey does not average one pound per year for each man, woman and child in the United States. What other product as pure and as universally liked as honey is used to this small extent?

The remedy is education. People have been educated to buy crackers in packages rather than in bulk, to buy pickles and fruits in glass rather than in bulk or tin cans, and they can be educated to use pure honey rather than cheap candies, adulterated syrups, etc. Too much sugar is a bad thing for a person to use. Many diseases result. But, who ever heard of a serious ailment being caused by the use of too much honey?

If every man in the United States used one-half

the amount of honey which a railroad engineer living in New York State and his family of four use each year, bee keeping would jump to the rank of poultry raising or some of the other great American agricultural pursuits. The gentleman to whom we refer says that 350 lb. or more of honey each year are required to satisfy the tastes and appetites of his home, and he raises enough more to pay a good share of his living expenses.

My suggestions for increasing the use of honey in any community would be that the local bee keeper give up, say, a very small per cent of his profits for one year for advertising—not necessarily in his local paper or in printing—but in a public demonstration. Let a bee keeper once make a favorable impression on the consumer and get him to use honey more freely for a short time, and the results will be certain. Very few people realize that honey is good for anything beside for spreading on hot biscuits or buckwheat cakes. How many people use honey in baking cake, and in the many ways it can be used to great advantage? The chances are, that not one person out of ten realizes that the use of honey in this way is possible.

Then this is the way in which bee keepers should advertise. Do not the large manufacturing houses, such as the manufacturers of breakfast and food products, constantly strive to bring before the public some new way in which their products can be used? Why does not the bee keeper follow this plan?

One bee keeper of whom we know, told us how he stimulated the sale of honey in his community: He says that he took a gallon can of extracted honey and started to town. The first house that he came to he stopped and asked for a small dish and poured out a liberal sample of honey and invited the housewife to taste it. He left the house with an order for a can. He did not have much trouble in selling all the honey he could possibly produce that season. This was a profitable way in which he advertised.

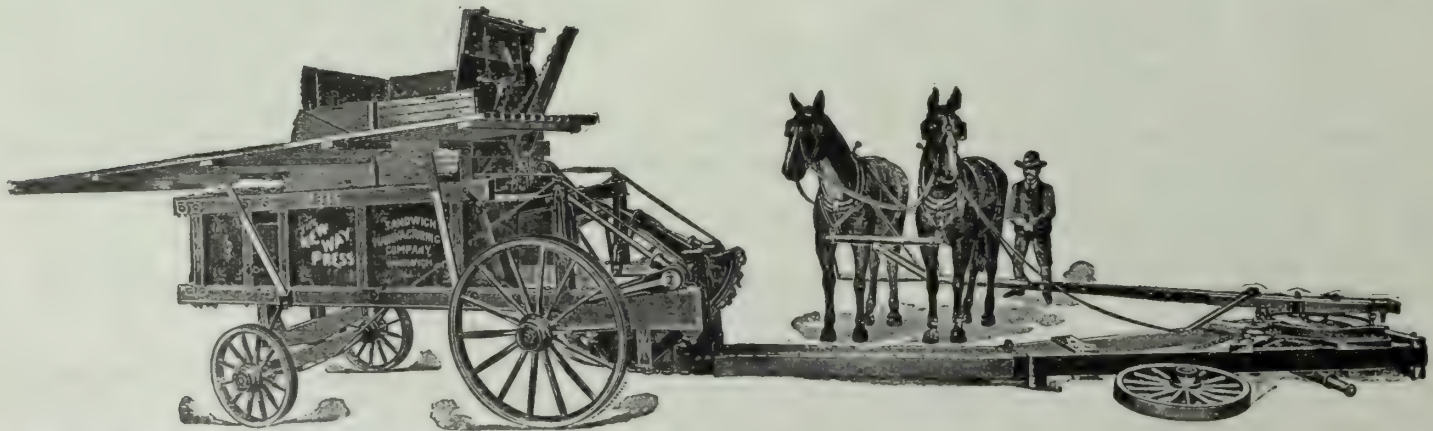
There is no use increasing the supply without increasing the demand, and \$5 out of the \$10 that the bee keeper may contemplate expending to increase his apiary, could probably be used to better advantage if expended to increase his sales. Create a demand, small though it may be, and it will grow. There is no doubt of it and it will soon be felt by its author.

This is a rather lengthy discussion I am afraid, but I sincerely believe the plan which I advocate is a helpful one, and I would be very glad to have you lay it before your readers. Perhaps some suggestions could be gleaned.

Medina, Ohio.

THOMAS P. HALLOCK.

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Agricultural Review.

Fresno.

PACKERS ANSWER.—Fresno *Republican*, March 11: The committee of the Raisin Growers company met yesterday to consider the answer of the Mercantile company to the sweatbox proposition. The Mercantile company declined to consider the proposition, for three reasons: First, because they do not approve of the sliding scale of prices; second, the price is too high; third, they have already submitted a proposition to the growers to buy all goods at 3 cents in the sweatbox, which proposition is open until May 1. If the packers accepted the sliding scale, of course the contracts would be signed and the highest percentage would be obtained. On the other hand, when the packers put 3 cents as the maximum price obtainable, the growers see what they can expect. They see the price that they obtained with an unworkable association is the highest that can be obtained under favorable conditions without an association, and that is a very strong argument for them to sign the sweatbox contracts. The growers will have until April 14 to decide whether to sign the contracts or not.

Kings.

BEE KEEPERS IN SESSION.—Hanford *Sentinel*, March 8: The regular meeting of the Central California Bee Keepers' Association was held March 7 at Hanford. There was a good attendance, and much interest taken in the various subjects.

Los Angeles.

FRUIT GROWERS TAKE ACTION.—Los Angeles Press dispatch to San Jose *Mercury*, March 12: 'Permanent organization to safeguard the fruit industry of California' was the keynote of the convention of fruit growers which assembled at the Chamber of Commerce today. It was a large and representative gathering of the men interested in an industry which annually brings to the State an income of about \$25,000,000. The convention was called to urge the necessity of the passage of a law specifically guaranteeing to shippers the right to route their shipments, a privilege now denied them under a recent decision by the United States Supreme Court, and to urge the necessity for the passage of the Hepburn railroad rate bill now before the Senate.

RANCH SOLD.—*Pomotropic*, March 9: W. J. Cox has sold his 20-acre orange ranch to George A. Colby of Greatfalls, Montana. The consideration named is \$20,000. This is one of the finest orange groves in this part of the State, most of which adjoins the town site of Glendora.

CITRUS UNION ASKS FOR INJUNCTION.—Special correspondence to *Pomona Progress*, March 8: The California Citrus Union yesterday appealed to Judge Jaines of the Superior Court for an injunction restraining W. T. Michael from picking or selling his oranges.

Monterey.

BEEF FOR TOURISTS.—Salinas *Index*, March 15: Armstrong Bros. brought in yesterday from their Buena Vista feeding grounds 216 head of fat steers, mostly three-year-olds, for shipment to the Los Angeles market. They received 4½c. a pound on foot, and the shipment will aggregate in the neighborhood of \$10,000. The cattle were fattened on beet pulp from the Spreckels factory.

Nevada.

FRUIT DAMAGED BY COLD.—Grass Valley special to Sacramento *Bee*, March 13: The county is experiencing the coldest snap of the entire winter. A windstorm swept this place and Nevada City yesterday morning, accompanied by a down-pour of rain. This gave way to snow. Last night a hard freeze set in, coating the snow and mud with ice. In the mountains above here snow has fallen to a depth of several feet. The wind did no great amount of damage, but the cold spell will play havoc with the fruit, as the recent warm weather advanced the buds several weeks. It is feared the loss will be heavy after returns are all in.

Orange.

PEANUT CROP.—Orange correspondence to *Pomona Argus*, March 8: Two hundred and fifty tons is the amount of the county's peanut crop for the year, according to the statement of C. E. Utt, known as "the goober king." Three hundred acres produced the whole crop, of which 80 tons were raised by Mr. Utt on one batch of 100 acres. On account of the damage done to the nuts by early rains, the average price has been only about 4c. per pound. It is Mr. Utt's intention to put out 200 acres to peanuts this coming season. He is now engaged in planting 200 acres to walnuts and apricots in La Habra valley. Peanut planting will not begin until early in May.

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A Safe, Speedy, and Positive Cure

The safest, Best **BLISTER** ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Blemishes from Horses and Cattle. **SUPERSEDES ALL CAUTERY OR FIRING. Impossible to produce scar or blemish.** Every bottle sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars. **THE LAWRENCE-WILLIAMS CO., Cleveland, O.**

Sacramento.

STRAWBERRIES IN WINTER.—Sacramento correspondence to Santa Rosa *Press-Democrat*, March 9: People in this community are amused at the report sent out from San Francisco concerning Southern California strawberries. Strawberries grown in the open fields at Florin, near this city, have been in market all winter, and have been served daily at restaurants and hotels.

NEW QUARANTINE.—The State Board of Horticulture has declared a quarantine against Florida and Louisiana to prevent the importation of any nursery stock from either of these States. A quarantine had previously been placed against any citrus stock from those States, but it has been decided to bar out deciduous stock as well.

COLONISTS WANT LAND.—Sacramento *Union*, March 12: Deputy Secretary of State Hoesch has received a letter from friends in Minnesota who are desirous of settling in this part of the State, and who are looking for one or more tracts of land containing from 4,000 to 5,000 acres each, to be used for colonization purposes, and to be subdivided into ten and twenty-acre tracts. Mr. Hoesch desires to locate these people in Sacramento county if the land can be secured at fair prices.

HURTS ASPARAGUS.—Isleton special to Sacramento *Bee*, March 13: The cold weather is keeping back the asparagus. A large acreage has been planted on all the islands. Growers are not shipping as many boxes as at this date last year. The Pioneer Fruit Company is packing and shipping East by express, and is opening up a new trade East.

San Bernardino.

ORANGE SHIPMENT.—San Bernardino *Sun*: Oranges are shipped at the rate of 125 cars nightly is the statement by the Sante Fe officials. This is the cleaning up of the crop, and from reports it appears that the fruit is in very good condition.

San Joaquin.

TO PLANT GRAPES.—Lodi special to Sacramento *Bee*, March 9: The Lockeford district, seven miles east of Lodi, is to be set out to grapes quite extensively this spring. Over 1,000 acres will be planted to grapes, one-third of which will be of the wine variety and the rest Tokays. This section, bordering on the Mokelumne river, is peculiarly adapted to grape growing. Altogether San Joaquin will plant about 12,000 acres to grapes this year. This large acreage is being set out because last season both table and wine grapes paid handsome returns on the investment.

PAID \$14,700 FOR TWENTY-ONE ACRES.—Lodi *Sentinel*, March 10: One of the best sales in Lodi was consummated by Dr. H. J. Cordier, who arrived here this week from Oakland. The purchase made by this newcomer comprised the 21-acre tract owned by Mrs. Fogazi. Dr. Cordier paid \$700 an acre, or a total of \$14,700 for the property. The land is now planted to vines, but was formerly a vegetable garden. The vines that are now there will be uprooted and the property cut up for town lots and residence sites.

MANTECA FARMERS ORGANIZE.—Lodi *Sentinel*, March 10: About fifty of the farmers in and about Manteca held a meeting there Thursday night and organized the Farmers' Co-operative Meat Company. The purpose of the organization is so to arrange affairs that they can market their stock.

Santa Cruz.

TO FIGHT CODLIN MOTH.—Salinas *Index*, March 8: The Pajaro orchardists are asking the supervisors of Santa Cruz for \$750 to help them fight the codlin moth this year, and are about to ask the supervisors of Monterey county also to stand in. The following named committee has

the matter in charge: H. H. Cowles, G. A. Morehead, J. L. Menasco, C. O. Silliman, M. B. Tuttle, Chester Stow and I. H. Tuttle.

Solano.

CANNERY WILL OPEN.—Rio Vista special to Sacramento *Bee*, March 8: The Rio Vista Cannery & Packing Co. will be put in operation again this season. This cannery was built two years ago and represents an investment of about \$50,000. It is one of the best fitted-up small canneries in the State, having the latest improved machinery. The cannery was closed for the season of 1905, but this year a profitable run is assured. The present directors have arranged to can little beside asparagus. They have contracted for a good supply of 'grass.'

Sonoma.

POULTRYMEN MET.—Petaluma *Courier*, March 14: The Petaluma poultrymen met today. Chairman C. D. Grover presided. A committee was appointed to fix the standard for eggs in regard to size, weight, etc. Three papers were read on the subject of caring for and feeding chicks.

Sutter.

PLANT TOMATOES.—Yuba City correspondence to Marysville *Appeal*, March 12: F. W. Johnson and R. W. Skinner have leased 65 acres of bottom land south of this city, which will be planted to tomatoes this spring for the Sutter Preserving Company's plant.

Yolo.

SUGAR EXPERIMENTS.—Yolo *Mail*, March 9: George Gray, agricultural agent of the Alvarado Sugar Refinery, is in the city conferring with his local agents, with regard to making experiments with sugar beets in this county. About 10 acres of the Haley ranch at Davisville will be planted to the beets, and Mr. Gray visited the Bower ranch at Yolo Wednesday, where a quantity of beets will be planted. Mr. Gray will visit the Madison neighborhood today with a view to securing the co-operation of ranchers in that vicinity. The sugar company pays all the costs of seeding, and Mr. Gray hopes

Sharples

TUBULAR CREAM SEPARATORS

21 POUNDS MORE BUTTER PER WEEK

Barnesville, Ohio, June 20, 1905: We were milking ten cows May 19. That day we took a Tubular separator for trial. We used it one week and got 86 pounds of butter that week. The week before we used it, we got only 65 pounds. The week after the agent took it away we got only 64 pounds. We felt we ought to have it. Later we arranged to buy it. We recommend the Tubular to anyone interested in cows. It surely will pay any one to buy a Tubular. (Signed) LONA and C. W. ACTON. Write for catalog Y-131. It explains fully.

THE SHARPLES SEPARATOR CO.
WEST CHESTER, PA.
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9 CORDS IN 10 HOURS

RUNS EASY
No Backache

SAWS DOWN TREES

EASILY CARRIED
weighs only 41 lbs.

BY ONE MAN, with the FOLDING SAWING MACHINE. It saws down trees. Folds like a pocket knife. Saws any kind of timber on any kind of ground. One man can saw more timber with it than 2 men in any other way, and do it easier. Send for FREE illustrated catalog, showing latest IMPROVEMENTS and testimonials from thousands. First order secures agency. Address FOLDING SAWING MACHINE CO., 158-164 E. Harrison Street, Chicago, Illinois.

to interest a number of Yolo county farmers.

TO TEST IMPORTED GRAPES.—Yolo *Mail*, March 13: F. Bioletti of the University of California was in Woodland Friday making arrangements with I. Blowers for planting some imported grapevines. Mr. Bioletti has received about 40 or 50 imported samples, most of them from France, and a test will be made of their practical value in this country.

NOTICE

We have purchased the business of **G. G. WICKSON & CO.** at San Francisco, Los Angeles and Portland, closing the Wickson stores at San Francisco and Portland. We will continue the business at

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carrying a complete stock, thus affording the creamerymen and dairymen of Southern California and Arizona the advantages of a first-class supply house.

All accounts owing to and by G. G. Wickson & Co. will be collected and settled by G. G. Wickson, who will have office at our San Francisco house. We solicit the trade and desire to merit a continuance of the business of all former customers of Wickson & Co.

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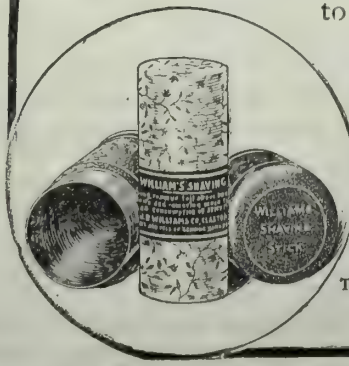
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The Home Circle.

Rabbi Ben-Hissar.

Rabbi Ben-Hissar rode one day Beyond the city gates. His way Lay toward a spot where his own hand Had buried deep within the sand A treasure vast of gems and gold He dared not trust to man to hold.

But riding in the failing light, A pallid figure met his sight— An awful shape—he knew full well 'Twas the great Angel Azrael. The dreadful presence froze his breath; He waited tremblingly for death.

"Fear not!" the Angel said: "I bear A message. Rabbi Ben-Hissar, One thing the Lord hath asked of thee To prove thy love and loyalty. Therefore now I am come to bring The rarest jewel to thy King."

Rabbi Ben-Hissar bowed his head. "All that I have is his!" he said. The Angel vanished. All that day He rode upon his lonely way Wondering much what precious stone God would have chosen for His own. But when he reached the spot, he found No other hand had touched the ground.

Rabbi Ben-Hissar looked and sighed. "It was a dream!" he sadly cried. "I thought that God would deign to take Of my poor store for His dear sake. But 'twas a dream! My brightest gem Would have no luster meet for Him!"

Slowly he turned and took his way Back to the vale where the city lay. The path was long, but when he came Unto the street which bore his name He saw his house stand dark and drear, No voice of welcome, none of cheer.

He entered and saw what the Lord had done.

Lo! Death had stricken his only son! Clay he lay, in the darkened hall, On the stolid bier, with the funeral pall. The pale death-angel Azrael Had chosen a jewel that pleased him well.

Rabbi Ben-Hissar bent his head. "I thank thee, Lord," was all he said.

—New York Press.

Apple Blossoms.

No kind fate intervened to warn her as he came into the room, quick and eager, and she went to meet him with outstretched hands and shining eyes.

"I am so glad for you," she said impulsively, giving him her hands. "Don't try to pretend that you are not proud of yourself, for of course you are. We bought every one of the evening papers and pored over them until I, for one, am positively overcome with awe when I consider 'that rising young architect, Richard C. Doane.'" And she swept him a low courtesy. "And fame sat lightly on his brow," she quoted, teasingly.

"But she isn't sitting there yet," he laughed, retaining the slender fingers and holding them tightly in his own. "This is only the beginning. There's plenty of hard work ahead."

"You are sure to succeed," she interrupted softly.

"I can only hope so," he returned. "I have worked hard for it and I feel that it is in line with my other work. Yes," he went on, thoughtfully, "I think we shall succeed."

"And then?" she asked.

His face was very bright and eager, and she found, to her consternation, that the color flooded her cheeks as her eyes met his. Embarrassed, she picked up a spray of apple blossom lying on the table. She walked over to the fireplace, drawing the pink and white petals nervously through her fingers. He followed her and stood with one arm resting on the mantel.

"I wonder," he said in a voice he tried in vain to steady, "if I dare to unfold the rest of my aspirations."

"Why not?" she replied, trying to speak easily. "You know I care very much for whatever concerns you." Under the circumstances this was about as unfortunate a remark as she could well have made.

Reassured, he came closer. "Like all well regulated aspirations," he said, with embarrassed hesitancy, "they are inspired by one governing idea"—He broke off abruptly and, with a quick step toward her, took her hands in his. His embarrassment had gone and his eyes were very tender. "Surely you know, Catherine, sweetheart," he whispered unsteadily, "surely you know."

For a moment her heart seemed to stop, then with all her strength of will she pushed him from her. "No, no, Richard, I cannot," she whispered brokenly. "I have promised, I cannot."

"Promised what, sweetheart?" he asked, puzzled by this sudden change.

"You know, we have seen a great deal of Mr. Channing lately," she went on unsteadily. "He is often here and is always sending us things—books, games, flowers. Every day something comes either for mother or me. Usually for mother, though—so I never dreamed—he is so much older!"

"Today," she went on, a mournful little catch in her voice, "his man brought those." She nodded toward a curiously wrought bowl on the table, where, massed in sweet profusion, a wealth of apple blossoms overflowed, pink and white and fragrant with faint perfume. "And this," she walked to the desk and, picking up a note, held it out to him.

Mechanically he took it. "Dearest of all women," it began—and he read it to the end.

His face went suddenly white.

"Catherine, surely you will not marry this man?" he demanded hoarsely.

She covered her face with her hands. "I have promised," she moaned.

"Promised! He doesn't even ask for your answer until to-morrow night."

"I have promised mother," she explained with gentle dignity. "There are business reasons I cannot explain. He was very kind three years ago when father died. We owe it to him to do anything we can."

"It is absurd! Quixotic! The man is three times your age," he returned hotly. Then his voice changed and he took the slender hands in his. "Surely you will not do this thing—let me talk to your mother," he pleaded gently.

"Mother must not know," she said. "Had you seen the distress in mother's face you would know I must do it," she continued. "Don't you understand?" she ended plaintively.

"No, I don't," he answered grimly, "but I do understand that John Channing is worth a couple of millions. Women are all alike," he went on, with sudden bitterness. "It's never what a man is, but what he has that tips the scale. Love cannot compete with Bradstreet. I've been the usual kind of a fool, I suppose," he ended, with a bitter laugh.

If he had taken her in his arms, then and there, it would have ended differently, but he was very young and very proud, and very unhappy, and thought it was a manly thing not to show how much he cared. Or if she had let him see that he was dearer than any other man, millions or no millions, he would not have gone, but she, too, was young and proud.

So, hurt and angry, he had gone, and she stood where he had left her. She wanted him to go, of course, but it was hard to have him leave like that. She sank into a chair and leaned her soft, bare arms on the table. The bright, fair head drooped slowly until it rested against them, and the fire light threw fitful, golden shadows on the white folds of her gown and quivered fantastically on the mass of fragrant blossoms over her bowed head.

The dance at the Venter Country Club was in full swing. Lights were blazing; the sound of violins came through the open windows. Inside, the fifth dance was well under way, and a distracted, disheveled young man sought frantically for a tall, golden-haired girl in a thin, white gown.

Meanwhile the owner of the white gown and golden hair had slipped away—away from the lights and music and confusion—away from the vision of a stern, gray-haired man which had suddenly confronted her—and stood on the wide, moonlit porch outside, alone in the sweet-scented dusk.

"You are so silly to act like this," she argued with herself. "He isn't going to hurt you, is he? It doesn't help it any to stay out here and be a coward. Go back. You said you'd do it. Go back." Then she drew closer into the friendly shadows and laid her hot cheek against the cool leaves. "Richard, Richard, dear," she repeated softly.

Inside, the dance had ended. The music stopped with a crash; the dancers scattered in little groups, and the erstwhile distracted young man found evident consolation in the society of a plump little brunette, who showed no inclination to elude him.

Two persons who had been watching the dancers detached themselves from the crowd and came toward her along the moonlit porch; her mother, pretty, graceful, looking singularly young as the moonlight touched her flushed and—yes—laughing face. There was no doubt about John Channing's mirth; he was laughing heartily.

"He certainly said 'For Miss Page,'" "How could I know?" she heard her mother, smilingly, protest. And then, "He probably lost the card—my stupidity! Served me right for being afraid to speak," in John Channing's lower amused voice. As they neared the shadow in which Catherine stood he turned and taking her mother's hand in his, lifted it to his lips. His stern face softened as she had not dreamed John Channing's face could soften, and there was a newly tender note in his voice. "As though," he said softly, "there could be any other woman in the world for me but you."

Swiftly, noiselessly, Catherine turned and fled; around the clubhouse, across the porch, down the steps, into the moonlit garden, conscious only of divine relief. Then as the absurdity of the thing came over her there came with it an uncontrollable desire to laugh. On and on she ran, struggling with subdued laughter, down the path, away from the lights and noise and people—and almost into the arms of a young man who turned sharply around a corner.

"I beg your pardon," he began politely, then stopped short, staring at the laughing face so near his own.

She held out her hands with a little cry of delight that gladdened his heart; to save her life she could not have spoken.

For a moment his eyes searched hers; then his face cleared as if by magic. He wasted no time in explanations, which could be deferred to a more appropriate season, but proceeded promptly to take the lovely, laughing vision in his arms.—Margaret Richards.

Fashion Notes.

NECKWEAR.—The tailor-made girl has everything her own way this season. Blouses and shirts on the most approved mannish lines are to be prominent in the summer wardrobe. In no wise is this tendency toward simplicity so noticeable as in the new neckwear. The lace stock with ribbon and frills of a season or two back is distinctly passe. To be quite up-to-date you must wear linen of good, stout quality, made up into ascots, four-in-hands, or even bands running around the neck with stitched strips buttoned on at the front and extending down the shirt waist plait. Embroidery plays a large part in the finishing of these stocks. The wonder of it is that French knots, dots and even sprigs of flowers do not take away from the strictly tailor-made effect. This is largely due to the faultlessness of the fitting and the crispness of the linen; a good quality of linen sheeting, or butchers' linen, often being used for the entire stock. Again pique enters into the make-up of the collar proper with tie ends of the smooth linen. But as regards embroidery: Imagine sprays of forget-me-nots, corn flowers, or even violets with appropriate green leaves, embroidered upon your tailor-made stock; one spray directly under your chin, two others upon the tie ends! Yet the smartest stocks display just such startling innovations. And the flower sprays are in color, too. It will be quite the proper thing to match the flower on your stock with the flowers on your shirt waist, or the color of your jacket suit. So, before you get out your embroidery hoop and silks, decide upon the color of your runabout frock.

If you are an athletic girl you can have embroidered stocks as well. The girl who yachts, or swims, or golfs will, this summer, be identified by the emblems which she wears upon her stock. The yachting symbols are most effective. A wheel in dull blue underneath the chin with tie ends decorated with anchor and star in old red sounds a bit unusual, but that is what makes the combination smart. Tennis racquets, golf sticks, oars, are embroidered upon stocks intended to be worn with shirts unbuttoned, untrimmed, and fitted with a jaunty pocket. Even the unassuming business woman with no outdoor fads can have embroidery upon her stock and very effective bits, too. One of the handsomest stocks seen was a short ascot with square ends decorated with graduated dots of black and white. The dots were large at the bottom of the tie, running to the size of a pinhead three inches up. Each line of dots was either white or black, not mixed, and the black rows were shorter than the white.

The girl with no taste for embroidery need not be discouraged. There are the plain white ascots, short, with square ends. The latter, by the way, are newer than the points. The stocks are held in place by a pearl pin, and are decidedly chic. There are fat bow ties of linen adorned, four-in-hands, which tie beautifully, and innumerable stocks with buttoned ends, some of them with a line of French dots to mark the middle.

There are so many styles that all can be suited and the successful wearer of stocks will have a supply large enough to war-

rant a fresh one at the least show of soil. Their immaculateness is their chief charm after all.

Baby's Wardrobe.

Today, if we are abreast of our times, we dress the baby primarily for health and comfort, secondarily for looks. Our grandmothers reversed that order. That might seem like a libel on our grandmothers, but if you doubt the statement look at the baby dresses of two generations ago preserved in your attic or that of your neighbors. Low-necked and sleeveless linen shirts were placed next to the skin; low-necked and very short-sleeved muslin dresses, not for August days alone, but for all the year. The finest of materials were used, with beautiful handwork in tucking and embroidery, as a matter of course.

Unhappily for our babies, many mothers of today, although they strive to keep up to date with their art clubs and their reading circles, and possibly even their so-called 'Mother's Club,' are yet content to follow their grandmothers and great-grandmothers in the care and clothing of baby. To be sure, the low-necked dresses are now seen only in the hot weather, but the old idea remains—how will baby look in the clothes, not how will he feel?

No garment shows the change from the methods of olden time more than the 'band.' This, in our grandmothers' day, consisted of a strip of flannel five or six inches wide and long enough to go several times around the baby. It was put on just as tight as the mother could pull it and securely pinned. Its object was primarily to prevent rupture, secondarily to keep the abdomen warm. A better instrument to frustrate its own purpose and torture the helpless baby could scarcely be devised. Imagine such a band wound many times tightly about your own body—not straight and smooth, but in a mass of wrinkles, upon which you are obliged to lie, and often in the same position for hours at a time. Every mother knows that it is impossible to pin such a band so that it will remain in place. Examine it an hour after it is put on, and you will find it tight in one place and loose in another, crowding the tender little organs out of their natural position, and making rupture far more probable than if the body were naked. Today the up-to-date mother discards this flannel strip for the woven band, which clings and does not bind.

Make the woolen garments without hems at the wrists or arm-holes. Finish the raw edge with silk buttonholing, the stitches about one-eighth of an inch apart. This is softer than the hem, and much softer than the closely buttonholed scalloping, which is pretty, but makes a hard ridge around baby's neck.

Open all seams on the woolen garments and fasten them flat, for baby should spend most of his long-clothes period lying down, and he wants no hard seams to lie on. It is not necessary to burden him with extra skirts. One flannel skirt—or two at most—and no white skirts, are sufficient. And all skirts should not be more than twelve inches below his feet. The freer those little limbs can be the better.

Slips should be very plain. It is considered 'proper' nowadays, and the time and money saved in material, making and laundry, would be much more beneficial to baby if used in other ways.

For ease in dressing the baby, there should be a long opening in the back of the dress, and the sleeves large at the wrist. A plain coat-sleeve is more easily put on than a full sleeve gathered into a small wristband.

If the season is warm, leave the little feet bare. For the fall and winter, white woolen stockings are best, fastened at the knees to the diaper. Pin both folds of the diaper from over and from under the leg, thus making a snug little drawer-leg. When babies are six or seven months old put them into pajamas with drawers buttoned on to the waists.

Chaff.

He—Your sister has a face like a cherub. She—The idea! You never saw any cherub's face but a painted one.

"Did the doctor say you had a tobacco heart, dear?" "No; he examined one of those cigars you gave me and said I had perhaps been poisoned by a cabbage snake."

"My wife," he said proudly, "has been known as the queen of hearts." "No doubt," they answered, "it was because she took the knave."

Mother—Willie, who gave you that apple? Willie—Mabel Jones. Mother—And what did you say to her? Willie—I told her to shut up her crying.

Domestic Hints.

RICE MUFFINS.—Beat one egg, add one cup of milk, one cup of cold boiled rice, one cup of flour sifted with two level teaspoons of baking powder, a pinch of salt and one tablespoon of melted butter. Bake in hot well-greased iron gem pans.

SOUTHERN SALAD.—Remove the seeds from bell peppers, chop together two pods, three ripe tomatoes and two cucumbers. Lay on a platter covered with crisp lettuce, chill and pour over it the juice of a lemon and three tablespoonfuls of olive oil.

LEMON MINCEMEAT.—Six large lemons, juice and the grated yellow rind; to this are added two pounds each of chopped apples, seeded raisins, currants and sugar; a pound and a half of beef suet chopped fine and a quarter pound of candied lemons; orange and citron.

DUMPLINGS FOR STEW.—Mix and sift one pint of flour, two teaspoons baking powder, one-half teaspoon salt. Mix to soft dough, with milk. Turn on board, roll out one inch thick, cut in small circles. Roll each in flour, drop on top of simmering stew. Cook twenty minutes.

LEMON BUTTER-SCOTCH.—Boil a gill of water, a tablespoonful of vinegar and a heaping cup of brown sugar for ten minutes, then stir in a heaping tablespoonful of butter. Cook until it hardens in cold water, take from the fire, add the juice of a lemon and pour into shallow, well greased pans.

APPLE PUFFS.—Chop four sour apples very fine, stir into them one beaten egg, one-fourth cupful molasses, a cupful and a half of cornmeal, the same amount of sifted flour and half a teaspoonful of salt; dissolve half a teaspoonful of soda in warm water and add it, using enough water to make a thin batter. Bake in buttered cups in a quick oven.

STUFFED MACKEREL.—Split fish, clean and remove head and tail; stuff and sew up in the usual way, sprinkle with salt and pepper and dot over with bits of pork; lay in buttered dripping pan, adding a few pieces of pork and a small quantity of hot water. Bake about twenty-five minutes in a hot oven, basting frequently. This is easy to prepare and will go farther than broiled mackerel.

POUND CAKE.—Six ounces of butter, one-half pound sugar, four eggs, ten ounces of flour, one teaspoon baking powder sifted with flour. Beat butter to a smooth cream, add sugar, beating very light. Now add eggs one at a time, beating thoroughly between each time. Add flavoring (lemon and a little mace), and mix the flour in lightly. Bake in loaf pans in moderate oven.

LIMA BEANS.—Soak two cups of Lima beans over night, drain and cover with fresh water. Two hours before needed drain and cover with boiling water; cook half an hour, drain again and cover with boiling water with a speck of soda and cook slowly until tender. Drain, add salt and pepper, two level tablespoons each of butter and flour and one cup of cream. Let boil up once, then serve.

CREAM PIE.—Mix thoroughly two cups of flour and five tablespoonfuls of butter, then add three tablespoonfuls of sugar and one large egg, which has been thoroughly beaten together previously. Roll an eighth of an inch thick, line two pie tins, prick with a fork and bake a pale brown, then fill with this cream: Two cups milk, two tablespoonfuls of cornstarch, five tablespoonfuls of sugar, yolks of five eggs. Cook together like custard, and when cold cover with meringue made of whites of five eggs and five tablespoons powdered sugar.

MACARONI A LA NEAPOLITAINE.—Into a fish kettle or asparagus boiler half full of boiling water lay a half pound of unbroken macaroni. Boil until tender, adding a little salt to the water. Drain the water from the macaroni and slip this out upon a hot platter. Keep hot in the open oven while you cook together two tablespoonfuls of butter, one of flour and, when these are thick, two cups of tomato juice. Stir to a smooth sauce, season with salt, pepper and onion juice and stir in four heaping tablespoonfuls of Parmesan cheese. Pour this over the macaroni on the platter and serve.

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Hints to Housekeepers.

Electricity, properly applied, is an excellent stimulant to the hair.

The contents of a fruit-tin which shows a bulge should never be used.

Lemon juice and brandy, equal parts, will fade tan, if used patiently.

Dishes which are to be frozen need an extra amount of sweetening.

When soaking beans, a tiny pinch of soda in the water will be an improvement.

An open box of fresh lime placed in a damp cellar makes the air purer and drier.

When iron begins to lack smoothness apply salt, wipe, add a bit of beeswax and wipe again.

If soot is dropped on a carpet, throw down an equal quantity of salt and sweep all off together.

Moles and warts must be destroyed. They cannot be made to disappear by internal treatment.

A small portion of orris root put into the ordinary washing water will impart a delicate perfume to the clothes.

Moles are a soft growth, warts are hard—they cannot be treated alike. Sometimes it is difficult to say which a given spot is.

To keep the color of parsley, dip it for a minute or two in boiling water, then shake off the water and chop fine for soup or sauce.

Falling hair is a symptom, not a disease. Look for the cause and remove it. This may be local, but it is more likely to be internal.

Two potatoes grated in a basin of warm water will give better results than soap in washing delicate flannel or woolen goods, ribbons, etc.

Too much dependence is placed on hair tonics. They have their place, but it is a limited one, and no one hair tonic could possibly fit all cases.

It is better to steam green cabbage, cauliflower and the like. A sprinkling of salt should be applied to the vegetables before they are put into the steamer.

Good macaroni is of a yellowish color; it does not break in cooking, and if properly cooked yields nearly four times its bulk. It should never be soaked or wet before boiling, or put to cook in cold or lukewarm water. If it appears soiled or dusty before cooking, wipe each stick with a clean cloth, then break and drop into boiling water.

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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, March 21, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday.....	77 1/4 @ 76 1/2	77 1/4 @ 76 1/2
Thursday.....	78 1/4 @ 77 1/2	78 1/4 @ 77 1/2
Friday.....	78 1/4 @ 77 1/2	78 1/4 @ 77 1/2
Saturday.....	78 1/4 @ 77 1/2	78 1/4 @ 77 1/2
Monday.....	78 1/4 @ 77 1/2	78 1/4 @ 77 1/2
Tuesday.....	78 1/4 @ 77 1/2	78 1/4 @ 77 1/2

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday.....	43 1/4 @ 42 1/2	43 1/4 @ 42 1/2
Thursday.....	43 1/4 @ 42 1/2	43 1/4 @ 42 1/2
Friday.....	43 1/4 @ 42 1/2	43 1/4 @ 42 1/2
Saturday.....	43 1/4 @ 42 1/2	43 1/4 @ 42 1/2
Monday.....	43 1/4 @ 42 1/2	43 1/4 @ 42 1/2
Tuesday.....	43 1/4 @ 42 1/2	43 1/4 @ 42 1/2

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	May, 1906.	Dec., 1906.
Wednesday.....	1 26 1/4 @ 1 26	1 27 @ 1 27
Thursday.....	1 26 1/4 @ 1 26	1 27 @ 1 27
Friday.....	1 26 1/4 @ 1 26	1 27 @ 1 27
Saturday.....	1 26 1/4 @ 1 26	1 27 @ 1 27
Monday.....	1 26 1/4 @ 1 26	1 27 @ 1 27
Tuesday.....	1 26 1/4 @ 1 26	1 27 @ 1 27

Wheat.

The local wheat market continues very dull. Holders are inclined rather to await development than to sell at present low prices, and while there is little demand and almost no activity, prices have ruled steady during the last week. It was thought that the recent decline would cause a better demand for wheat, but that has not been the case as yet. European markets continue very quiet, and the trend of values is in favor of European buyers; but buying is limited and spasmodic. Australian wheat seems to be coming more into favor at the lower range of values. It is now come to be the general feeling that an advance is not soon to be expected. Advices from the north say that the foreign demand has not improved by the reduced quotations, and buyers are firm in the belief that a further decline is necessary before trading will start up enough to raise prices. Some authorities, however, are not expecting the market to go lower before a reaction sets in. Their belief is based on a knowledge that a long, dull period is inevitably followed by a reaction, and in the absence of any very good reason for the present inactivity, they believe that the market need only be started up again to resume its former activity. Meanwhile, there remains the possibility of political complications or of crop damage. There have been a few reports circulated during the last week concerning crop damage. One dispatch has it that 100,000 acres of winter wheat near Eureka Flat, Wash., has been greatly damaged, if not killed, by a severe storm that raged there during the early part of the week. Other advices state that low-lying districts in California have been flooded and greatly damaged during the last few days. However, these reports do not find great credence among wheat traders, who generally believe that only some very unusual development in the growing crop could affect the market at this early date, and that May and June are better months to make predictions.

California Milling.....	1 32 1/4 @ 1 35
Cal. No. 1 shipping.....	1 27 1/4 @ 1 30
Northern Club.....	1 30 @ 1 32 1/4
Northern Bluestem.....	1 33 1/4 @ 1 36 1/4
Northern Red.....	1 25 @ 1 27 1/4

PRICES OF FUTURES.

Tuesday, at the forenoon session of Exchange Dec., 1906, wheat ranged from \$1.26 @—.

Flour.

There have been no new developments in the flour market during the last week. If there is any change it is that the market is a little weaker. Local prices have not changed, but flour is quoted at a fractional decline in the north. Some of the largest millers expect that the market will shortly improve. This opinion they deduce from the fact that there is always a little increased activity in the spring and also that stocks of flour in the Orient are reported to be dwindling down pretty low. This report is strengthened by the receipt of numerous inquiries by northern millers from the Orient. However, these inquiries have offered prices which millers would not consider. None of the other foreign points which are usually expected to consume our surplus has shown any improvement and nothing has happened to lend encouragement.

Patents, California.....	4 85 @
Second Patents, California.....	4 60 @
Straights.....	4 25 @
Superfine No. 1.....	3 50 @ 3 75
Superfine No. 2.....	3 00 @ 3 40
Oregon Bakers'.....	4 50 @ 4 35
Washington Bakers'.....	4 00 @ 4 40
Eastern Patents.....	5 50 @

Barley.

A slight advance in No. 1 feed barley is

noted this week. However, there is very little activity in barley at present. There is only a small demand, notwithstanding that supplies are running low. It is estimated that not more than 75,000 tons remain in the State, and that at the present rate of consumption the stock will be cleaned up by the arrival of the new crop. It is reported that not more than 6,500 tons remain in city warehouses, 3,000 tons in Port Costa and about 7,000 tons in Stockton. Holders, however, are not disposed to expect higher prices on account of the limited demand. In the north, barley has been greatly relieved by the use of corn, which is proving a good substitute.

Brewing.....	1 25 @ 1 27 1/2
Feed, No. 1.....	1 20 @ 1 21 1/2
Feed, fair to good.....	1 15 @ 1 17 1/2
Chevalier, No. 1 to choice.....	1 30 @ 1 35
Chevalier, common to fair.....	1 20 @ 1 25
December.....	90 @

Oats.

The market in oats remains unchanged, supplies are low, but the demand is not great, and it is not likely that anything will occur that will change the market in the near future. It has been estimated that the acreage of oats this year will be up to the usual standard.

White oats.....	1 50 @ 1 05
Black oats.....	1 30 @ 1 75
Red oats.....	1 45 @ 1 70

Corn.

Corn remains steady at the advanced prices last quoted. There seems to be, however, no disposition to raise the market beyond its present level. The use of corn in the North is a growing feature of the market, and it promises to be an important one, as it seems to be meeting with good satisfaction.

Large White, good to choice.....	1 20 @ 1 25
Large Yellow.....	1 20 @ 1 25
Small Yellow.....	1 50 @ 1 55
Egyptian White.....	1 38 1/4 @ 1 40
Egyptian Brown.....	1 27 1/4 @ 1 35
Kafir.....	1 30 @ 1 40

Rye.

The rye market does not receive any attention at present. Little if any movement is noticeable in this commodity. Supplies are low and the demand is weak.

Good to choice.....	1 50 @ 1 55
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Buckwheat.

Quotations on buckwheat are nominal. In the absence of any new feature, the usual limited demand has been unable to make any noticeable change in prices.

Good to choice.....	1 50 @ 1 65
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Beans.

The bean market remains dull under a limited demand. The Eastern market is slow and dealers do not expect further orders from that locality, at least for the present. Limas, pinks and large whites have declined a trifle during the last week. The local movement, however, is fairly good, but supplies are in excess. Advices from the south state that the usual acreage is going in.

Small White, good to choice.....	2 90 @ 3 25
Large White.....	2 25 @ 2 50
Pinks.....	1 65 @ 1 90
Pinks, damaged.....	1 00 @ 1 25
Bayos, good to choice.....	3 30 @ 3 60
Red Kidneys.....	3 50 @ 3 75
Reds.....	3 00 @ 3 25
Limas, good to choice.....	4 50 @ 4 65
Black-eye Beans.....	4 25 @ 4 50
Cranberry.....	3 30 @ 3 35
Garbanzas, small.....	3 10 @ 3 25
Garbanzas, large.....	3 50 @ 3 85
Horsebeans.....	1 25 @ 1 50

Dried Peas.

Dried peas remain strong at the prices last quoted. Supplies are becoming smaller, and a firm market with an upward tendency is the prospect.

Green Peas, California.....	2 15 @ 2 50
Niles.....	1 90 @ 2 25

Hops.

The hop market is very quiet. Scarcely any demand exists at the present time, as brewers are nearly all supplied for present needs, and are not disposed to lay in stocks for future requirements. Many growers around Sacramento are still holding to their hops, but it is said to be poor quality holdings.

Medium to fair.....	5 @ 6
Good brewing.....	6 @ 7
Prime.....	7 @ 8
Prime to choice.....	8 @ 9

Wool.

Rainy weather has put a stop to shearing and trading in spring wool has also been suspended to a certain extent on this account. The market has consequently been dull, but dealers anticipate a very good market for spring wool as soon as the weather clears.

Humboldt and Mendocino.....	15 @ 16 1/2
Northern, free.....	14 1/2 @ 16
Northern, defective.....	11 @ 13
Middle County, free.....	10 @ 14
Middle County, defective.....	8 @ 10
San Joaquin and Southern, free.....	5 @ 10
San Joaquin and Southern, defective.....	7 @ 9

SPRING.

Oregon, valley.....	23 @ 25
Eastern Oregon.....	15 @ 17

Nevada.....	15 @ 19
Southern.....	12 @ 15
Middle County.....	15 @ 17
Northern free.....	17 @ 21

Hay and Straw.

There has been some little diminution in hay shipments during the past week, the total arrivals being 3,000 tons, as compared with 3,550 for the preceding week. The situation has remained strong in spite of good crop prospects, and at the moment matters are in a very satisfactory condition for all concerned. Prices are not high for the consumer, and yet most grades are selling on a paying basis for the producer. It looks as though there would be no great surplus of hay to be carried over into the next season, and with the present good outlook for the growing crop there is no complaint that could be made. The choicer grades of hay have not been very much in evidence during the past few weeks, yet during the last day or two offerings in this line have been ample for all demands, and prices have been well maintained. Alfalfa is in light but ample supply and, with the decrease in shipments, there has been no decline in prices. Because of the plentiful supply of grass stock hay is in lighter demand, but holds its own at the old figures. Straw is dull and neglected, there being a growing tendency for consumers to use cheap hay instead of straw for bedding.

Wheat, choice.....	14 00 @ 16 00
Wheat, other grades.....	8 00 @ 13 50
Wheat and Oat.....	8 50 @ 12 00
Tame Oat, fair to choice.....	8 00 @ 12 00
Wild Oat.....	8 00 @ 9 50
Barley.....	7 00 @ 9 50
Alfalfa.....	9 00 @ 11 50
Stock hay.....	7 50 @ 8 50
Straw, 3 bales.....	30 @ 50

Millstuffs.

Bran, this week, has suffered a further decline and is now quoted at \$18 to \$19 per ton. Other millstuffs are weak, owing to a rapidly decreasing demand. Middlings is also quoted at a decline of \$1 and more.

Alfalfa Meal, 1 ton.....	21 00 @ 22 00
Bran, 1 ton.....	18 00 @ 19 00
Middlings.....	25 00 @ 28 00
Shorts, Oregon.....	20 00 @ 21 00
Barley, Rolled, choice.....	25 50 @ 26 00
Cornmeal.....	27 50 @ 28 50
Cracked Corn.....	28 00 @ 29 00
Oilcake Meal.....	39 00 @ 40 00
Cocoanut cake or meal.....	24 50 @ 25 50

Seeds.

The seed market is dull. There has been no change in quotations, notwithstanding the very limited demand. Rainy weather prevents planters from working, and consequently there is little movement in seeds. A week of bright weather at this time would greatly affect the activity in seeds. However, it is considered that the planting season is getting pretty well along, and, with a continuance of the rains, the expected demand may not materialize.

Alfalfa.....	12 50 @ 13 00
Flax.....	3 25 @ 3 50
Mustard, Yellow.....	3 75 @ 4 25
Mustard, Trieste.....	4 50 @ 4 75
Canary.....	6 @ 8 1/2
Rape.....	2 1/2 @ 3 1/2
Hemp.....	5 1/2 @ 6
Timothy.....	5 1/2 @ 6

Honey.

Very little honey is being received at present on the market. Rainy weather has prevented bee men from telling what the season's product will be, and, if it continues, is apt to affect the output by preventing the bees from working.

Extracted, Water White.....	4 1/2 @ 5
Extracted, White.....	4 @ 4 1/2
Extracted, Light Amber.....	3 1/2 @ 4
Extracted, Amber.....	3 @ 3 1/2
Extracted, Dark Amber.....	2 1/2 @ 3
Extracted, Hawaiian.....	2 1/2 @ 3
White Comb, 1-frames.....	10 @ 12 1/2
Amber Comb.....	9 @ 10

Beeswax.

There is no change in the beeswax market. Although there seems to be a very limited amount on hand, there has been no change in prices, as there is little inquiry for it.

Good to choice, light 1/2 lb.....	27 @ 28
Dark.....	25 @ 26

Live Stock and Meats.

The meat market is in general strong and sustained. Beef has weakened a half cent, but other varieties have remained at the last quoted prices or have advanced. Hogs continue to be very scarce and no packing is going on at present. The quotations on hogs have advanced to from 6 1/2 to 7 1/2 c. per pound. Heavy hogs are scarcely seen and 125 lb. is now considered the top weight for the small class. Veal is considered a trifle easier and is quoted now at 8 cents.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net 1/2 lb.....	6 @ 6 1/2
Beef, 2nd quality.....	5 1/2 @ 6

Beef, 3rd quality.....	4 1/2 @ 5
Mutton—ewes, 9 @ 100; wethers.....	11 @ 12
Hogs, hard grain, 150 to 250 lbs.....	7 @ 7 1/2
Hogs, large, hard, over 250 pounds.....	6 @ 6 1/2
Hogs, small, fat, under 150 lbs.....	6 1/2 @ 7
Hogs, soft.....	5 @ 5 1/2
Veal, large, 1/2 lb.....	8 @
Veal, small, 1/2 lb.....	8 @ 9
Lamb, spring, 1/2 lb.....	14 @ 15

Hides, Skins and Tallow.

The hide market has been well sustained during the last week. Anticipated lower prices have not come, but prices have remained firm. Receipts this week have been fewer and of smaller quantity. The continued high price of leather is expected by some to keep the hide prices up.

Nothing but select hides, clean and trimmed, will bring full figures. Culls of all kinds either from grubs, cuts, hair slips, side brands or murrain, are not always readily placed at the lower figures.

	Sound.	Culls.
Heavy Steers, over 56 lbs.....	12 @	12 @
Medium Steers, 48 to 56 lbs.....	12 @	11 @
Light Steers, under 48 lbs.....	11 1/2 @	10 1/2 @
Heavy Cow Hides, over 50 lbs.....	11 1/2 @	10 1/2 @
Light Cow Hides, under 50 lbs.....	11 1/2 @	10 1/2 @
Stags.....	8 1/2 @	7 1/2 @
Wet Salted Kip.....	12 @	11 @
Wet Salted Veal.....	13 @	12 @
Wet Salted Calf.....	14 @	13 @
Dry Hides.....	20 @	20 @
Dry Kip and Veal, 11 to 15 lbs.....	20 @	20 @
Dry Calf, under 4 lbs.....	24 @	24 @
Pelts, long wool, 1/2 skin.....	1 50 @ 2 00	1 50 @ 2 00
Pelts, medium, 1/2 skin.....	1 00 @ 1 25	1 00 @ 1 25
Pelts, short wool, 1/2 skin.....	50 @ 75	50 @ 75
Pelts, shearing, 1/2 skin.....	20 @ 40	20 @ 40
Horse Hides, salted, large prime, each.....	3 25 @	3 25 @
Horse Hides, salted, medium.....	3 75 @	3 75 @
Horse Hides, salted, small.....	3 25 @	3 25 @
Horse Hides, dry, large.....	1 75 @	1 75 @
Horse Hides, dry, medium.....	1 50 @	1 50 @
Horse Hides, dry, small.....	1 25 @	1 25 @
Tallow, good quality.....	4 @ 4 1/2	4 @ 4 1/2
Tallow, poorer grades.....	3 1/2 @ 3 3/4	3 1/2 @ 3 3/4

Bags and Bagging.

The prices last quoted on bags remain unchanged except for a slight decline in bean bags, which are now quoted at 5 1/2 @ 6c. The volume of business is rather light, owing to high prices, and it is thought that consumers will hold off buying until necessity compels them. It is predicted by holders that a sharp advance will be experienced as soon as the season is under way.

Bean Bags.....	5 1/2 @ 6
Fruit Sacks, cotton, No. 1, 8 @ 8 1/2; No. 2.....	7 1/2 @ 8
Fruit Sacks, jute, as to quality.....	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 25x36, spot.....	7 1/2 @ 7 3/4
Wool Sacks, 4-b.....	35 @ 36
Wool Sacks, 3 1/2-b.....	32 @ 33

Poultry.

The poultry market this week is considered a little weaker, owing to a falling-off in the demand. Although receipts have been rather light, the demand is not sufficient to force prices upward. A decline in hens and roosters is quoted. Turkeys arrive only spasmodically and the demand for them is not strong. The quotations on dressed turkey is largely nominal. A feature of the market is the sharp advance in ducks. Young ducks are quoted as high as \$10 a dozen, and there is a very active demand for them at that price.

Turkeys, dressed, 1/2 lb.....	18 @ 22
Turkeys, choice Young, 1/2 lb.....	15 @ 16
Turkeys, live gobblers, 1/2 lb.....	16 @ 19
Turkeys, live hens 1/2 lb.....	16 @ 19
Hens, small, 1/2 dozen.....	4 00 @ 5 50
Hens, large, 1/2 dozen.....	6 00 @ 7 00
Roosters, old.....	4 50 @ 5 00
Roosters, young (full-grown).....	6 50 @ 7 50
Fryers.....	5 50 @ 6 50
Broilers, large.....	4 50 @ 5 50
Broilers, small to medium.....	3 00 @ 4 00
Ducks, old, 1/2 dozen.....	6 00 @ 7 00
Ducks, young, 1/2 dozen.....	7 00 @ 10 00
Geese, 1/2 pair.....	2 00 @ 2 50
Goslings, 1/2 pair.....	2 50 @ 3 00
Pigeons, old, 1/2 dozen.....	1 00 @ 1 50
Pigeons, young.....	3 00 @ 3 00

Butter.

Butter arrived this week in very liberal quantities, and for the most part was taken very quickly by willing buyers. Shipments to the north have been suspended and prices have dropped about 3c on creamery. The general condition of the market now is regarded as weak.

Creamery, extras, 1/2 lb.....	25 @
Creamery, firsts.....	24 1/2 @
Creamery, seconds.....	23 @
Dairy, select.....	23 1/2 @
Dairy, firsts.....	23 @
Dairy, seconds.....	22 @
Mixed Store.....	18 @ 20

Cheese.

The cheese market is weak. There is very little buying in this commodity at present. A decline of 1c. is quoted on California fancy.

California, fancy flat, new.....	12 1/2 @ 13
California, good to choice.....	12 @
California, fair to good.....	11 @
California, "Young Americas".....	13 @ 13 1/2
Eastern, new.....	15 @ 16

Eggs.

The egg market is firm. Liberal receipts are arriving, but a very satisfactory movement continues. The chief feature of the market has been speculative buying for storing. Rainy weather has hampered storing operations and a decline is looked for, if the rain continues.

Potatoes.

The potato situation has not improved materially. Large stocks are still present and it seems as though the market were unable to rise from the condition into which an over supply put it at the end of last month. Arrivals from the North continue to be heavy. An advance in river Burbanks is quoted. This is due to an improvement in quality, obtained by picking over old stock. Sweet potatoes are very scarce at present and are quoted at \$1.75@2, an advance of 25 cents.

River Burbanks, 50 cental.....	60	@	90
Salinas Burbanks.....	1 10	@	1 40
Oregon Burbanks.....	80	@	1 25
Tomatoes.....	90	@	1 00
Sweet Potatoes.....	1 75	@	2 00
Early Rose, Oregon.....	1 35	@	1 50
Early Rose, California.....	1 25	@	1 35

Vegetables.

Canning operations in asparagus are now pretty well under way and the effect has been to check the increasing receipts in this market. Cannery buyers have been on hand and have carried away all the stock that could be had at the inside figures, and an advance of 7c. is quoted. Artichokes have declined and are now quoted at 50@60c. Rhubarb has been in more liberal receipt and is now quoted at 75c. to \$1 per box. Onions were received in large quantities during the first of the week. Over 4,000 crates of Australian onions arrived, as well as large supplies from Oregon and some from Nevada. Peas are weaker. Hubbard squash has almost disappeared, but the price has not been affected.

Celery, 1/2 dozen.....	40	@	50
Radishes.....	10	@	20
Lettuce.....	10	@	20
Asparagus, 1/2 lb.....	5	@	7
Rhubarb.....	75	@	1 00
Green Peppers, southern.....	20	@	—
Cucumbers, hothouse, 1/2 dozen.....	75	@	1 50
Summer Squash, southern.....	2 00	@	—
Turnips, yellow.....	1 50	@	—
Turnips, white.....	1 20	@	—
Cauliflower, 1/2 dozen.....	40	@	75
Beans, String, 1/2 lb.....	20	@	—
Cabbage, choice garden, 100 lbs.....	65	@	1 00
Egg Plant, 1/2 lb.....	10	@	15
Garlic, 1/2 lb.....	4 1/2	@	5
Onions, Oregon, 1/2 ctn.....	1 00	@	1 50
Onions, Australian, 1/2 ctn.....	3 25	@	—
Peas, Green, 1/2 lb.....	8	@	10
Tomatoes, 1/2 box or crate.....	1 50	@	2 00
Artichokes, No. 1.....	50	@	60
Artichokes, No. 2.....	35	@	50
Carrots, 1/2 sack.....	80	@	1 00
Hubbard Squash, 1/2 ton.....	25 00	@	—

NOTE—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top, with hand holes in the ends, and weigh when filled from 50@60 lbs gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 30 lbs. gross.

Fresh Fruits.

The apple market has not changed this week. There is a good demand for choice varieties, but the poorer varieties are weak. Reports from the interior show that the apricot crop will be a very light one this year. A cold snap through the Pacific Northwest has caused great damage to fruit trees in that section. Advices from other localities on the Coast show that crop prospects are in general very bright. Peaches are mentioned as being in especially fine shape.

Apples, choice to select, 50-lb bx.....	1 50	@	2 50
Apples, good to choice, 50-lb. box.....	75	@	1 25
Apples, common.....	40	@	50
Pears, Winter Nellis.....	2 75	@	—

Dried Fruits.

The dried fruit market continues very firm. There is a very good movement in dried apples at present and apricots are still in active demand. Prunes are moving fast and it is doubtful if the smaller varieties will last to the new season at the present rate of consumption. Reports concerning the new peach crop of the State are rosy, but the apricot crop will be very light. Advices from the North say that cold weather has greatly injured the fruit trees in that locality.

EVAPORATED OR BLEACHED.

Apples, 50-lb boxes, rings, pressed, good to choice.....	8 1/2	@	8 3/4
Apples, extra choice to fancy, 50-lb boxes.....	9	@	9 1/4
Apricots, Royal, good to choice, 1/2 lb.....	8 1/2	@	9 1/4
Apricots, Royal, fancy.....	9 1/2	@	10
Figs, 10-lb box, 1-lb cartons.....	55	@	62 1/2
Nectarines, White and Stanwick, 1/2 lb.....	8	@	8 1/2
Nectarines, red, 1/2 lb.....	—	@	8
Peaches, unpeeled, good to choice.....	8 1/4	@	8 3/4
Peaches, unpeeled, fancy to extra fancy.....	9	@	9 1/4
Pears, standard, 1/2 lb.....	—	@	8 1/2
Pears, choice to fancy.....	10	@	12
Plums, Black, pitted.....	5 1/2	@	6 1/4
Plums, Red, pitted.....	7	@	8
Plums, Yellow, pitted.....	6	@	8
Prunes, Silver, good to fancy.....	5 1/2	@	8 1/4
Prunes, in bags, 4 sizes, 1/2 ctn.....	—	@	40-50s, 5 1/2 @ 5 3/4 c;
50-60s, 4 1/2 @ 5 c; 60-70s, 4 1/4 @ 4 1/2 c; 70-80s, 3 3/4 @ 4 c; 80-90s, 3 1/4 @ 3 3/4 c; 90-100s, 3 @ 3 1/4 c; small, 2 3/4 @ 3 c.			

COMMON SUN-DRIED.

Apples, sliced.....	5	@	5 1/4
Figs, White, in bulk.....	3	@	3 1/4
Figs, Black.....	3	@	3 1/4

Raisins.

The old raisin prices rule steady. There is a good demand for raisins of all descriptions, but stocks on hand are holding out well thus far. The frequent rains this year in the raisin districts have made the prospects bright for one of the largest crops in the history of California raisin growing. The raisin pool recently met with disaster and it is said that the pool failed because of an offer of a quarter cent raise by the Packers' Association

It is probable now that the raisin growers will this season do without the combination.

(Fresno delivery except otherwise specified.)

London Layers, 2-crown, 20-lb box.....	1 50	@	—
London Layers, 3-crown, 20-lb box.....	1 60	@	—
Fancy Clusters, 4-crown, 20-lb box.....	1 75	@	—
Dehesas, 20-lb box.....	2 00	@	—
Imperial, 20-lb box.....	2 50	@	—
2-Crown Standard loose Muscatel.....	5 1/2	@	—
3-Crown Standard.....	5 1/4	@	—
4-Crown Standard.....	5 1/4	@	—
Seedless Thompsons, 50-lb boxes.....	4 1/4	@	—
Seedless Sultanas.....	4 1/4	@	—
Seedless Muscatels.....	—	@	—
Fancy, 16-oz. Seeded.....	6 1/4	@	—
Choice, 16-oz. Seeded.....	6 1/4	@	—
Fancy, 12-oz. Seeded.....	5 1/4	@	—
Choice, 12-oz. Seeded.....	5	@	—
Fancy Seeded, bulk.....	6 1/4	@	—
Choice Seeded, bulk.....	6	@	—

Oltus Fruits.

The orange market shows considerable firmness. Despite rainy weather and unfavorable condition for retailers, the movement of oranges has been very good. Prices are firm as last quoted. Limes and lemons are strong and manifest an upward tendency. Grape fruit has been easier under a smaller demand.

Oranges, fancy.....	2 25	@	2 75
Oranges, choice.....	1 75	@	2 25
Oranges, standard.....	1 25	@	1 50
Oranges, Seedlings.....	1 25	@	1 50
Lemons, California, fancy, 1/2 box.....	2 00	@	2 75
Lemons, California, good to choice.....	1 25	@	1 75
Lemons, California, standards.....	60	@	1 00
Grape Fruit, 1/2 box, new.....	1 00	@	1 50
Grape Fruit, seedless.....	2 00	@	2 50
Limes, 1/2 box.....	3 50	@	6 00

Nuts.

The nut market is very firm and a good demand exists for nearly all varieties. Almonds are much stronger, owing to a much better demand.

Peanuts, fair to prime.....	4 1/2	@	5 1/4
Cal. Walnuts, No. 1 soft shell.....	—	@	13
Cal. Walnuts, No. 2 soft shell.....	—	@	9
Cal. Walnuts, No. 1 hard shell.....	—	@	12 1/2
Cal. Walnuts, No. 2 hard shell.....	—	@	8 1/2
Almonds, IXL, 1/2 lb.....	12	@	13
Almonds, Ne Plus Ultra, 1/2 lb.....	12	@	12 1/2
Almonds, Nonpareil, 1/2 lb.....	12 1/2	@	13
Almonds, Langue-doe, 1/2 lb.....	8 1/2	@	—
Almonds, Golden State, 1/2 lb.....	9	@	9 1/4
Hard Shell, 1/2 lb.....	5	@	—

PLANT DISEASES.

Walnut Blight.

By NEWTON B. PIERCE, Pathologist in Charge, Pacific Coast Laboratory and Plant Improvement Gardens, Santa Ana, California.

The following treatment recommended for spring use in the prevention of walnut blight or bacteriosis is based upon several years of careful experiments by the United States Department of Agriculture. They are given to enable the growers of walnuts throughout the State to take advantage of the work of the department on this disease so far as the experiments have progressed. The following treatment will reduce the loss one-half.

(1) All infected trees should be pruned carefully to remove branches showing the action of the disease of the previous year. Remove the dead tips of limbs, especially those of last year's growth, cutting well back of the diseased parts. Also cut away small limbs which show the blackened scars of the past year's disease, where the organism causing the disease winters in the pith cavity. Burn all prunings.

(2) Spray the trees a second time thoroughly with the bordeaux mixture. This work will give best results if done some two weeks before spring growth begins. All portions of the tree should be treated, special attention being given to the wood of the past year.

(3) Spray the trees a second time as soon as the nuts are firmly set, using the same spray and making a special effort to treat the young nuts upon all sides. The object is to protect the nuts from infection.

(4) Prepare the spray as follows: 5 lbs. of copper sulphate. 5 lbs. of good quick lime. 50 gal. of water.

(a) Slake the lime in an oak barrel in a small amount of water. When perfectly slaked, add enough water to make 25 gal. of milk of lime.

(b) Thoroughly dissolve the copper sulphate in an oak barrel containing 25 gal. of cold water.

(c) Continue to pour one pailful each of the milk of lime and of the copper sulphate solution simultaneously into a third oak barrel, holding 50 or 60 gal., until all of the two solutions are thus united. Stir the milk of lime as it is dipped out and pour it through a fine wire strainer into the mixing barrel.

(d) When the mixture in the third barrel is well stirred it will be ready to apply as a spray to the trees. Spray the trees while the mixture is fresh and stir the latter occasionally.

(e) The spraying should be done if possible when there is little or no wind.

(f) Use a spray pump which will maintain 120 lb. or more of pressure, and such nozzles as necessary to reach the highest limbs and do the best work over all portions of the tree with the least waste of spray.

GREEN PEAS should be treated with a fertilizer containing a high percentage of POTASH, in order to get the healthiest, fullest pods.

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CALIFORNIA VEGETABLES

By PROF. E. J. WICKSON, Author of "California Fruits."

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PACIFIC RURAL PRESS, Publishers, 330 Market St., San Francisco, Cal.

PLANTING BEETS.—Tehama special to Sacramento Bee, March 9: Work on planting a number of small patches of land in this section to beets as an experiment has already commenced, and by the time the land is all in there will be almost 500 acres planted to the saccharine-producing tuber. The land in this section seems to be admirably suited to the culture of beets, and if this year's experiments are a success, three farmers will engage in the industry on a large scale. It is the intention to ship the crop by flat-bottomed boats to the new sugar factory which is being erected at Hamilton.

PRIZE BALE OF HOPS.—Yreka special to Sacramento Bee, March 10: Chas. H. Holzhauser, of Etna, has just received from the managers of the Portland Exposition the first prize (a gold medal) for the best bale of hops exhibited from California. Other farmers in Siskiyou county contemplate raising hops instead of wheat. Scott valley soil is well adapted for hop-raising, and as the experiment has been successful, it has encouraged others to venture in this lucrative business.

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Owing to the remarkable increase in the business of the CENTURY MERCANTILE CO., it has been deemed necessary for them to increase their capital stock. Their trade in MERCHANDISE is steadily growing, but their most phenomenal success is in the sale of PRODUCE for country shippers. Their fair methods in this matter seem to meet the approval of producers, and large shipments of PRODUCE are resulting.

Notice to Stockholders of Century Mercantile Company.

Notice is hereby given, that in pursuance of a resolution and order by the Board of Directors of the Century Mercantile Company, a corporation organized and existing under the laws of the State of California, unanimously adopted at a meeting of said Board, duly and regularly called and held on the 1st day of March, 1906, at the office of said corporation, No. 14 Sansome St., in said City and County of San Francisco, State of California, all the members of said Board being present and acting, a special meeting of the stockholders of said Century Mercantile Company is hereby called and will be held at the office of said corporation, No. 14 Sansome St., in said City and County of San Francisco, State of California, said place of meeting being at the principal place of business of said corporation, and at the building where the Board of Directors usually meet, on Wednesday, the 16th day of May, 1906, at 10 o'clock A. M. of said day, for the purpose of considering and acting upon the proposition to increase the capital stock of said corporation from \$20,000.00, divided into 2,000 shares of the par value of \$10.00 each to \$100,000.00, divided into 10,000 shares of the par value of \$10.00 each. By order of the Board of Directors of Century Mercantile Co.
Dated March 1st, 1906.

J. H. CONGDON,
Secretary of Century Mercantile Co.
ALBERT C. AIKEN, Attorney-at-Law, No. 802 Mills Bldg., Attorney for said Corporation.

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GOOD ROADS.

Taxes Levied for Road Work.

The State Department of Highways has prepared the following statement of the amounts of taxes levied in 1905 in the several counties of California for county road purposes, to be expended by the boards of supervisors during the fiscal year beginning July 1, 1906:

COUNTIES.	Value of Property Taxed for Road Purposes.	Rate on each \$100 of Value.	Amount.
Alameda	\$28,129,779	.40	\$112,483 12
Alpine	468,385	.40	1,873 54
Amador	5,460,322	.35	19,076 13
Butte	14,847,841	.40	59,391 36
Calaveras	6,085,400	.315	19,169 01
Colusa	11,433,874	.35	40,018 56
Contra Costa	19,341,212	.34	65,726 12
Del Norte	2,993,265	.35	10,481 38
El Dorado	4,261,580	.35	14,915 53
Fresno	28,406,598	.30	85,219 79
Glenn	8,066,730	.25	24,664 33
Humboldt	17,624,083	.40	70,496 25
Inyo	2,265,905	.25	5,664 76
Keen	21,153,000	.24	50,767 20
Kings	6,623,104	.33	21,856 24
Lake	3,015,635	.50	15,078 18
Lassen	5,240,363	.38	19,913 38
Los Angeles	46,965,062	.60	281,790 37
Madera	7,438,381	.32	23,802 82
Marin	8,937,323	.35	31,280 63
Mariposa	2,257,871	.40	9,031 48
Mendocino	10,104,271	.40	40,417 08
Merced	13,977,055	.40	55,908 22
Modoc	4,266,092	.35	14,931 32
Mono	1,236,349	.24	2,967 24
Monterey	15,810,430	.40	63,241 46
Napa	9,208,049	.35	32,229 43
Nevada	5,207,740	.40	20,830 96
Orange	9,889,118	.40	39,556 47
Placer	8,251,323	.40	33,005 29
Plumas	4,222,821	.56	23,646 13
Riverside	7,796,622	.50	38,983 11
Sacramento	16,675,055	.374	62,364 71
San Benito	5,517,224	.33	18,206 84
San Bernardino	13,963,752	.50	69,818 76
San Diego	9,285,726	.60	55,714 36
*San Francisco			
San Joaquin	23,172,510	.40	92,690 16
San Luis Obispo	11,887,100	.40	47,548 40
San Mateo	15,517,507	.492	76,346 13
Santa Barbara	12,768,798	.40	51,075 19
Santa Clara	33,504,969	.40	134,028 00
Santa Cruz	6,857,666	.45	30,859 50
Shasta	10,418,065	.40	41,672 26
Sierra	1,605,243	.44	7,063 07
Siskiyou	11,282,460	.40	45,131 80
Solano	14,080,045	.40	56,320 18
Sonoma	23,053,700	.35	80,687 95
Stanislaus	13,004,389	.40	52,017 56
Sutter	6,588,234	.35	23,058 82
Tehama	10,486,223	.35	36,701 78
Trinity	2,271,890	.40	9,087 56
Tulare	15,960,910	.35	55,863 19
Tuolumne	6,474,740	.57	36,906 02
Ventura	8,437,522	.40	33,750 09
Yolo	14,590,082	.40	58,360 33
Yuba	4,017,237	.40	16,068 95
Total	\$634,279,314		\$2,540,019 15

*No expenditures on county roads.

FORESTRY.

Successful Fire Protection in California.

An item of news of wide importance to timberland owners is the announcement that a California lumber company, which applied a plan of fire protection to a single township during the summer of 1905, is now preparing to extend the same protection to the rest of its large holdings of cut-over land.

Except in the National forests, but little attempt has as yet been made to protect from fire the forests or cut-over lands of the Pacific coast. In California, it is true, the State forester has taken up fire protection as one of the most pressing problems of his administration. But in Oregon and Washington particularly, and on private holdings in California, fires are so destructive that little hope is cherished by owners of securing crops on cut-over land before fires have prevented or destroyed them. The severe losses which have come from these fires have, however, made a deep impression upon lumbermen. Where timberlands are owned, too often the investor must be contented with the profits of his first lumbering operations, since, despite the excellent natural reproduction which would, under better conditions, restore the lands to forest, fire is almost certain to burn over, killing seedlings, scorching larger growth, and so deferring future crops indefinitely.

In the summer of 1904 the McCloud River Lumber Company, of McCloud, Cal., appreciating the seriousness of the fire losses common to lumbering operations in the region, agreed to attempt to protect its land according to the advice of the Forest Service, provided the plan of fire protection could be shown to be practicable and not too costly. The area chosen for the plan was cut-over land, a township in extent, on which the amount and character of the young timber was, as is commonly the case, sufficient to warrant expending something to guard it until it should establish a renewed forest. Last summer the plan was put in opera-

tion. It called for clearing and burning broad fire lines from 200 to 300 ft. in width, to serve as base lines from which to fight possible fires; organizing a patrol; locating tool houses for the storage of fire-fighting tools; erecting telephone lines to summon aid; and other similar measures. In making the fire lines, the old logging trams were followed as far as possible. Twenty miles of lines were cleared.

During the dry season of 1905 the operation of this plan proved so successful that the company took steps to extend the protection to the rest of its holdings—from three to four hundred thousand acres—and may now apply to the Forest Service for another plan to cover an additional 20,000 acres recently purchased in southern Oregon.

The holdings of the McCloud River Lumber Company are in a region where the danger from fire is unusually great, since the long dry season and the abundance of slash and chaparral not only make the starting of fires very probable, but also render their control difficult in a high degree.

One of the most important and significant points in connection with this use of a fire-protection system by a private owner is the fact that it means the recognition of the future value of young timber, proof that forestry has made rapid strides in California.

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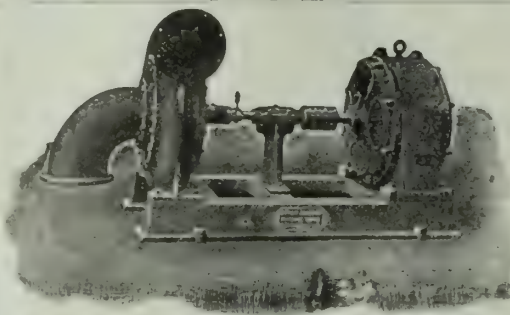
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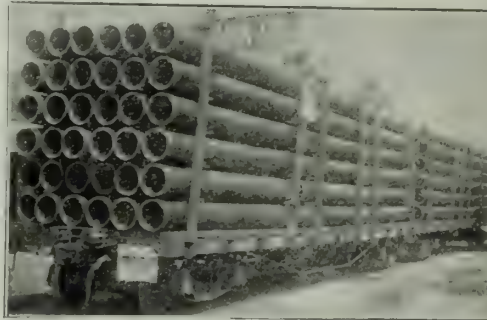
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Patrons of Husbandry.

Tulare Grange Meeting.

TO THE EDITOR: Tulare Grange convened in its hall on Saturday, March 17. Notwithstanding that there were several heavy showers during the forenoon, there was a fair attendance—enough to give a spirited interest to the meeting.

The first and second degrees were conferred on a class of three in an impressive manner, which we have rarely, if ever, seen excelled in any lodge.

The Special Committee on County Mutual Insurance reported that the necessary signatures have been secured to the application for a franchise and it will be sent on in a few days to the Insurance Commissioner.

In the literary exercises the subject of the day was, "Should Tulare Grange encourage the culture of sugar beets in this county?" There being a beet-sugar factory newly erected in this county and contracting for a supply of beets, it gave much interest to the discussion, which was very generally participated in, as many of those present are planting sugar beets under a contract with the factory. In as much as the factory is contracting to take all the beets delivered to it, either at the factory or the railroad and pay \$4 per ton for all delivered at the railroad or \$4.25 for all delivered at the factory, which is considered a fair price, the market requirement was eliminated from the consideration of the subject, as was the sugar per cent in the beets, the contract between the grower and the factory not stipulating for any sugar per cent in the beets; the real subject for discussion was thus narrowed to the yield in tons per acre and the exhausting effect of sugar-beet growing on the soil. It was agreed that the soil in this locality is deep and rich in plant nutrients and that a good yield of sugar beets, say 15 to 25 tons per acre, will be exhausting to the soil, and for a continued maintenance of this yield, after two or three crops, fertilization should be resorted to. It was also agreed the soil here varies in character and that in suitable soil (there being abundance of that here), with the right quality of seed, suitable preparation of the soil, early planting and attentive care of the crop, the yield here, both in tonnage and sugar content of the beet, will equal that of any locality in the State.

The Grange agreed to encourage the growing of sugar beets in Tulare county. The conditions all seem to indicate that it is destined to be one of the most remunerative and permanent of farm industries for this county.

CLEAN ROADS.—Two questions were drawn from the question box. First, "Is it lawful or right to dump rubbish on the roadside?" It was admitted that this practice is too common, both on the country roadside and in the municipality; that it is neither right nor lawful, that it is unsightly and unhealthy; that the practice should be prohibited. The Secretary was directed to correspond with Mr. T. B. Twaddle, supervisor for this district, and request him to have the road overseers prohibit the practice. Should anyone persist in doing so in the future, he should be prosecuted. If there is now no ordinance prohibiting it, one should be passed. All rubbish should be buried or burned.

The second question was, "Should the programme for each meeting of the Grange be followed, to the exclusion of new subjects?" It was reasoned that this in all circumstances would be injudicious; that while the programme subjects have been carefully selected and deserve the best consideration of the Grange, new subjects do come up, to which the Grange should give immediate and careful consideration.

The subject chosen for the next meeting is, "What can be done toward the solution of the farm-help problem?"

ST. PATRICK.—This being the seventeenth of March, St. Patrick's birthday, one of the Brothers was seen wearing a sprig of shamrock over his Grange badge. He explained why it was that on this day all sons, and for that matter all daughters, of Erin wear a shamrock on St. Patrick's Day. That there is now so much Irish blood, native and naturalized, in the people of the United States, it is not to be wondered at that a custom so commemorative of an important event in the history of Christianity should meet with approval in this home of the Christian and the free; that the custom originated at a time when St. Patrick was converting Ireland to Christianity, he preaching to the king and court at Clontarf; but the Brother said he would not be responsible for the exact geographical locality, his memory might be wrong. St. Patrick, telling of the existence of the

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You have to *harvest* it, before you get your profits.

And your profits now depend very largely upon the *way* you harvest it.

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It does not take a great deal of *waste* to eat up all your profits.

It may be only a spoonful of grain at a time but it counts.

Don't waste.

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Do it now, while you have time.

Here is the way:

Go to an International Harvester Company of America dealer and ask him for a catalogue of the machine he handles.

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—that will save you the greatest amount of time and labor and worry and trouble in the busy harvest days;

—that will harvest the grain you have grown with the least possible waste;

—that will not go to pieces after cutting a few hundred acres;

—that will be easy on your team;

—that you can get repairs for easily and quickly when you need them;

—that will, in short, give you thorough satisfaction in every way—doing for you everything that you can in reason expect a harvesting machine to do.

If that's what you want, all the more reason for looking up the agents of the International line.

You know the line—the six leading makes of harvesting and haying machines, used wherever grain and grass are grown:

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As good harvesting and haying machines cannot be made *without* such facilities as the International Harvester Company possesses.

Such facilities are made possible *only* through the co-operation of the manufacturers of these several lines of machines.

It is co-operation which enables them to produce from forest and mine their own raw materials—and thus be independent of uncertain and fluctuating markets. Acting together, they own, control and operate their own coal and iron mines, their own coke-ovens and steel mills, their own lumber camps and saw mills. They not only get their raw materials of first quality, but what is of equal importance they get them when they want them.

It is co-operation which enables them to maintain experimental shops where every effort is made to perfect the principle and improve the design of the International Line.

It is the great *demand* for their machines which enables them to equip their factories with every possible facility for producing machines of the highest excellence—factories and workmen which could not by any possibility be maintained to supply a small demand.

It is this *demand* which enables them to maintain agencies almost everywhere where grain is grown—convenient to you—convenient to buy—convenient to secure repair parts.

The fact that so many farmers cannot be persuaded to buy any other,—the fact that so many farmers continue to buy them,—the fact that they are considered the standard wherever grain is grown in every part of the world is sufficient indication of their reputation and their reliability.

We don't believe that you will be willing to let harvest time approach without knowing more about the International line for 1906; we *know* you will be glad to get the catalogue. Call on the dealer at your very first opportunity.

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Trinity (one God in three Divine Persons) was asked how, possibly, that could be. He stooped down and picked up a sprig of shamrock, displaying three leaves upon one stem. This was accepted as a satisfactory explanation. The king and his followers adopted Christianity; the rest of Ireland soon doing the same. Thus the wearing of a sprig of shamrock on St. Patrick's Day denotes a Christian of Irish descent. The Brother told that he had lately visited Ireland, the home of his childhood; that social conditions

there are improving; that he brought the seed of the shamrock he wore from Cork, and knows it to be of Irish descent too; that on the ship on which he returned were several hundred immigrants of Irish birth, young, vigorous, hopeful men and women, all imbued with a love of America and American institutions, all ambitious to make homes for themselves in and be good citizens of the United States, and all worthy of home and citizenship in this land of the brave and free.

J. T.

PROF. FOWLER was unable to attend the meeting of the Farmers' Institute, last week, being ill, and Professor Clark handled his subjects. He spoke upon "Pumping for Profit" and "Alfalfa Culture," thoroughly going into the subject of irrigation. Mr. Berwick, one of the officers of the Parcels Post League, spoke on the subject. In Mexico the rate charged is one-fourth what is paid in this country for a similar service. Mrs. Fowler delivered a lecture on "Food for the Human Temple."—*Vacaville Reporter*.

THE FIELD.

Testing Seed Corn.

Mr. A. T. Wiancko, agriculturist of the Purdue University Agricultural Experiment Station, prepares the following directions for testing the vitality of seed corn:

No farmer can afford to neglect making sure that every ear of corn he uses for seed will produce strong vigorous plants. The difference between none and two or three weak ears per bushel of seed corn may amount to hundreds of bushels in the resulting crop. The cost of producing an acre of corn is practically the same whether the stand of plants is good or poor, so why not have the good stand and the larger crop?

To make the germination test, proceed as follows:

1. Make a shallow tray or box about two feet or three feet in size, and two inches deep inside. Bore small holes, one and three-quarter inches apart, in the sides and ends about half an inch from the top. Through these holes string light copper or galvanized wire both ways, thus marking the tray off into squares—a square for the kernels of each ear of corn to be tested. A stout string may be used instead of the wire, but it will last only one season. Instead of weaving in the cross wires, a piece of large, meshed, wire chicken-fencing may be nailed on top of the tray, with a half-inch strip all around the edges on top of the wire, so that when the tray is covered the cover will not rest on the wire. This is the 'tester.'

2. Fill the tester up to the wires with earth or sand and thoroughly wet it.

3. Take the tester to where your seed corn is stored, or take both tester and the selected seed corn to a place where you can work conveniently.

4. Take the first ear of corn and remove five kernels, each from a different part of the ear, and put them on the first square in the upper left-hand corner of the tester and press them down into the earth. Lay the ear on a shelf or table. Then take the next ear and proceed in the same way, putting the kernels in the square to the right of the first and the ear in the corresponding position beside the first ear on the shelf. Continue this until the first row of squares is filled, then turn and come back on the next row below. The ears corresponding to the second row of squares may be laid in a row on top of the first row on the shelf. Whatever the system followed, the ears must be so arranged that the ear belonging to the kernels in a certain square in the tester may be easily located.

5. After the kernels are all placed and well pressed into the wet soil, carry the tester into a room where the temperature can be kept around 70°. The ordinary living-room will be about right, but the tester should not be put near the stove.

6. Cover the tester with panes of glass, resting lightly on the sides so as to let in a little air. Glass makes the best cover because it prevents drying out and at the same time permits one to see how the corn is getting along without lifting the cover.

7. After four or five days take off the cover, carry the tester to where the corn is stored and then examine the kernels in each square. If any lot of kernels shows dead germs or weak sprouts, throw away the ear from which they came. Never use an ear which does not show at least four strong root and stem sprouts out of five kernels tested.

The tester may be made of any size convenient. The one described above will test about three bushels of ear corn at a time, or every five days.

GRAPE JUICE FACTORY.—San Bernardino Sun, March 9; Plans are afoot for a big grape-juice factory to be located at Rochester. The president of a company which operates seven grape-juice factories in Michigan, has been in the valley negotiating for lands at Rochester station, which is close by the thousands of acres of vineyard in the Cucamonga and Etiwanda districts, and here the newcomers proposed to establish a factory for the purpose of putting up grape juice for commercial demands. The Michigan man says that his company alone shipped 30 carloads of grape juice to California last year, and with as fine grapes as are raised here, and such a prospective market there is no reason for all that money to go in freights. The bottling of pure, unfermented grape juice has become a great industry in parts of the East in recent years, and it is remarkable that the California vineyards have not before this attracted attention of the manufacturers. This gentleman stated that the Rochester plant would cost about \$30,000.



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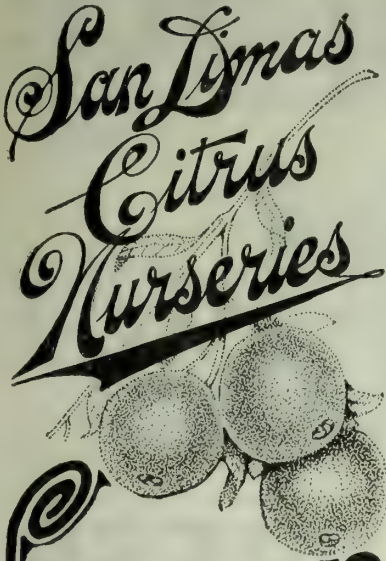
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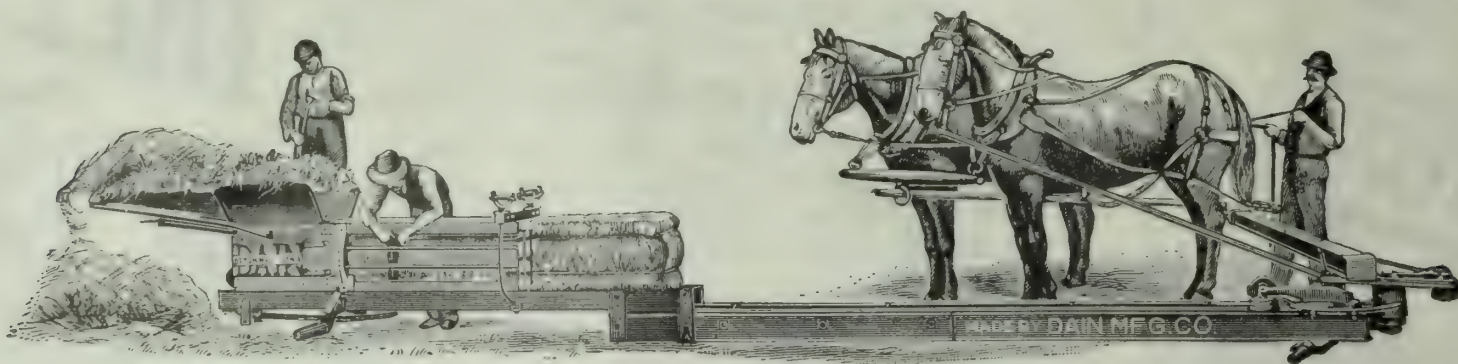
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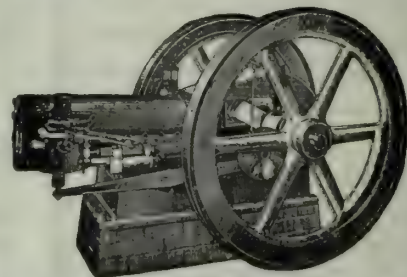
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Vol. LXXI. No. 13.

SAN FRANCISCO, SATURDAY, MARCH 31, 1906.

THIRTY-FIFTH YEAR.
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In the Snowslide Country.

In recent comments on the weather we cited the fact that the great interior region received the worst of the polar surge which has marked the present month. We tried to content ourselves with the reflection that we in California caught the fringe of it, although that was heavy enough to more than satisfy those who enjoy unique experiences. The lofty region in which the State of Colorado lies has had to contend with snowslides to an unusual extent. These have brought devastation to a number of mines in southwestern Colorado and they represent an agency of destruction which is at work each

going to and from their labor.

The engraving on this page shows a scene in the Imogene basin, one of the semi-circular valleys frequently seen in the mountains of southwestern Colorado; and particular interest attaches to this scene because it has been this spring visited by a snowslide which destroyed the buildings which are seen in the center of the picture. Above the buildings are steep hillsides covered with pine, which were considered to indicate immunity from such danger. This year the mass of snow and the velocity of it were such as to carry the slide down the valley and over the edge of the hollow in which the buildings stand, so that the vast body of snow dashed down the precipice and

and permits him to battle for escape. The writer narrowly missed such a death when overwhelmed in a comparatively small slide at Riverside, between Ouray and Red Mountain. This spot—Riverside—was the scene each year of successive slides, and occasionally they would accumulate a mass of snow more than a hundred feet thick. This would not melt during the warm season, and one summer the four-horse coaches used to pass through a tunnel cut through the unmelted snows of the past winter. To a big slide, buildings and tramways are as the twigs that are snapped by a hurricane. On the heels of the descending avalanche there comes a whirlwind due to the vacuum caused by the rapid motion of the



Scene in the Imogene Basin, Colorado, Recently Devastated by an Avalanche.

spring but with variable intensity. Of all evidences of Nature's power there is none so feared by the miner as this, "the awful avalanche." After the winter snows have fallen and, by successive thaws and frosts, have become packed, there comes, during the period marking the end of winter, a heavy snowfall which, settling and accumulating upon the hardened surface of the earlier precipitation, is ready to be launched down the steep slopes of the mountains with all the suddenness of a thunderbolt and all the confusing terrors of a whirlwind. A slight cause may disturb the uneasy equilibrium; even a mountaineer's foot-fall may cause a huge mass of snow to become detached. In the San Juan region of Colorado, where the mountain slopes are steep and but poorly protected by forests, there are more people killed each year from this cause than in Switzerland, although the man of leisure who risks his life climbing the Swiss heights usually receives more mention in the daily press than the miners and other humble individuals who lose their lives in the San Juan while

broke the building like an egg shell. It was a similar supposed immunity from danger which has caused other catastrophes, the buildings having been erected at a spot confidently believed to be beyond the range of any slide.

The destructiveness of a snowslide must be seen to be appreciated. If at a distance, one hears the roar of its onset before the eye has caught sight of the cloud of snow that marks its fierce career; if near by, all attempt to observe is abandoned in the effort to escape. But few persons have been caught in a snowslide and yet lived to relate their experience. The snow comes down like a torrent. If it is a "ground" slide it uproots trees and carries rocks with it; if it is due to the descent of a new snowfall on an older surface, it is less violent, but deadly enough. Men have been found dead whose head and shoulders only were pinned under the snow, which congeals instantly into a solid mass. Such slides are often mere masses of slush, heavy and wet. The dry snow gives a man a chance, for it carries air with it

snow-mass, and this cyclonic disturbance in the wake of the slide is frequently the cause of as much loss of life as burial in the snow itself.

In the cemeteries at Telluride and Silverton are many large graves inclosing the remains of groups of unfortunate men who have been swept into eternity by the fearful avalanche. Such happenings have incited the hardy people of the region to many deeds of heroism; indeed, almost as many losses have occurred among rescue parties as among those first entombed.

There is only one way to avoid the danger; for buildings, not to erect them at the foot of snowclad slopes; and for men, not to go abroad on the mountains just after a fresh snowfall, especially when it comes on top of a hardened surface. But even the greatest care is insufficient, as we have seen, and so long as the mountains raise their proud heads to heaven they will occasionally shed their white mantles so as to overwhelm the men who invade them in quest of gold.

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SAN FRANCISCO, MARCH 31, 1906.

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The Week.

It now seems to be largely a question of run-off. The storm has relaxed its hold and has gone east, and the California streams will have a chance to unload their burdens and the low lands to rise into growing conditions. Plenty of water is undoubtedly good, but enough water to be used as it is wanted and under skies which favor vigorous growth and a minimum of plant diseases and disasters is better. The normal California winter, supplemented by irrigation as needed, is therefore greatly to be desired, and it is some satisfaction to remember that such is our usual portion. It is in these years of flooding streams that other things go astray also. The trees are thrown out of their reckoning and beset by disease and loss of crop; the grain goes wrong; public improvements in the form of roads and bridges have to be replaced. Such is the burden of this year and it is good to see it lifting.

Speaking about getting water just in the right place and in the right amount, what could be more satisfactory than the present outlook for national handling of water in the Sacramento and San Joaquin rivers? Our Congressmen and public-spirited citizens are now pursuing a thoroughly rational course, under the guidance of the Government engineers. The result promises to be that which we lately mentioned as a common sense view of the case, namely: that the navigability of the river be improved and not endangered, and at the same time the surplus water which is available during two-thirds of the year be kept away from lands which it now destroys and placed upon other land which needs it. On another page of this issue will be found a brief report by Mr. Grunsky on this subject, and that report has really set many legislative wheels in motion in the right direction. First of all, of course, is the need of accurate surveys and definite plans which can be measured and figured upon. These will be secured, no doubt, for a bill which meets the views of conflicting interests was introduced on Monday in both houses of Congress, appropriating \$200,000 for the investigation and survey of the San Joaquin and Sacramento valleys with a view to reclamation of the overflowed land, irrigating arid land, etc.

Right upon the heels of this proposal for investigation comes another law introduced by Senator Flint

to set the Reclamation Service at work along the lines of the results of the investigation. It authorizes the Secretary of the Interior to undertake the work of constructing reservoirs, dikes, canals, etc., to aid in the great scheme. Before entering upon this improvement, the Secretary shall secure the promise from two-thirds of the land owners affected to refund the money to be spent in twenty annual installments. When completed, the improvements are to pass into the hands of the associations of land owners, to be maintained at their expense. The refund money of improvement expenses is to go for further improvements. Five million dollars is to be appropriated to carry on the contemplated work. It is hoped by such steps it will be possible to reclaim 1,750,000 acres of overflowed land and irrigating 2,000,000 acres of arid land in the Sacramento Valley, and also the reclamation and irrigation of a million acres in San Joaquin Valley, making a total of 5,000,000 acres. The navigability of the rivers would not be interfered with, but, on the contrary, improved. These are great things to think about. The affair seems large, but it is only rational that such vast areas of rich lands must not always be at the mercy of riotous rivers. Looked at from that point of view, it does not seem so appalling. It will certainly be done.

We have on another page exceedingly interesting additions to the walnut discussion. The explanation of the contradiction between Mr. Payne's earlier and later statements seems to be that he did not really know what variety he had until the fact was demonstrated by evidence collected in a judge's way of doing it, and the history of his tree was made clear. This mistake of Mr. Payne's is not so wonderful when it is remembered how little the Santa Clara valley has done with walnuts until very recently and how little was known about them. If it was a question of prunes, Santa Clara would have been sharper. But this is only an incident, even in the broadest estimate of it, and the chief advantage which we see in it to the general walnut discussion lies in the fact that Judge Leib was attracted by it out of his usual line of work and tempted to give the public the results of the investigation which we have long known him to be making. We have tried to get this information in many artful ways for some time, but failed until Mr. Gillet shook Mr. Payne's tree, and then down came the whole delightful matter. Now the subject is just opened, and there is a chance for a score of men and women, who have been working at this subject for the last few years, putting in time and money, and taking out some of the latter, we hope, who can contribute much from their information. We should like to hear also from the nurserymen who are offering grafted trees, and from the planters at the south, who are coming to prefer something more uniformly good than seedlings. Let us have the whole matter now; there never was a better time for it.

Attorney-General Herbert S. Hadley, of Missouri, who is making it so uncomfortable for the trust millionaires and for those who indulge in railroad iniquities in the shape of discrimination in rates, rebates, etc., holds to rather a long-distance cure for existing evils. At a recent banquet in New York he made an address, indicating that he looked for relief, not to socialism or Government ownership, but to an aroused public sentiment that would compel honesty and obedience to law. That may be right in the long run, but it seems to us that the way toward the realization of such a sentiment is to keep up efforts at exposure of wrongs and efforts also at making restraining laws; even if they do not accomplish all that is hoped of them, they will be most effective in arousing the public sentiment which Mr. Hadley trusts in. To keep quiet and not to try to regulate evil is to put the people to sleep and incapable of any sentiment whatever except of serene satisfaction.

Canning conditions are peculiar on the other side of the world. Consul-General Wilber, speaking of the pineapple canning industry at Singapore, says that there is only one European canner there and he employs Chinese. All the rest are purely Chinese canners, with cheap Chinese labor and without power machinery. The cans are made by coolies in slack times, so cost less than by machinery.

QUERIES AND REPLIES.

That Peach Trouble.

TO THE EDITOR: You were kind enough two weeks ago to tell me that the trouble in my peach trees is the 'shothole fungus.' May I ask you where I can get further information as to its character, cause, prevention, etc.? Is there any publication about it—pamphlet or otherwise? Our peach trees in this locality look now as if they were killed. Only a few trees—and these young ones—have escaped. Most trees have still a little green at the top, but many are showing scarcely a green leaf. Those who used the bordeaux mixture and those who sprayed with lime, sulphur and salt are apparently not a whit better off than their neighbors. I think the trees will come out again—most of them—and we will have a moderate crop, but unless some remedy is found our trees will all be dead in a couple of years.—CORRESPONDENT, Fresno county.

TO THE EDITOR: I write for information as to a condition of the peach trees that developed last year, and appeared again this spring, that of the sap gumming in the laterals and the leaves falling, causing a loss of the crop also in severe cases. All kinds of names and reasons have been advanced for the disease, such as shothole fungus, gumming (also fungus), blight, and sour sap. Trees that have a coating of lime, sulphur and salt wash (a fungicide) are as badly affected. Bordeaux had little or no effect last season. The complaint was quite universal last spring. If anyone has made experiments with good results, such information would be gladly received. We associate the disease with a late crop, wet spring, causing a mild form of sour sap.—GEORGE H. CUTTER, Sacramento.

There is nothing very satisfactory in the way of description of the shothole fungus, except in the technical works on plant pathology. This cropped out so suddenly as a serious pest of the peach that our experts have not had time to fully study it in this connection. It has been working in the apricot for years, but the effect upon the tree is nothing like what seems to be the injury which it has produced last year and this on the peach trees of the San Joaquin valley. Investigation is still going on, and we may have something more in detail later. We still think that the peculiar weather conditions of the last two years have had much to do with its ruinous work, but we do not dare to prophesy concerning it, except that we believe that with proper remedies, and with a return of more normal conditions, it will recede from its present threatening attitude. In some cases a very early spraying has been more effective than late applications. The matter is certainly serious and we should like to have all observations upon it.

That Squirrel Disease Again.

TO THE EDITOR: We are interested in Tulare county, and we are pestered with the annoyance caused by squirrels, and desire to know if the experiments carried out some years ago at the University, for the extermination of these rodents, by inoculation, has been a success, and if so, where may we obtain some of the infected rodents, or, if we capture some of them may we have them inoculated? The trouble we are experiencing mainly results from the large areas of uncultivated or abandoned lands adjacent to our property, and the ordinary precautions used for poisoning and shooting them is only of temporary duration.—OWNERS, San Francisco.

Although there was common report circulated in the newspapers that the University had been experimenting with the virus of a disease that would kill squirrels, the fact is that the University has never done anything of the kind, and we have no information concerning the efficacy of such a recourse. We have heard of people in Contra Costa county and in the Livermore district of Alameda county who believe that such a disease exists, but we have never had opportunity for verifying it. You may like to correspond with Mr. Chester Young, Livermore, California. He wrote us last fall that he thoroughly believes in the existence of such a disease and thinks it has saved him a great deal of money.

Foothill Forage With and Without Irrigation.

TO THE EDITOR: Please give me what information at your command the best grasses for forage or hay. I am not looking for a grass that will grow without water or plant food. I have abandoned that field. I want a grass that will give the best returns for good care in the way of plenty of water and plant food; one that will give the very highest returns in good feed for stock. Sorghum is satisfactory in its place, but other feed gives variety. Besides, I have land

that cannot be tilled; steep hillsides that wash badly. Now let me turn to the other end of the string: Can you name a shrub or bush that will grow on our dry hills and make feed for sheep, goats or cattle? We have a fairly good evergreen shrub or bush that does for sheep and goats, but the leaves are too small for cattle. It is eaten by sheep and goats only when other feed is not plentiful. —FOOTHILL FARMER, Calaveras county.

On upland that you can irrigate we doubt if there is anything better than a mixture of Australian rye grass and red clover. The rye grass will give you an excellent fall and winter growth, and will maintain its life during the summer if the ground is not allowed to become too dry. The red clover will give you a continuous spring and summer growth on lands which are too heavy or too shallow for alfalfa. You can carry this sowing upon steep lands, and can maintain irrigation by overflow from contour ditches on the hillsides. This has been done on quite steep hillsides in Nevada county. The contour ditches will help you to drain off the winter water, and at the same time serve for distribution of the water during irrigation season. We cannot help with the evergreen shrub you are seeking. We have not yet found anything so good as some of the native shrubs for the dry uplands of California. If you will write to the Nevada Experiment Station, Reno, Nev., and ask for a copy of their bulletin on 'Sheep Ranges of Northwestern Nevada,' you will find in it descriptions of many plants which they find of value, and some of them may be growing somewhere in your district, and make it easy for you to secure seeds or plants of them.

Opium Growing.

TO THE EDITOR: We contemplate engaging in the culture of *Papaver somniferum* in this State, if all the expected circumstances turn out as we hope. We have been advised that efforts in this direction have already been made by some persons in this State, but at some long period of time. Will you kindly advise as to this and also give us any information as to soil, climate, etc., best sources of information, etc.? —PROSPECTOR, San Francisco.

The opium poppy grows thriftily all through the Coast region at least, and possibly would thrive also at many interior points. During the last thirty years we have seen specimens of opium made from points distributed all the way from Ventura to Mendocino counties. The plant is not very particular about soil, but is somewhat rebellious against sharp heat and drought; consequently, rather a retentive soil, if well cultivated, seems to meet its requirements. In the economic garden in Berkeley, on rather a heavy clay loam, it grows very thriftily, and can be seen every summer in the garden plots. The difficulty in the manufacture of opium in California is not, therefore, in the growth of the plant, but in the amount of labor which is required to score the capsules and to scrape off the exudation from time to time as it accumulates. This is the Asiatic method of securing opium. If it should appear feasible to extract the juice by simply crushing the capsules and separating the opium from the mass of the juice, the labor requirements would be so reduced that production might seem feasible. Anyone undertaking opium production with our high-priced labor must, therefore, assure himself that the gathering and manufacturing of the drug can be done by machinery, rather than by the Asiatic method.

The Occurrence of Grain Rust.

TO THE EDITOR:—I wish to thank you for your answer about rust on the foxtail I sent you. This question of rust is of great importance to the people of California, and many farmers here were inclined to the belief that the damage this spring to the wild grasses was caused by frost. I would like to ask if there is any more chance of rust coming to the wheat this season, since the entire crop was covered with rust last season, or is last year's rust quite destroyed? —GROWER, San Miguel.

Although the continuance of rain, if followed by high heat while the air is moist, favors rust, there is scarcely any more chance of rust coming to your wheat this year than last. Rust spores are always present, and whenever weather conditions are right they will develop with such rapidity as to destroy a field of grain, although no rust may have been noticed the previous season. Your experience this year will depend entirely on the character of the season, and not upon the abundance of the fungus last year.

Spraying, Fertilizers and Grain Troubles.

TO THE EDITOR: Should the formula for spraying the codlin moth on apple trees be used the same way on pears?

How long a time is required for the available phosphoric in bone to become fixed in the soil? If I apply 400 lb. of acidulated bone meal and 200 lb. sulphate of potash to the acre in the rows for potatoes, how much more would be required to do the same good applied broadcast? If this fertilizer was sown broadcast on plowed land in an already good condition and an inch of rain fell the next day, to what probable depth would the plant food be carried? What would the correct way be to use this fertilizer on potatoes? I wish to put the fertilizer in the furrow at the time of planting if it would not do any harm.

I send you some barley that was sown last October. It has not suffered for rain, since the rains began on November 4, and grew all right until six weeks ago, when it turned yellow and looked sick. Barley that was sown in February is all turning yellow in spots now. We could not discover anything at the start but at this time, on that I send, you will notice what appears to be aphids. Can you tell me what they are and the cause of the brown color on the larger leaves? The barley was sown on rather poor land. Wherever there is a rich spot it does not seem affected to amount to anything. When we hauled the hay from the same field last year the hay was full of what I call chicken lice, but they only crawled and did not bite. What is the trouble, and can anything be done? —FARMER, Alpine, San Diego county.

Spraying for the codlin moth in the pear in entirely the same as in the apple.

It is impossible to tell how long it will take available phosphoric acid to revert. It depends upon many circumstances. Common experience, however, is that this matter may be disregarded in the use of bone meal. The application of bone meal and sulphate of potash, which you propose, is enough for a broadcast application. It is safer than to make application in the row, because in that way the fertilizer is too apt to be collected in masses. It is better to allow the roots to seek for it, which they will do in a properly cultivated soil. It is impossible to tell you how far an inch of rain would carry soluble fertilizers; it depends upon the character of the soil, and whether it was previously moist or dry. You need not apprehend that it has gone beyond reach of the plant roots.

Your plants show some aphids, also some leaf spot. It also seems to be yellowed rather by surplus water and low temperature than by any specific pest. If it does not improve on the increase of heat and better growing conditions generally, send us some more specimens. What you speak of as 'chicken lice' were probably mites of the red-spider class, which sometimes occur, and usually under conditions of considerable heat and drought.

Transplanting Old Pecans.

TO THE EDITOR: I wish to replant some 10-year-old pecan trees. Can it be done successfully? If so state the best method, time of year, and how much they should be cut back. —SUBSCRIBER, Mendocino county.

We have no knowledge on this subject. If it can be successfully done the practice would be the same as in moving other large deciduous trees. Do it at once: it would already be too late in the earlier districts of the State but in Mendocino things ought to be in about the right condition. Dig carefully, saving a good spread of roots. Sever the tap root cleanly: you need not try to retain it. Pack the soil closely around the roots or if the soil is loamy settle it with water up to the highest root and fill in with loose soil. Thin out the branches and cut back to laterals but not to stubs, taking away about half of the top. This is a theoretical prescription; you can see how it will work and tell us later.

The Soil at Planting.

TO THE EDITOR: Will you please inform me through the columns of your valuable paper whether in planting out flowers and small plants it is better to plant when the ground is very wet, or is it better to plant in moderately dry ground and put on water after planting? Also, what will kill lice on rose bushes? —BEGINNER, Santa Maria.

It is certainly better to plant in soil which is rather dry than too wet. Watering after planting does not puddle the soil so badly as to attempt to work it when it is too wet. Rose lice are easily killed with kerosene emulsion, tobacco tea, whale oil or other soap-suds or any insecticide sold at the stores. Rose lice are very easy to kill.

Not Pear Blight.

TO THE EDITOR: I enclose some twigs of the Bartlett pear which have a blight of some sort. Is it the regular pear blight, and, if not, what is it and the best remedy? The trees affected are in very wet land, but have always been healthy until last year. The trees are about 15 years old. —READER, Napa county.

You send only short twig ends, which are not sufficient to tell whether it is the true blight or not. If you do not find any blackened places or streaks on the larger limbs from which the twigs were taken, you have no blight, but simply unfavorable growing conditions which have caused these twigs to shrivel. A stroke of blight below may cause twigs above to look like yours, because their nutrition has been interfered with; but there is no evidence of blight on the twigs themselves.

Sheep-Shearing Machines.

TO THE EDITOR: Can you tell me something about sheep-shearing machines? Are they a success? Have they any drawbacks—if any, what are they? —SUBSCRIBER, Alvarado.

We understand they are being successfully used. The place to discuss them is in our advertising columns.

CALIFORNIA WEEKLY WEATHER BULLETIN.

Report of the U. S. Weather Service for Week Ending March 27, 1906.

ALEXANDER MCADIE, Forecast Official and Section Director.

Sacramento Valley.

Heavy rain continued throughout the week. Southerly winds prevailed from Tuesday until Sunday. On Friday the wind reached a velocity of 36 miles per hour. A thunderstorm is reported at the close of the week. Warm weather in the mountains caused a rapid melting of the snow which, added to the heavy rains, resulted in high water and freshets. The snowfall in the mountains is heavier than it has been for years. The week closes with showery conditions continuing and every likelihood that large areas will be overflowed. The lowest temperature was 44° on Tuesday and the highest 64° on Thursday.

Coast and Bay Sections.

Continuous rains prevailed throughout the week, with moderate southerly winds increasing to moderate gales on Thursday. The rainfall was exceptionally heavy for this period of the year. On Friday over an inch of rain fell in less than 24 hours. The temperature was too high for any snowfall in the Coast Range.

San Joaquin Valley.

Cloudy weather prevailed throughout the week, with rain on four days. All of the tributaries of the San Joaquin are running bank full and considerable damage has been done in places by the high waters. In the vicinity of Sonora, county bridges, railway trestles and roads have been washed away. In many parts of the valley the creeks and rivers are out of their banks. Breaks in the ditches and canals are numerous. At San Joaquin bridge a river stage of 18.5 ft. occurred on Sunday night. This is the highest water recorded at this point.

Southern California.

Stormy weather prevailed throughout the week, with heavy rains on Wednesday, Thursday, Friday and Saturday. High winds were reported on Saturday; and at San Diego a maximum wind velocity of 28 miles per hour from the south occurred. Thunderstorms were reported at San Luis Obispo Saturday afternoon. The rainfall during the latter part of the week was very heavy in all portions of the south. At San Diego up to the close of the week the seasonal rainfall was nearly two inches in excess of the normal. As shown in the table of seasonal rainfalls the water supply is abundant. The week closes with unsettled weather and showers still prevailing.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, March 28, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.	Total Seasonal Rainfall to Date.	Total Seasonal Rainfall Last Year to Same Date.	Average Seasonal Rainfall to Date.	Maximum Temperature for the week.	Minimum Temperature for the week.
Eureka.....	1.74	29.70	29.73	64	44	44
Red Bluff.....	4.06	25.48	30.63	70	44	44
Sacramento.....	2.71	17.45	18.14	64	48	48
San Francisco.....	1.82	15.38	19.98	63	50	50
San Jose.....	1.14	12.34	14.69	68	44	44
Fresno.....	1.56	9.70	9.96	70	48	48
Independence.....	.30	5.52	3.78	68	38	38
San Luis Obispo.....	4.44	21.88	19.34	66	48	48
Los Angeles.....	3.34	17.31	17.85	68	48	48
San Diego.....	3.27	12.73	13.46	66	48	48
Yuma.....	.09	5.35	8.53	82	52	52

* This data will be omitted in future.

HORTICULTURE.

The Payne Walnut Tree and Other Matters
About the Walnut.

TO THE EDITOR: I have neither the time nor inclination to write for the newspapers, but in this case I think I ought to do so in order that no injustice may be done two of my warmest friends, Luther Burbank and George C. Payne, by the article of my friend, Mr. Gillet, published in your issue of March 24. I am sure Mr. Gillet would not wish to do either of those gentlemen any injustice, and had it occurred to him to drop a note to either of them as to the apparent discrepancy in the name of the large walnut tree on Mr. Payne's premises, he would have received an explanation in reply which would at once have been entirely satisfactory to him.

As my inquiries resulted in the change of the name of the variety of that tree, I feel it is incumbent upon me to set the matter right with the same publicity with which the matter has been given to the public.

When Mr. Payne wrote the letter to Mr. Gillet of February 13, 1900, in which he referred to the big tree on his place as being of the genuine Santa Barbara soft shell variety of walnuts, I am sure he did so in good faith. It was of the finest quality, and the only fine quality soft shell nuts generally known in his county at that time were of that variety. The only trees of Santa Rosa soft shells in the county at that time, or now, for that matter, so far as I have ever heard, were on the Orkney orchard, and he did not know that they were Santa Rosa soft shells until long thereafter, when I disclosed it to him as herein-after stated.

It was after that date, and I think about three or four years ago, when I first became interested in walnuts, that Mr. Burbank was visiting me, and in driving over the country he desired to look at the orchard which was planted with the trees that he sent to a gentleman here in 1887 (if I remember the date rightly), of his Santa Rosa soft shell variety. I ascertained from the records the tract of land then owned by that gentleman and then drove to it in his company, and sure enough we found quite a walnut orchard upon it, but quite a way back from the road, the orchard being now owned by Miss Orkney, and on Moorpark avenue.

Mr. Payne had often told me about having grafted his walnuts from some trees in the neighborhood, and also that they were the Santa Barbara soft shell; but about a year or so ago, when I asked him what particular tree he got the grafts from, he told me the Orkney orchard on Moorpark avenue. I then promptly told him that those were not Santa Barbara soft shells, but were the Santa Rosa soft shells. I afterward told Mr. Burbank the same thing, and I suppose Mr. Payne may have done likewise. So this accounts very plainly for Mr. Payne's designating that tree in 1900 as the Santa Barbara soft shell variety, while in 1905 Mr. Burbank designated it as being the Santa Rosa soft shell.

These two gentlemen are most intimately known by me, and I think it would be impossible to select gentlemen of higher moral ideas or stricter integrity.

I thought at first that I would content myself with simply writing this explanation, inasmuch as I had something to do with the changing of the name of that tree; but while I am on the subject I would like to compare (and it would probably be interesting to your readers) my own experience with Mr. Gillet's on some of the matters to which he refers in his letter.

INVESTIGATING THE WALNUT.—I have spent considerable time, money and travel in trying to investigate this walnut business. I had made up my mind to go into it to quite an extent and I wanted to get started right. I found it a very large field, and I am frank to acknowledge that I have learned but very little of what there is to be learned in the matter. Nevertheless, I have come to some pretty clear and decided opinions on some of the points connected with it, and your readers are entitled to my experience and conclusions for what they think they are worth; but they must take them in this form, for I have not the time to answer individual inquiries.

In the first place, as this Payne tree has been referred to quite a number of times and is, I think, by all odds the largest walnut tree in the State, at least so far as I have any information, I send you a photograph of it which Mr. Payne gave me last year, and which, if you could put in your paper, would give your readers an idea of what a walnut tree grafted upon the California black walnut will do where conditions are favorable. [This picture will appear in a later issue.—Ed.] I want to say that the conditions are extremely favorable where this tree is grown; the soil is deep, very rich, not far from a dry stream, but which runs water in the winter, on the edge of a barnyard, where it must have been—at least on one side of it—quite heavily fertilized, in fact, has had ideal conditions in which to thrive. Moreover, it is isolated, except it being in a row; a little from it, however, is a butternut tree, and a little ways from

that is an English walnut tree, both on their own roots. None of these trees are large enough or close enough to interfere with the other. The bulk and area of the butternut tree, I should judge, is not to exceed one-twentieth of the large tree, and the English walnut tree, on its own roots, is still smaller. All these trees stand along the edge of the barnyard lot and have had exactly the same chances in their struggle for existence.

It was seeing these trees that first specially directed my attention to the infinite preference to be given to the California black walnut root as a stock for grafting purposes.

THE CALIFORNIA BLACK WALNUT.—When I determined to go into the walnut business, all kinds of walnuts were open to me for selection, and hence I examined every kind most carefully, from Santa Ana to Santa Rosa.

The English walnut on its own roots, in my judgment, does not compare in vigor with the same walnut grafted on the California black walnut root or the Eastern black walnut; and the last named does not compare, in my judgment, with the California black walnut. As I have said, all kinds were open to my selection, and naturally I wished to choose the best; and I chose the California black. I cannot recall a single instance of ever seeing any die-back or any blight on the native California black walnut tree, nor can I recall ever seeing any die-back on any trees grafted on that variety, although, no doubt, in soil which is not fit for walnuts at all you would have die-back, whatever variety of root was used.

Senator Belshaw kindly drove me through the walnut section of Contra Costa county, and we went up Walnut creek toward its source to see the undisturbed, old native California walnut trees. I saw them, probably five feet in diameter, still in fair vigor and fairly productive. One tree must have been at least a century or two old, had had no cultivation and was in very dry soil.

I saw a great number of California black walnut trees in that valley grafted with the English walnut, and they all seemed to be vigorous and healthy.

The Payne tree, just referred to, notwithstanding its immense size and immense crops, has never shown a sign of die-back, even on the very top branches, at least not since I have become acquainted with it, for several years back.

There are two California black walnut trees on either side of a gateway on the Monterey road, just beyond Gilroy about half or three-quarters of a mile, which are simply monsters—about four feet in diameter, with tops vigorous and of proportionate size to their trunks. I took the pains to hunt up their history and found they were planted in 1856 or 1857, about half a century ago.

COMPARED WITH EASTERN BLACK.—As to the comparative merits of the California and Eastern black, I think the California has the decided preference in several particulars. In the first place, it holds its foliage late in the fall, and hence gives the nuts which it is supplying with sap a chance to perfect themselves. The Eastern black, on the contrary, sheds its leaves and stops growing quite early in the fall, long before the English walnuts have ripened, especially the late varieties. Of course, the top greatly dominates the root, but I do not think it does so absolutely.

As to their vigor, if the ground is heavy, strong and moist, I can see no substantial difference between the two varieties. I have this very fairly illustrated in my own yard on the Alameda, between San Jose and Santa Clara. The trunk of the California walnut will be a little larger and the top broader than the Eastern black, but the Eastern black would be slightly higher. On gravelly or light soil, however, the difference between the two varieties is most marked. In California the Eastern black is almost a total failure in such soil unless it receives a great deal of water, and then it does but indifferently well, while the California black seems to luxuriate in that kind of soil, provided only it has depth.

A most marked illustration of this in on the road from Santa Clara to Los Gatos, in front of Mrs. Winchester's place, where there is a row, supposed to be uniform Eastern black walnuts, but, in some way, in one or two places a nut or two of the California black seemed to have been planted; while this is very good soil for most purposes, yet it is evidently the bed of an old creek and quite gravelly, and I think it is no exaggeration to say that the California black in each case where it appears in this row is five or ten times larger than those of the Eastern black variety, which immediately adjoin them.

I have said "provided the soil has sufficient depth;" if the soil is shallow it is no good for walnuts anyhow, no matter what variety is planted; at least it suffers so very much in competition with deep soils that the effort to raise walnuts upon it should be abandoned.

If, from my own independent examinations and comparisons, I have fallen into an error in preferring the California to the Eastern black, I feel I am at least in respectable company. Not only you say in your last issue that you have always recommended the California black (and which, indeed, you have done both consistently and persistently), but I notice in the last November number of the *Pacific Northwest* that Professor Van Deman, a gentleman of recog-

nized national authority in such matters, gives this advice to the Oregon farmers: "I should recommend the use of the native California black walnut stock grafted with the best Persian white walnut."

THE BLIGHT.—I have specially looked for blight upon the native California tree, because the first time I ever met my friend Mr. Gillet was at John Rock's nursery, just about the time I was becoming interested in walnuts, and he told me then, as he has written in this letter now, that he thought, but was not quite sure, that the walnut blight may have originated through the California black trees; but I have never been able to verify it in a single instance, and have never found any blight on the California black walnut.

I may be able at this point to throw a little light upon the origin of the walnut blight. I have a son-in-law, Mr. W. H. Wright, who has been in Chile for three years in charge of the Mills Lick Observatory expedition, and he became acquainted with the largest nurseryman in that country, Don Salvador Izquierdo, who has immense nurseries of several hundred acres in extent, and who is a man of great learning, and whose catalogue of his nurseries alone contains between three and four hundred pages. He told Mr. Wright that California, in his judgment, got the blight from Chile, as they have had it there quite a number of years before it appeared here. Certainly, whether it preceded or succeeded the advent of the walnut blight here, it was not produced there from native California black walnut trees. The remedy found after years of trial there is such that he states that the dread of the disease has greatly diminished.

The remedy which he gives in his catalogue is to have the walnuts planted wide apart and the crown high up in the air, so that the hot air can circulate freely around, under and through the trees. I think that is one of the reasons why our late French varieties escape not only the frosts, but to a very great extent, the blight also. I am more familiar with the Franquette than with any other variety, and that does not begin to leaf out until about the first of May in an average season; but by the time it has bloomed it is somewhere along from the middle to the last of May, and by that time the air is so hot and dry that I think the spores of blight cannot live and float in the air without being killed.

It is the rarest thing in the world to see any blight upon that variety, although the early leafing-out varieties may be full of it.

I wish some scientist who is competent to do so would ascertain just how much heat and how much dryness the spores of the walnut blight will stand before they lose their vitality.

PROPAGATING WALNUTS.—I think Mr. Gillet is entirely right about the difficulty of budding walnuts in the nursery. Last year, in September, I had several thousand of them budded in the nursery and not one of them grew. Still, I could see some reason for that, because before the budding was finished I noticed yellow leaves beginning to appear throughout the nursery which showed me the sap had quit running, and without plenty of sap it is useless to bud the walnut.

They were budded by the ordinary shield budding, which I do not think is a good way to start with, although I did see a row of walnut sprouts near Vacaville, which I think was on the old Smith place, now occupied by Mr. Bassford, where a couple of thousand buds had been put in by the shield method in September, and nearly every one of them had grown; in fact I could not find one that had not, although I got out of the buggy and went along the trees and examined them. However, that had been an old row of native California black walnut trees cut off about four or five feet from the ground, about a foot in diameter, and probably six or eight sprouts had been left around the top of the stump and were budded in September, and which, owing to the great vigor of the sprouts, must have had a good deal of sap in them, even that late in the season.

I hunted up the man who did the budding, brought him down to my place on the west side of the valley, and had him bud a whole lot of sprouts upon some English walnut trees that I had cut back the spring before, turned on all the water he wanted, made a nice flow of sap, and not a single bud grew. It seemed to me the buds were drowned, there was so much sap coming out where the buds were inserted. I have noticed, however, that it is much easier to graft the California black walnut than the English walnut—at least, that has been my observation on my own place.

Last year, even after my September experience, along about the first of October (but on the other side of the valley), I had some young walnut trees budded with the plate or patch-bud method and nearly half of them grew; but the sap was in much better condition in these young trees on that side of the valley, owing to the soil being much better. I think if the patch or plate-bud method is used, and the conditions are just right, that the budding may be quite a success; but just what all those conditions are, is something that I would not like to try to define.

Grafting of larger trees, however, can easily be done. Mr. Payne put in about 2,500 grafts for me a year ago this spring in trees about 20 ft. high, and I think I am entirely within the bounds when I say

that over 99% of them grew. To all intents and purposes I may say they *all* grew.

He does not believe in budding walnuts, however, and in fact has never tried to learn. He has had very fair success in grafting in the nursery. I will know just what percentage he can make grow in that way, for I had him re-graft my nursery where the buds failed to take last September.

In my judgment nothing ought to be budded or grafted in nursery stock except the strongest trees, no matter what variety is used for stock. I never saw any variety that did not vary very greatly as to vigor, and small, weak trees during the first year will never make strong, large trees nor a tree worth using and should be abandoned the very first year. Walnuts for seed do not cost much and nursery room is abundant, and there is no excuse for any nurseryman using anything except the strongest trees. Not only that, but it has been my experience that only those nuts that sprout first should be used—they are the ones that seem to have the vigor. Whether it is because of that vigor, which they have inherently in them, that they sprout first or not, I do not know. I only give you the result of my observation extending something over three years.

I have written you a long and somewhat discursive letter because I have not time to write a short one. It takes time to classify one's ideas and to boil down what you have to say in the fewest possible words.

S. F. LEIB.

San Jose, March 24.

We are exceedingly glad to have Judge Leib's contribution to this discussion. There is no horticultural subject of greater present interest in this State. We hope all readers who have had experience or observation will claim their share in the discussion. The picture of Mr. Payne's tree will appear later.

—EDITOR.

That Walnut Tree at Mr. Payne's.

TO THE EDITOR: In Felix Gillet's article on walnut culture in last week's PACIFIC RURAL PRESS he mentions the great walnut record of the trees owned by George C. Payne. It is due Mr. Payne to state that when he wrote his letter of February 13, 1900, to Mr. Gillet, he had good reason to believe that the tree from which he procured his grafts was a Santa Barbara soft shell.

Judge Leib and myself visited the orchard, looked up the records and found out beyond the shadow of a doubt that the walnut tree from which Mr. Payne secured his grafts was a tree which I sold to the former proprietor, in fact, every walnut tree on the place was a Santa Rosa soft shell purchased of me.

To show how conditions vary results, I have also been growing the Juglans Rupestris for many years, and find it has a dwarf growth and poor root system not suited to our rich valley soils.

Santa Rosa.

LUTHER BURBANK.

Those Nitrogen Germs.

The United States Department of Agriculture issues a special circular saying that the extravagant and misleading claims contained in some of the advertising matter now appearing in regard to inoculating material for legumes make it necessary again to call attention to the limitations of the value of inoculation. Summarized from Department bulletins, they may be stated as follows:

No beneficial results can be expected for a particular crop if the bacteria for that crop are already present in the soil.

But little, if any, benefit can be expected from the use of these bacteria if the ground is decidedly in need of other fertilizers, such as phosphates, potash or lime.

But little, if any, benefit can be expected from inoculation if the soil is already rich in nitrogen.

A recent examination of samples of cultures for inoculating legumes obtained through various seed firms throughout the United States indicates that there has been a slight improvement in the general character of these cultures.

THE GARDEN.

Lima Bean Growing.

Lima bean raising, as a commercial industry, says the Santa Barbara Independent, is confined to a limited section of southern California. About 60,000 acres are used for the crop, and of this three-fourths lie in the fertile Santa Clara valley, in the southern part of Ventura county, where is situated the largest lima bean farm in the world, the famous Dixie Thompson ranch of nearly 3,000 acres.

Twenty-five years ago the miles of bean fields that may be seen from the car window in passing through this section were growing extensive wastes of wild mustard, where herds of cattle, sheep and hogs roamed unattended, and homes were few. The crude methods used in seeding and harvesting limas at first prohibited a very extensive acreage, but the want

of proper machinery was soon supplied, so that today one man can easily care for 50 acres without assistance.

The lima is a pole bean, and where summer rains occur should not be raised on an extensive scale, as they would have to be supported; but in this land of the lima they lie in great billows along the rows, twisting their tendrils about each other and bloom and pod continuously until the moisture is exhausted or the desperate husbandman cuts their career short by harvesting them.

In the early autumn one may ride for miles, awaiting the coming of the threshing machines. A million and a half of dollars is lying out under the golden sunshine within the radius of a few square miles. Anxiously the husbandman looks at the threatening clouds and hopes for fair weather until the gigantic steam thresher, with a capacity of 3,000 sacks a day, shall reach his broad fields and put his crop in the sack ready for housing or shipment.

If the crop in the bean belt is very large and the demand for threshing machines is excessive, the impatient husbandman prepares a bean floor and proceeds to tramp out the harvest of limas. Huge water tanks, dripping with their liquid burden, move around a constantly narrowing circle in the field until an earthen floor of the proper size is ready to be packed firm by driving horses and vehicles upon it, until it is perfectly solid and smooth. When the floor becomes dry the beans are loaded upon huge header wagons and piled upon it. Now is the time when the wives and daughters of the ranchers are pressed into service to assist in saving the valuable harvest of lima beans. Donning sunbonnet and gloves and her shabbiest gown, the California matron, who shines as a lady of extreme culture at her club or musicale, thinks it no lowering of dignity to lend her aid at this crisis, for farm laborers are often a scarce commodity at this time of the year.

The lady mounts a vehicle of some kind and goes driving around and around, hour after hour, over the yielding tons of bean vines until the seeds are freed from the pods; men with pitchforks constantly turn and move the straw upon the floor, and it is surprising how quickly the product grows into white mounds ready to be winnowed and sacked. Tramping is a primitive method of securing one's harvest, but in sunny weather it is not more expensive than threshing by steam.

The housewife strongly objects to the 'tramping' of the limas, as the men who work upon the bean floor demand a generous diet, and it must be prepared in her kitchen, whereas the steam thresher always provides its own cuisine.

In favorable seasons in the best soils 25 eighty-pound sacks per acre are produced, but 1,500 pounds per acre (average) is considered a very good crop.

Lima bean growers state this crop cannot be produced at a profit of less than \$2.50 per cental, with fair crop returns every year. They often sell as low as \$2, but some years of short rainfall have brought them up to \$4 per hundredweight.

FORESTRY.

Planting Forests on the National Reserves.

Forest planting on the national forest reserves has gained far wider scope and a wholly new importance since the administration of the reserves passed to the Secretary of Agriculture, a year ago. This work now forms a leading part of the activity of the Forest Service and gives great promise for the future.

This change is due to a fuller appreciation of the needs of timber supply and water conservation, and to the knowledge that nature, unaided, cannot repair the forest ravage and waste of the past.

The area now under forest in the West is less by millions of acres than the area suitable for forest growth. In the first place, fire has destroyed an enormous quantity of forest, denuding mountain slopes so completely that forest renewal by natural means has been rendered impossible for ages. Again, vast areas, scores of millions of acres, like the chaparral lands of southern California, which once bore forest growth but long since lost it, must remain indefinitely unproductive wastes unless brought again, by planting, under forest. Moreover, the demand for timber, even the local demand, can not long be supplied from the reserves unless they are developed to the highest productive capacity, and for this, forest replacement and extension, quite as much as conservative logging, are essential. Finally, the indirect use of the reserves is not impressive. The vital importance of water for irrigation would, in the case of several of them, alone suffice to render forest planting on watersheds imperative. In southern California forest extension on the mountains is strongly favored by public sentiment, at almost any expense, because it is water, not the supply of fertile soil, which limits agriculture, so that land worth \$2,000 an acre with water could hardly be given away without it.

There are now six permanent reserve planting stations, two in California, one in New Mexico, one in

Colorado, one in Utah, and one in Nebraska. Others will be established as it is found advisable.

The past winter has been extremely favorable for planting in California. A large force of men has been employed, both in the San Gabriel and in the Santa Barbara mountains. Since the beginning of the rainy season about one hundred thousand seedlings have been set out. At least a dozen kinds were tried, to ascertain which are most suitable for use at different altitudes and under different exposures. Besides the seedlings set out on the mountain slopes, from two to three hundred thousand more have been transplanted from covered seed beds to nursery beds, there to be held for use in the winter of 1906-7. The prime object of the operations in southern California is the improvement of important watersheds.

With the approach of the spring season plans are being made for active work at other stations.

Caterpillars on Oaks.

By C. W. WOODWORTH, of the University of California Experiment Station.

The live-oaks about the Bay region of California are subject from time to time to the attack of immense swarms of caterpillars, which often entirely defoliate them, thus rendering them temporarily unsightly and contributing in no small measure to the death of the trees. These losses can be entirely avoided, however, if the proper measures are taken, and this circular is prepared to call attention to the methods of accomplishing this work.

There are two species concerned, which have quite different habits and present a somewhat different problem of control.

1. CALIFORNIA OAK CATERPILLAR: (*Phryganidia californica*, Pack.).—The insect bearing the above scientific name might be called the 'California oak caterpillar,' since it is strictly limited, as far as known, to this tree. It is a remarkable moth in many ways; it is not found outside of California, and is the only representative of its family in America. The moth is pale-gray in color, with an expanse of wings of about an inch, and can be seen sometimes in countless numbers flying about oak trees, especially in the latter part of the day. They are not strong of wing, but simply flutter about, alighting now and then on leaves and then again taking to wing. During the night and the larger part of the day most of the individuals will be found resting quietly on the leaves. The length of life in this stage of its existence is somewhere in the neighborhood of two weeks, during which time it may lay two or three masses of eggs, or sometimes deposit all of its eggs in one place. The under sides of the leaves are usually chosen for egg laying. The eggs are about the size of a radish seed, yellow in color at first, but become darker as they develop, and finally the caterpillar emerges and begins to feed upon the foliage. The first feeding is usually on the under side of the leaves and is noticeable on the upper side only as pale spots due to the drying out of the leaf over the denuded portion beneath caused by their feeding. Later, however, when the caterpillars get larger, the leaf is eaten through except along the larger veins, and thus becomes skeletonized. The leaves so eaten usually soon drop from the tree, which thus becomes entirely devoid of foliage. This may sometimes occur before the larger part of the caterpillars have finished feeding, and they may die of starvation. Usually, however, a good proportion of them find enough to bring them to maturity. Then they seek a suitable spot on the bark of the tree and transform into a chrysalis, which is more like that of a butterfly than the form common in moths, and is entirely naked, not being protected by silken coverings. This chrysalis is strikingly ornamented with black marks and is really a very beautiful object. After a short time in this stage the adult moth emerges, thus completing the cycle.

The remedy for this insect is to spray the trees with paris green, using a mixture of one pound of paris green to 200 gal. of water. When the moths are seen fluttering about the tree in great numbers, immediate arrangements should be made for spraying the trees, and strict watch maintained so as to recognize the first signs of injury by the young worms produced from this brood of moths. As soon as these worms are noticed the application should be made at once and with great thoroughness, so as to place some of the poison in reach of every caterpillar. If this is done, the insects will be killed before serious injury is occasioned, and a single application will control the difficulty. This has been demonstrated many times in many places, so that there is no doubt of the efficiency of the treatment. In most cases in the past, however, the mistake has been made of allowing the caterpillars to become large, so that considerable damage is done to the trees before any steps are taken toward controlling it. There should be no difficulty, however, in following the directions here given, because the presence of the moth, which everybody recognizes, indicates the approach of the injury and gives ample time for the preparations for the work.

In spraying for this insect the only difficulty met with is that dependent upon the size of the trees

affected. It will usually be necessary, in order to effectively spray, to provide ladders and send the man using the nozzle into the highest parts of the tree, and to provide him with a long extension rod enabling him to reach to every part, since thorough work can be done in this way only. One should use a spray nozzle giving a fine mist, and never attempt to spray a tree with a nozzle which throws a stream, for thorough spraying cannot be accomplished in that way. All good spray nozzles are short-distance nozzles and must be placed close to the parts of the tree when they are being sprayed. Furthermore, in spraying these insects the trees should never be allowed to drip, because after the leaves have been thoroughly wetted with a fine mist any further application simply washes off the poison which has already been placed on them, and a much less satisfactory distribution of the poison results.

Thorough spraying requires, then, first, the reaching of every part of the tree; second, the use of a spray nozzle giving a fine mist; and, third, the avoidance of drip.

The University is now experimenting with the use of especially large sizes of extension rods with the hope of finding satisfactory means of handling rods that will reach the topmost parts of the tree, avoid the use of ladders, and so simplify the spraying problem; and, if the experiments prove successful, the matter will be reported in full in a bulletin of this station, but there need be no failure to protect the trees if one is sufficiently interested to give the necessary labor and attention.

2. TENT CATERPILLARS: (*Malacosoma*, spp.).—The above name applies to a series of moths, some six in number, which are usually known by the term 'tent caterpillar,' because of the peculiar habit of the young caterpillar of constructing silken tents in which they live the larger part of the day, only going forth from time to time to feed upon the leaves. The six species known to occur in California are very similar in appearance and habits, though some show such a remarkable amount of variation in color and pattern of the wings of the moth, that they have received quite a number of names, and a good many varieties are recognizable.

The insects are not strictly confined to the oak; indeed most, if not all of them, are rather general feeders. In the bay region the live-oak leaf seems to be a favorite food, so that often they are seriously troublesome on the oak and scarcely noticeable on the other trees. The moth is quite strictly a night-flier and is not very commonly observed. The eggs are laid in a mass upon the small twigs, usually forming a ring around the twig, though sometimes occurring simply as a mass on one side of the branch. The eggs are somewhat conical, set with the small end toward the twig, and all firmly cemented, so that the individual eggs are not usually easy to distinguish. These insects are not at all infrequent on orchard trees all over the State, and the egg masses are known to all orchardists who come across them in pruning in the winter. The insects are all strictly one-brooded, passing the winter in the egg state. Quite early in the spring the eggs hatch and the worms produced proceed at once to a crotch, usually following down the twig and selecting the crotch where this twig joins another, and there, all working together, build a tent of silk in which they hide. This tent at first is quite small, but is increased day by day and serves as ample protection for the growing worms. When the food is abundant, the insects may spend the larger part of their life in this tent, living together as a large family, going out in droves, feeding together and returning again together to their tent; but when food is scarce the social instinct is gradually overcome and the insects may be found wandering all over the trees and leaving the tree to attack other plants. In all cases when the insect is nearly full-grown this wandering habit is assumed, even though the food may be ample; and wherever they are abundant they become very conspicuous, through their habit of crawling over the ground, especially along paths and sidewalks, and even crawling up sides of buildings. Finally they spin cocoons over themselves, using the hairs that cover the body in addition to the silk which they spin, and then transform into the pupa condition, from which somewhat later the moth emerges, and, after living its retiring life, lays its mass of eggs and dies.

The control of this insect on smaller trees, when not very abundant, can often be best accomplished by searching for the tents in the crotches in the spring and the destruction of each colony. In the Eastern States a chemist's test-tube brush, attached to the end of a long pole, is often used, by means of which the small tents can be brushed out of the tree and brought down with their contents of small worms. The use of a torch, consisting of a rag tied in a ball at the end of a pole and saturated with kerosene and set on fire, has been quite commonly used in California for the burning out of the tents, but is no more rapid than the brush method and endangers the life of the twigs. We would be rather inclined to use the pole-pruning shears and remove the twigs entirely, rather than to use the torch method. When the insects are very abundant, it will often be preferable to spray the trees in the same way as for the preceding insect. The spray method to be employed is exactly the same as for the *Phryganidia*, and the

timing of the spray should depend upon the observation of the presence of the small tents produced by the newly hatched worms. If the spraying is attended to while the tents are still small, there will be no appreciable damage to the trees; but if this matter is allowed to go on until the insects are nearly full-grown, there may not be enough good accomplished in spraying to pay for the treatment.

CONCLUDING REMARKS.—The oak, which is our most beautiful native tree in central California, should be protected from its insect enemies. This can be done by spraying with paris green. Any kind of spray outfit will do, though on account of the large size of the trees it would be distinctly desirable to have the use of a power outfit. The maintenance of the beauty of the shade tree is a community matter, and it would be wise for the street departments of cities to be provided with ample equipment for making such applications. In villages and country places the ordinary orchard spray outfit is already at hand and can be used. Success will depend upon the thoroughness and the proper timing of the treatments.

THE SWINE YARD.

Classifying Hogs From Creamery Point of View.

At a regular meeting of the Humboldt County Creamery Exchange, held at Ferndale, Cal., on the 10th day of March, 1906, the following resolution was adopted:

Resolved that stock in hogs be classed as follows: No. 1 shall consist of barrows and spayed sows and shoats and free from defects of any kind, not fat, and weighing from 40 pounds to 120 pounds each.

No. 2 shall consist of large, rough and piggy sows and be subject to a cut in weight of 20%.

No. 3 shall consist of boars and stags and be subject to a cut of 40% in weight. Soft or acorn-fat hogs are not wanted by creameries at any price.

E. C. DAMON,

Secretary Humboldt County Creamery Exchange.

Peas for Pork.

TO THE EDITOR: Will you kindly permit me to call to your attention a new industry which, if once inaugurated and properly fostered, will greatly diminish our dependence on the East for certain products, and at the same time increase by many millions the annual value of the proceeds of our farms?

It is quite generally claimed that California is not in the "pork belt." The great corn-growing States from Ohio westward to central Kansas and Nebraska supply a large part of the pork consumed in the world. California hogs do not "feed out" as square as a shoe box as those in the big corn belt. The reason is simply because we have as yet found no feed for our stock which can take the place of Indian corn which is grown by the billion bushels on the other side of the Rockies.

The flesh of our hogs is claimed to be lacking in flavor, and is, to say the least, not very palatable, particularly after having been cured. Yet California can grow a feed, and grow it in almost limitless quantities, too, which, when fed to hogs of some good Eastern stock, like the Poland China, for instance, will produce pork superior to that manufactured from the corn-fed hogs of the East.

Canada, to the eastward of Lake Huron, sells in Liverpool, London and Antwerp the highest priced pork on the market. The hogs from which this, the very best pork in the world, is manufactured, are fed on field peas, great crops of which are grown for that very purpose. Now, if Canada, where but one crop per year of these peas can be grown, can afford to feed hogs for the export trade, how would it be in California where two or three crops can be grown each year?

Should our farmers make a beginning in this new industry, inside of five years we would, in addition to supplying our home market, be able to export millions of dollars worth of pork products to the great markets bordering on the Pacific, markets which would always give us the first call, as we are 2,000 miles nearer than are our Eastern farmers. Of course this movement would do away with the Eastern ham, bacon and lard business which now flourishes in every city of our State.

Should our farmers begin growing peas and feeding hogs they will learn, as the cotton growers of the South have learned, that peas being leguminous plants, instead of exhausting, actually enrich the soil by returning to it the nitrogenous elements which preceding crops have extracted from it. Thus, in the language of the late Governor Mount of Indiana (than whom there never was a more thorough, up-to-date farmer), "while thus fattening your stock you are also fattening your land."

This letter is not as complete as it should be, and it may mislead experimenters to make a trial with the ordinary table pea, whereas the field pea, which is sown broadcast, is exceedingly prolific, and is extensively grown around St. Thomas, Canada, is the

variety I had in mind. By sowing the first crop in February or March a succession of crops can be grown each season.

A. BURNTRAGER.

1332 Filbert street, Oakland.

This Canadian field pea which you speak of has already become quite well known in California. The seed is brought into southern California by the carload, and it is grown as a crop in the orange orchards for plowing under early in the spring as a green manure. It is also being used to some extent in the central part of the State, and seed is usually obtainable in any quantity from the large seed dealers in San Francisco. Your suggestion is therefore particularly pertinent, as the plant which you propose is already known here.

SERICULTURE.

Another Start with Silk in San Diego.

San Diego, says a local paper, is now equipped with a full line of apparatus to handle silk worms and silk from the time the egg is received here until the finished cloth comes from the loom. The big shipment of machinery which was ordered some time ago in the East arrived yesterday and was taken into the building formerly known as the Victoria hotel on D street, between Second and Third.

This shipment consisted of about 5,000 lbs. of various things, the largest being the main portions of the warper and loom, and came from the Atherton Company of Paterson, New Jersey. There is another loom coming, the shipper being the Compton Loom Company of Worcester, Massachusetts.

Herman Fascher, who, with his sister, Miss Fascher, has charge of the experimental plant which is being fostered by L. J. Wilde, will proceed this morning to get the new machinery in place, so that he can use some of his silk on it.

He expects to occupy the present place only until a factory building is erected out on National avenue, where a tract of 18 acres is to be utilized, including the mulberry orchards. Just how soon the change of location will be made cannot yet be decided.

For some time Mr. and Miss Fascher have been using the house at the corner of Second and D streets, formerly occupied by Dr. Oatman, as their headquarters, and they now have over 20,000 silk worms in various stages of development.

These worms were hatched from the ounce of eggs which were received from Washington. Another shipment of an ounce of eggs, containing 40,000, is expected by the end of the month, by which time the worms now on hand will nearly all have passed to the cocoon-making stage.

There are many cocoons now on hand, having been spun by the worms which hatched out earliest. One group of worms is just approaching the age when they will be put in excelsior or some other material to go to work at their silky covering. The next younger group is moulting, or losing the present skin so that a larger size may be attained. It takes two days for the worms to pass through this process. Below this class is the group which includes the smaller worms, measuring an inch to an inch and a half in length.

WORMS ARE GREAT EATERS.—It takes considerable to feed these numerous worms, and they need a great amount of care. During the 24 hours they will make way with 25 or 30 lbs. of mulberry leaves, and they have to be fed every two hours. This necessitates getting up in the night several times to feed them.

The leaves upon which they feed are picked by boys from the 2,000 trees at Coronado, which were purchased for the purpose, and from some 300 trees on this side of the bay. The worms will not eat the leaves when they are dry, and even wilted leaves do not agree with them, hence it is necessary to have fresh leaves picked every day.

In the room where he has the worms, Mr. Fascher also has the reel which he invented and which takes the silk fibers from the cocoons. Before the cocoons are ready for this unreeling they have to be soaked in warm water to soften up the mucilaginous substance which the worms mix with the strands of silk to make their tiny homes.

INTERESTING MACHINERY.—From the cocoons the fibers are wound on the reel, which by its rotation dries the tiny strands and then they are automatically wound upon spools. This apparatus unites 20 of the threads from the cocoons into one thread on the spool. It can make 200 yards of thread per minute, or about two and a half pounds per day.

The next piece of machinery, also Mr. Fascher's invention, upon which he has been awarded a gold medal, is the twister. This, like the reel, is operated by electricity, and is to make the silk thread for sewing purposes. For this, three of the spools from the reel mentioned are placed on spindles and a thread started from each. These three threads converge, and by intricate mechanism are given 15 twists to the inch and then go on another sort of

reel, whence, by other machinery, they can be made into skeins or wound on spools, after having been washed free of all the mucilage-like substance and dyed the desired colors.

Mr. Fascher is now having made here two other pieces of machinery of his own invention. One is to prepare the warp and the other the filler for making the silk cloth on the new machinery which has just arrived.

The filler is the thread which runs crosswise of the cloth, while the warp runs lengthwise. These threads are given only three or four twists to the inch, while sewing silk is given, as stated, 15 twists. The twister which is to make the warp will have 36 spools, while that for the filler will have but eight.

When the new apparatus is set up, the warp will be put on the warp beam (the roller on which the warp is wound on the loom), and adjusted for the width and length of the piece of cloth which is to be made. The filler, or cross thread, is shot back and forth in shuttles through open spaces or 'tents' which the 'harness' makes in the warp.

Agricultural Review.

Butte.

WILL SEAL 40,000 CANS PER HOUR.—Chico special to *Sacramento Bee*, March 22: The local California Fruit Canners' Association cannery is to be improved by the installation of a machine which will hermetically seal and cap 40,000 cans of fruit an hour. During the season the daily capacity of the plant will be 2,000 cases a day, or about 48,000 cans. The fruit-drying and packing department of this company is to be enlarged, and Chico was one of the places where it was decided to install a plant.

TO IRRIGATE IN TWO COUNTIES.—*Pleasanton Times*, March 17: The land between Biggs and Marysville is to be irrigated. This work is being done by the settlers in Gridley, who are building lateral ditches leading from the recently completed Butte county canal. These ditches will eventually cover, with the extension into Sutter county, about 80,000 acres. Between 10,000 and 12,000 acres will be put under water this spring by 60 farmers. Many of these settlers are from Oklahoma and arrived last month. The Butte canal takes its water from Feather river, near Hamilton, and carries 500 cu. ft. Its construction cost \$25,000.

COUNTING BEES.—Chico special to *Sacramento Bee*, March 21: An experiment is under way here in which 10,000 bees have to be counted twice. The object is to find how much honey is required to feed one bee, and two counts of the 10,000 bees are made during the extremes of temperature to get a good average. The tediousness of the job can hardly be imagined. A single glass tube must be watched for four days, and every bee passing through it counted. J. M. Rankin, Government Apiarist at the Garden, is conducting the experiment. He is also busily engaged in artificially rearing queen bees to send to bee-men of this

State for breeders. Over 400 orders have been received for the queens, which are of the Carniolan and Caucasian strains. The wet weather causes the 'workers' to rebel against providing extra food for the cells, and they frequently destroy them. A choice foreign plant at the Garden, from China, called 'yang tow' is becoming acclimated in one year, only the tender tips being frozen this year. The fruit, which in China only the rich can afford, resembles the plum in shape and the gooseberry in taste and in size of seeds. The flavor, however, is striking.

Colusa.

GRAIN TURNING YELLOW.—*Sacramento Union*, March 22: A steady rain continues. Grain in Colusa is in excellent condition, except on the low land, where it shows a yellow tinge on account of too much moisture. Much land along the river was not planted on account of stormy weather. A meeting of land owners who farm south of Colusa was held, and it was decided to put in a pumping plant on the river one mile below Colusa. Considerable of the ditch has already been completed by individuals, and this will be extended until 2,000 acres are irrigated. It is intended to plant the land in alfalfa.

Fresno.

REEDLEY RAISIN GROWERS MEET.—*Reedley Exponent*, March 16: A meeting of the Reedley raisin growers was held last Friday. About fifty growers were present. They resolved to stand together and pool their crops irrespective of any other district, and to co-operate with the growers at any time when 75% of all the growers of central California are ready to join a permanent organization.

FRUIT TREES IN DEMAND.—*Salinas Index*, March 22: The nursery season in Fresno closes with a record unequalled in 20 years. The local yards are sold out of peaches, and estimates of the new acreage planted in this district alone exceed 7,000. The demand for Muscat grapes has been large, notwithstanding the unsettled condition of the raisin situation, and over 3,000 acres of new vines have been set out. Apricots and citrus stock are also favorites, and every variety of fruit tree has been sold except pines. Peach trees have sold at an average of \$225 a thousand, as against \$140 last year, and sales are on record at \$350 for the Muir. Los Angeles and Sacramento counties have bought all the pear trees in sight. Large shipments of deciduous fruit stock of all varieties have been made to Mexico, South America, South Africa and Australia. The result will be a great increase in output of fruit in three years.

Kern.

SHEEP SHEARING.—*Kern Exchange*, March 22: Sheep shearing is in full swing over the county, though interfered with by rain. The camps are in the south end of the valley at Biaca's, on Poso creek, at McKittrick and at the old county well near San Emidio.

Kings.

MONEY IN DAIRYING.—*Lemoore Leader*, March 17: C. W. Williams is realizing big profits from his dairy herd. He has only a common strain of cows, eight in number, and his receipts from the sale of cream for the past four months have been: November, 1905, \$54; December, \$57; January, 1906, \$66; February, \$60.41. During the month of February he received 31c. per pound for his cream, which is an increase of 8 or 10c. per pound over the rate paid during the corresponding month last year.

Los Angeles.

RAIN DELAYS ORANGE PICKING.—*Alhambra Advocate*, March 17: Riverside orange shipments to date aggregate 2,203 cars, with 181 cars of lemons. It is estimated that the orange crop is very nearly half off. Last week's output was 218 cars of oranges and 13 cars of lemons. The rain delayed picking for a few days.

Monterey.

EXPERIMENT WITH BAMBOO.—*Salinas Index*, March 8: Bamboo farming is to be inaugurated in this county. O. Noda, proprietor of the tea gardens at Pacific Grove, has ordered a shipment of 300 lb. of bamboo plants from Japan and expects to receive them on the next steamer. Mr. Noda has a ranch in Carmel valley, where he will plant the bamboo. The bamboo plants which he has ordered are about 20 ft. long and he expects to have them all under cultivation by the first of April. The variety that he has ordered is of the species that grows large, and it sometimes grows to seven inches in circumference.

Orange.

CELERY CROP SHORT.—*Huntington Beach correspondent to Los Angeles Times*: H. S. Hazeltine, of the California Vegetable Union, has returned from a

tour of inspection to Jersey island. Mr. Hazeltine says that the heavy frost and inadequate drainage practically annihilated the celery crop. In the fore part of the season several cars were shipped to Eastern points, where they arrived in such poor condition that dealers refused to pay freight charges. That which was shipped to San Francisco hardly realized the expenses of getting it out of the soil. Owing to the many adverse conditions surrounding celery growing, the Vegetable Union has decided not to operate in that section the coming season. Orange county celery growing will have nothing to fear from northern California competition. Shipments of celery from Smeltzer for the week aggregate 89 cars, making the season's total to date 2,077 cars. Reports indicate that there are only 50 cars of Golden Heart celery left. This will be cleaned out by the end of this week. Shipments of Green Top will begin by the latter part of this week. There is a lively demand for this variety all over the country. The Golden West Celery & Produce Company has purchased \$2,000 worth of celery seed for use in planting the coming season's crop. Part of this seed was imported from France.

PICKLE FACTORY.—*Huntington Beach News*: E. M. Frie, an expert pickle maker, has arranged to install a plant at Huntington Beach. By the first of next November a modern canning and pickle plant will be in operation here. Articles of incorporation for the Huntington Beach Canning, Pickling & Produce Company are ready to be filed. The company is capitalized for \$100,000, divided into 1,000 shares. All of the stock has been subscribed.

Sacramento.

HOPGROWERS TO REDUCE ACREAGE.—*Sacramento Bee*, March 19: Hop growers in this part of the State are agitating a movement to reduce the acreage of hops, believing by this means better prices for the product will prevail. Overproduction was responsible for the low prices that prevailed for two years. The co-operation of the growers of Washington and Oregon may be enlisted and growers induced to abandon 15 acres out of every 100, or let that acreage go to seed.

San Joaquin.

WORLD'S FAIR AWARD.—*Lodi Sentinel*, March 15: J. W. Dougherty received a bronze medal awarded by the World's Fair judges at St. Louis on a fresh peach display of the Orange Cling variety. Of the 15 awards carried off by San Joaquin county over two-thirds of the number were for fruit and vine displays. The fruit was for display with no idea for prizes. Among those who are yet to receive awards are J. and R. Boyce, V. Jahant, J. B. Cory, R. Adams, T. C. Shaw, A. Thornton, J. Theden and others.

Shasta.

COSTS \$90 TO WATER SHEEP.—*Redding Searchlight*, March 16: J. Fitzpatrick will pay the Forest Bureau \$90 for the privilege of watering 1,500 sheep at Pit river this season. He has 5,000 head of sheep which he will move from Arbuckle, where they have wintered, to the eastern part of Shasta county for the summer. Mr. Fitzpatrick has a band of 1,500 that he proposes to range on Walker's land south of Pit river. The feed is ample, but water is scarce, the only supply being Pit river. The forest reserve includes a strip of land one mile wide along the southern bank, and though the ground is worthless for grazing yet he must get a permit in order to reach water. So he has taken out a 'grazing' permit, paying \$90 therefor, or at the rate of 6c. a head, which might be called a watering permit.

Solano.

DAIRYING IN FAVOR.—*Solano Republican*, March 16: A creamery in Suisun, by H. Bird, is now in construction and will be ready for operation in a month. It has given a new impetus to the dairying industry and alfalfa growing in this section. Hilborn Bros., H. Miller, W. H. Turner, M. Jensen and W. C. Hale are experimenting in alfalfa for dairying purposes. The most extensive project in alfalfa growing yet reported in this section is that of the Stones, who contemplate seeding 100 acres of the McMasters' ranch, providing pasturage for their work horses as well as dairy cows. The Frost ranch of 160 acres, near Elmira, was valued at only about \$6,000, and part of it was recently seeded to alfalfa, which is irrigated. The owners were recently offered the sum of \$18,000 for the property, which was refused.

TWO CARLOADS OF HORSES.—*Solano Republican*, March 16: F. O. Scarlett received two carloads of work horses from Modoc. The animals will be pastured on the hill ranges until they become in good order, when they will be placed on the market.

TO CULTIVATE MARSH.—*Solano Republican*, March 16: Lauritzen & Smith, who purchased a tract of marsh land on Grisly island some time ago, are arranging to place 100 acres under cultivation. The land will be broken this spring and allowed to stand until the sod decays, when it will be seeded to grain and other vegetation. This land has been used for pasturage with profitable results, but the new owners have decided it will yield a greater profit under cultivation, the soil being very fertile. The experiment is interesting to other owners of marshes.

Socoma.

LARGE GRAPE ACREAGE.—*Healdsburg Enterprise*, March 10: Since the offer of the Asti Swiss Colony Company for the furnishing of all the grape cuttings necessary for the planting of a large acreage of grapes in Mendocino county there has been a great impetus given to viticulture there. It is estimated that 500,000 vines were planted this year within ten miles of Ukiah, the Asti Colony having furnished 250,000 cuttings. Many of the growers have closed ten-year contracts with the Asti Colony to sell their grapes at \$10 per ton with the benefit of a raise in the market price.

Stanislaus.

DRY CULTURE FOR TOKAYS.—*Stanislaus News*, March 16: F. M. Barnett, a Stockton man, is conducting an experiment in viticulture on his ranch on Dry creek, which may mean a deal for Stanislaus, if successful. He is planting olives and Flame Tokay grape cuttings on the dry lands to see if they will flourish without irrigation, the idea being that the Tokays will color beautifully without water, and be especially prized for the table.

SOMETHING NEW IN PLOWING.—*Modesto Herald*, March 15: The only railroad locomotive in the world that carries its own track is plowing 45 acres of ground every day on the Little ranch, near Manteca. This steam plow team is the invention of Holt's manufacturing plant at Stockton and is successful. The engine is of 40 h.p. and does the work of 80 horses. It not only carries its own railroad track, but lays it automatically and picks it up again. The Holt people found that no matter how large and wide they made the traction wheels on their traction engines there was some ground in this country too soft to support them and give a good working power. They worked on the problem and turned out this locomotive. This is the plan: Two endless belts of steel links were made and crossways on these belts were fastened ties, 8 by 2 in., close together. Wheels or rollers were fastened on steel frames in these belts and the traction engine was supported between these two belts and on the axles from the wheels, to which the power of the engine was attached by sprockets and endless chains. This gave the engine as large a pulling hold on the ground as could have been secured had the engine been furnished with traction wheels 100 ft. in diameter. This unique engine was first tried on the treacherous peat on the islands and it worked successfully. It was brought out here to plow ground that was so soft that teams could not be used on it, and is a great success and a seven-days' wonder.

FINE HEADED BARLEY.—*Stanislaus News*, March 16: J. E. Latimer, of Ceres, displayed a bunch of headed barley which is over three feet in height, with fully developed heads. It is of volunteer growth, and came from the Whitmore land south of Ceres. Mr. Latimer states that there is quite a patch of this grain, and if it keeps on developing will be ready to harvest by the middle of April.

Sutter.


CANNERY IMPROVEMENTS.—*Marysville Appeal*, March 16: The California Fruit Canners' Association's cannery at Yuba City is undergoing general repairs. The cooling shed has been torn down and a warehouse will be built on the lot. An extension will also be made on the west side. Two new improved capping machines will be installed and two vats; a large fruit room will also be constructed.

Trinity.

APPOINTED SUPERVISOR.—*Weaver-ville special to Sacramento Bee*, March 17: R. H. P. Bigelow, forest ranger in charge of Shasta and Klamath forest reserves, has been promoted to forest supervisor, at \$1,600 a year, and has been assigned charge of the Klamath reserve, with headquarters in Yreka.

Yuba.

BEEF FOR HOP PICKERS.—*Wheatland special to Sacramento Bee*, March 17: The horse breakers who have been employed on the Horst's hop ranch have finished breaking over 100 head of Oregon horses, and the last lot was sent to Sacramento to be used on the Perkins hop ranch, near that city.



Warranted to give satisfaction

GOMBAULT'S CAUSTIC BALSAM

A safe, speedy and positive cure for
Curb, Splint, Sweeney, Capped Hock, Strained Tendons, Founder, Wind Puffs, and all lameness from Spavin, Ringbone and other bony tumors. Cures all skin diseases or Parasites, Thrush, Diphtheria. Removes all Bunches from Horses' or Cattle.
As a HUMAN REMEDY for Rheumatism, Sprains, Sore Throat, etc., it is invaluable.
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THE LAWRENCE-WILLIAMS COMPANY, Cleveland, Ohio.

The Home Circle.

Love, the Illusion.

Love is just a cobweb, wet with morning dew;
Love is just a fairy spell, invisible to view;
A tread—a touch too heavy, and the cobweb is not there!
A sigh too long, and lo!—the spell has vanished into air!

Love is just a morning-glory, doomed at noon to die;
Love is only half a story, told in passing by;
Love is gold, so delicate, the faintest flame would melt it;
Love's NOTHING—; but God help the man who's never known nor felt it;

—Helen Rowland in *Life*.

Carlotta Mia.

Guiseppe, da barber, he's greata for "mash,"
He gotta da bigga, da blacka mustache;
Good clo'es an' good styln an' playnta good cash.
W'enever Guiseppe ees walk on da street,
Da people dey talka "how nobby, how neat!"
How softa da handa, how smalla da feet."
He raisa hees hat an' he shaka hees curls,
An' smila weeth teetha so shiny like pearls;
O! many da heart of da silly young girls

He gotta.
Yes, playnta he gotta—
But notta
Carlotta!

Guiseppe, da barber, he maka da eye,
An' lika da steam engine puffa an' sigh
For catcha Carlotta w'en she ees go by.

Carlotta she walka with nose in da air,
An' look through Guiseppe weeth far-away stare,
As eef she no see dere ees somebody dere.

Guiseppe, da barber, he gotta da cash,
He gotta da clo'es an' da bigga mustache,
He gotta da silly young girls for to "mash,"

But notta—
You bat my life, notta—
Carlotta.
I gotta!

The Sea Madness.

I have come far from the sound of the thresh,
The sight of the living sea,
To a place of cribbed and narrow ways,
Where only the wind is free;
But the leap of the sea is in my blood, and
always, night and day,
I hear the lap and wash of the waves, the
hiss of the flying spray.

When the loosened winds of the tempest wake
far thunder on the deep
I can hear the siren music calling through
the veil of sleep;
Through the thronging city highways
comes the hollow ocean roar,
And I sicken for the long green surge,
the lonely foam-wet shore.

I know a storm-lashed headland, where
the broken hillside dips,
In a sombre flame of heather to the ocean's
singing lips.
I must go; the sea has called me, as a
mistress to her swain;
From the immemorial tumult I shall drink
of peace again.

F. O'Neill Gallagher.

Wooing "A Native."

"Oh, Gertrude, won't you help me peel these peaches? It's most train time and supper isn't anywhere near ready."

The voice came with a pleasantly suggestive clink of dishes through the screen door to where Gertrude Woodford stood under a large elm.

"I think the train is in," she answered, entering the cool, pleasant house in answer to her mother's call.

"For the land's sake!" Mrs. Woodford turned to her handmaid and gave an order with some asperity. Keeping summer boarders was really the ore excitement of her dull life, eagerly looked forward to during the long winter months when her daughter pursued her musical career in the city and she lived alone on the rugged cape.

"Small this year, aren't they?" she said, watching her daughter's pretty bent head and referring to the fruit.

"Not more so than usual," the girl laughed.

"Well, I don't care," Mrs. Woodford declared. "Mr. Garst says he never tasted sweeter peaches, and as to Mr. Clifford—"

"Who's trifling with my august appellation," called a gay voice as a young fellow swung himself onto the piazza. "Miss Woodford, I don't know which I shall devour first, you or the peaches, I'm so ravenous."

"I was just going to say that your appetite is all right, anyhow," Mrs. Woodford laughed. "Did your cousin come down with you?" she added.

"Yes, Garst got as far as the hammock and collapsed."

"Go and call him, Gertrude. Supper is ready," her mother said.

The girl rose and went through the hall. Inside the door she paused, looked with darkening eyes at the man who lay at full length in the hammock.

The slight clash of the screen as she stepped outside caused him to turn. He sprang up at once and came toward her, showing a strong, clean-shaven face and a figure singularly muscular, in spite of the fact that he walked with a slight limp.

"It is heavenly here after even a day in town," he said. "I have just been thinking that the most marvelous changes in our lives come when we least expect them. I wonder if you know what this summer has been to me?"

He was looking gravely into her eyes and the color mounted to her temples.

"Stephen, the fish is getting cold," his cousin called, impatiently, and Gertrude went quickly into the house.

In compliance with a previous promise to Jack Clifford, she went with him after supper to see the sunset from a hill nearby. When they were seated on a boulder, watching the vast sweeping of ocean and crimsoning sky, she turned suddenly to her companion.

"Why is Mr. Garst lame?" she asked gently.

"Well, I suppose it won't do any harm to tell you," Jack hesitated, "though we never speak of it when he is present. His leg was crushed in a railway accident, trying to save the girl to whom he was engaged."

"Did he save her?"

"Yes."

"Then why were they not married?"

"Oh, she threw him over for a man twice his age and the trifling adjunct of \$3,000,000."

Gertrude Woodford drew her breath sharply.

"She tried to stuff it down Stephen's throat that she was sacrificing herself to save her father from financial ruin, and I think he believed her," Jack went on.

"Then she attempted a platonic correspondence with him after her marriage, but he would have none of it. All the same, I don't believe he has every quite forgotten her. Anyway, he could not do so now, even if he would."

"What do you mean?"

"For she is come, she is here," as Jean Ingelow says in 'The Letter L.'"

"Here?"

"Yes; at the Ocean View. I saw her on the piazza tonight as I came up from the train. Handsomer than ever, by Jove! Tall woman, with bronze hair."

"Bronzed, you mean. I saw her arrive this morning," Gertrude said coldly.

"The old man very considerably 'shuffled off this mortal coil' two years ago, leaving her complete mistress of his millions," Jack rambled on. "My own opinion is that this alighting next door to where she knew Stephen was staying, in the subdued attractiveness of second mourning, is the beginning of the end. You should have seen him start when he saw her on the hotel piazza tonight."

Gertrude rose quickly.

"How cold it is up here," she said, with a shiver. "Let us get back to the house."

A group from the summer hotels and cottages was standing near Mrs. Woodford's house, watching the sunset, when they descended. Gertrude would have passed on, but Jack Clifford detained her. Unwilling as she was, she had to submit to an introduction to Mrs. Armitage, Stephen Garst's former fiancée. The latter turned to her at once with a scrutinizing look. The girl was too pretty not to be dangerous.

"It is beautiful here in these late summer weeks," she drawled.

"I think it beautiful at all times. The cape is my home," Gertrude answered quietly.

"Indeed! Then you are a native. I should hardly have thought it."

A faint color rose under the girl's skin at the supercilious tone.

"Miss Woodford's forefathers settled here over two hundred years ago," Garst broke in quietly. "I believe her ancestors for six generations back are buried in the little cemetery at Plum Cove. Not many of us can go back as far as that."

Mrs. Armitage looked quickly from Garst to the girl beyond him. But Gertrude had left the group with her head held high. She wanted none of Garst's vindication of her family. She had almost reached the house when he overtook her.

"One moment," he pleaded. "I want so much to speak to you tonight."

"I am afraid I must ask you to excuse me," she said, icily.

Had Garst known that the cold, direct look which she sent into his eyes was really the outcome of burning jealousy, he would not have turned away with so heavy a heart.

Jack Clifford had hard work to persuade her to accompany them on the yachting party arranged for the next morning.

"You forget that I am a 'native,' she said, with a bitter little smile, and Garst set his heel into the ground as he listened.

When they reached the wharf Gertrude turned to Jack Clifford.

"Old Capt. Lufkin is sick and can't go, the boy tells me," she said quickly. "I think we had better give up the trip."

"Miss Woodford"—Jack looked at her with mock reproach—"I am pained that you should thus undervalue my yachtmanship. Nothing but patriotic feeling prevented my offering my expert services to Sir Thomas for Shamrock III. Step on board the Widgeon, ladies, and fear nothing."

But fear entered Gertrude's heart more than once when they had left the little harbor and she noted the darkening horizon.

Mrs. Armitage was sitting near Garst, beautiful in her soft white flannel yachting suit. After half an hour's sailing Gertrude crossed to where Jack Clifford sat at the helm, thus bringing herself on Garst's other side.

"Do put back," she whispered to Clifford. "We are going to have a squall, and a bad one."

After a critical glance at the sky Jack put the boat's head around. But even as he did so a cold blast, which was as the foreboding of coming ill, shivered over them. Gertrude drew her breath hard. She alone knew what the wind would be when it struck them.

Suddenly, as if she had received a mortal blow the Widgeon went over—over until her mainsail lay almost level on the water. With a horrible hungry, suggestive hiss the sea rose over the combings of the hatchway.

Too terrified to scream the women held their breath, clinging for dear life to whatever they could hold on by. Mrs. Armitage flung herself on Garst's shoulder.

"Stephen! Save me!"

But in that moment when death seemed upon them he was not even aware of her presence. His arm went around the girl at his side and drew her close, his lips brushing her cheek, while her damp hair blew against his face. Gertrude scarcely cared whether it was life or death.

Then she suddenly wrenched herself free and flung her weight upon the tiller, putting it hard to port, for Jack's amateur skill seemed to have deserted him. The Widgeon came round, shuddering, into the wind, and lay like a frightened thing with flapping sails while the squall raced by.

"I think we owe our lives to you, Miss Woodford." One of the women from the Ocean View approached Gertrude when they were safely landed on the wharf, but Garst drew her aside.

"Sweetheart!" His voice vibrated as he bent over her.

Mrs. Armitage turned to look after them, lifting an end of her bedraggled flannel skirt.

"Well," she said slowly, "for nerve give me a native!"—San Francisco Call.

Popularity.

Here are some rules for 'wall-flowers' who do not enjoy their position and would succeed:

The girl who succeeds has so much to do that she has no time for morbid thoughts.

She never thinks for a moment that she is not attractive, nor forgets to look as charming as possible.

She is considerate of the happiness of others and it is reflected back to her as from a looking-glass.

She believes that in life there is serious work to be done, and that this serious work lies very close to the homely, everyday duties, and that kind words cost nothing.

She is always willing to give suggestions that will help some less fortunate one over the hard places in life's journey.

She is ever ready to talk about a book, a picture, or a play, rather than indulge in idle words about another.

She is her own sweet, unaffected womanly self. Therein lies the secret of her popularity—of her success.

Domestic Hints.

STUFFED BEEF HEART.—Boil a beef heart until tender. Remove from fire, cut out the center, make a dressing as for chicken, adding part of the center, chopped. Stuff and bake for an hour. Make a gravy as with a roast and add remainder of the chopped meat to it.

HAM MUFFINS.—Cream one-fourth cup butter, add gradually nearly three-fourths cup boiled ham, chopped fine, also a well beaten egg, then alternately one cup of graham flour and one cup white flour, sifted with three teaspoonfuls baking powder and a cup of milk. Bake in a hot well-buttered muffin pan about 25 minutes.

SCALLOPED CHEESE.—Take four slices of bread; remove the crust, butter each slice and put in a buttered baking dish in layers; chop one-quarter pound of cheese and sprinkle over it some salt and pepper. Mix four beaten eggs with three cups of milk and pour over the bread and cheese. Bake in a hot oven as you would bread pudding.

EGG SALAD.—Remove the shells from cold, hard-boiled eggs and cut in halves lengthwise. Mash and season the yolks with a little vinegar, mustard, salt and pepper. Take a spoonful of this mixture and form a circle in the center of a lettuce leaf. Cut the whites lengthwise into divisions resembling the petals of a daisy and arrange these around the yellow centers. Use as many eggs as there are guests to be served.

STEWED WATERCRESS.—Trim off the coarse ends of the cress and thoroughly wash it. Then put it into a saucepan of boiling salted water and cook it till tender. Drain, when cooked, press out all the water possible, put about two ounces of butter into a stewpan, then put in the cress and sprinkle over it a little flour. Stir for five minutes and pour in half a pint of white stock, add salt and pepper, and let cook briskly for ten minutes.

A Limit to All Things.

He had been away on a long journey and upon his return his wife was detailing to him a number of reforms and improvements which she had successfully engineered during his absence, says the Philadelphia Telegraph.

"And you know," she said, "the drawer that was locked for over a month and which you said couldn't be opened except by a locksmith? Well"—triumphantly—"I opened it."

"Well, well! How in the world did you do it?"

"With a hairpin."

"And the oven door," she continued, "has been slipping around on one hinge for ever so long just because you were too lazy to fix it, but it's all right now."

"Well, I'm glad you had it fixed."

"Had it fixed! I fixed it myself—with a hairpin."

"And then there's that crayon portrait of mother that stood in the corner for almost six solid weeks because you never would bring me any picture hooks—I got it up with a hook I made myself—out of a hairpin."

"Ye gods!" he said.

"And there's Willie. You've been coaxing him and bribing him for a year, trying to break him of biting his nails, and I broke him in a week."

"With a hairpin?" he asked weakly.

"No!" she snapped. "Don't be a goose! With a hairbrush!"

The Hair and the Wave.

"The Marcel wave ruin the hair? Nonsense," was the vehement declaration of a hair dresser. "I know that idea is in the air and it exasperates me to hear women utter it, for it is not true."

"It is now seven years since the Marcel wave was first introduced in this country and I have had at least a score of women customers who have had their hair waved regularly every week all that time and often twice during the week if they were going out to a dinner or reception."

"I wish you might see their heads. Their hair is in superb condition, with not a sign of brittleness or that lifeless look that comes from overheating with tongs."

"And why? Well, one reason is that some lotion is always used on the hair before the iron is applied, which prevents scorching, besides acting as a food for the scalp as well."

"What does injure the hair is ruffling it up beneath to make a pompadour. A rat is equally bad, as it beats the scalp."

"To overcome a natural deficiency of hair there is nothing more hygienic than a ventilated pompadour—an accessory which cannot be detected."

Hints to Housekeepers.

Hot milk is even better than boiling water to take out fruit stains.

Red pepper scattered in mice holes and the holes filled up with salt cement will drive away mice.

Cheese is usually brushed over with arsenic to keep the flies away and should therefore be washed before using.

For large shoes which slip at the heel glue a shaped piece of velvet to the inside bottom and side of the heel, and it will cling to the stocking.

Keep pudding sauce warm by placing the vessel containing it in a larger vessel of hot water, but do not allow the water to boil after putting the dish in.

Wash the drain pipes each day by pouring a strong solution of sal soda and boiling water down them. It will melt the grease and carry it to the sewer.

Never use a metal spoon for stirring fruit or tomatoes. A wooden one is better, and those with short handles are preferable for stirring thick messes.

To keep white furs perfectly fresh rub them with hot cornmeal when they are soiled. The pan is kept on the stove while the furs are being treated and the meal does duty several times.

Nails which have been removed from the wall frequently leave unsightly holes, which it is not always convenient to conceal with a picture or bracket. The best method of hiding them is with either putty, plaster of paris or a paste made of sawdust and glue. When dry, cover the filling with paint to match the paper.

Suet puddings are more nourishing if the suet is chopped as fine as possible, and the whole thoroughly well boiled. Any suet left over will keep good for weeks if melted down in a saucepan, strained and stored in a covered pot. Beef marrow is often used in puddings in place of ordinary suet. It is simply scraped out of the bone and used raw. It is much more delicate and delicious than suet.

Lines and wrinkles can be accounted for. If they come from worry or grief they will remain until the cause is removed. If the worry is not very serious the wrinkles can all be effaced with a little care. People who perspire easily do not wrinkle, and generally have a fine, clear skin; it is, therefore, a good thing to induce free perspiration by exercise and hot baths. The face should be steamed, to soften the skin and smooth out the lines; it must then be bathed in cold water. This will act as a tonic and make the flesh firm and pink. A muddy complexion will be greatly benefited by a course of mineral waters. Too much uric acid in the system is responsible very often for a coarse, sallow skin. This may be entirely remedied by taking a dose of salts (one to three teaspoonfuls, as necessary) every morning for a few weeks. This treatment is also good for anyone with a rheumatic tendency.

Medicinal Value of Vegetables.

Asparagus stimulates the kidneys.

Parsnips possess the same virtues as sarsaparilla.

Celery is a nerve tonic and is also good for rheumatism.

Onions are good for coughs, colds, kidney troubles, insomnia, liver complaints, etc.

Tomatoes are good for a torpid liver, but should be avoided by gouty people.

Beetroot is fattening and good for people who want to put on flesh. So are potatoes.

Lettuce has a soothing effect on the nerves and is excellent for sufferers from insomnia.

Spinach has great aperient qualities and is far better than medicine for sufferers from constipation.

Carrots and Brazil nuts are also excellent for this trouble. Carrots are also good for scurvy.

Medicinal Fruit Values.

Apples relieve constipation, nervous dyspepsia and rheumatism.

Blackberries, perfectly ripe, are one of the best remedies for summer complaint.

Cranberries are good for liver troubles resultant from overeating.

Lemons are good for the liver, help to keep off malaria and have many toilet uses.

"Our collection today, my dear brethren," said the minister, "is for the clothing fund. At the same time, may I earnestly impress upon you that, though the collection is for the clothing fund, it is not necessary to contribute buttons."

Teacher—Willie, what animal is web-footed? Willie—The spider, ma'am.

Canning Meat.

Living on a farm many miles from market, the greatest problem is to have fresh meat during the hot weather. A method of canning meat, given by an experienced housekeeper, is worth trying: Cut the meat so that you can easily get the pieces into a large kettle, and cook slowly in water slightly salted until it can be readily picked from the bones. After it has cooled sufficiently to be handled separate it, putting the best and largest pieces into one set of jars and packing the smaller pieces into others. Use the Lightning glass jar, quart size. After filling with meat, pour into each enough of the pot liquor, which has been boiling down in the meantime, to fill completely. Put the tops on securely. Then place in the boiler on the stove with enough warm water so that they are completely covered. The lower part of each jar is wrapped with an old cloth or towel, so that when they begin to boil there is no danger of loss by breakage. After the water has been brought to a boil it is kept at the boiling point for two hours. Before taking the jars from the water, and while they are still covered, finish sealing. This sounds more difficult than it really is. Hold the can firmly by pressing down upon the top. A large two-tined fork or stove-lid lifter will do. With that in hand push down the wire that seals the can. I have yet to find a canful that has not kept perfectly. When it is opened the liquor will be a solid jelly, and over the top will be a thin layer of the hardened fat. An ingenious housekeeper can originate many ways of serving the contents, which are nutritious, being 'home-made.'—Mrs. G. H. Wheeler.

Chaff.

Mr. Stoplate—That song always moves me. Miss Tersleep—If I'd known that I'd have sung it an hour ago.

"Ah, yes," said the cannibal chief, smacking his lips, "he was really a good man."

Mamma—Come now Willie, you must have your neck washed. Willie—Aw, say! Who invented neck-washin' anyhow?

Mrs. Hoyle—Does your husband make good money? Mrs. Doyle—Yes, its good enough, but there's too little of it.

Madam—Be sure to put plenty of nuts in the cake. Cook—I'll crack no more nuts to-day. My jaw hurts me already.

Tramp—I lived on water once for six months. Lady—Well, I must say you don't look it. Tramp—I uster be a sailor.

Miss Oldone—I wouldn't have refused Charley Banks if I'd been you. Miss Sweetgirl—I don't believe I would either, if I'd been you.

"Do you—er—ever tell fibs?" asked the lady who had advertised for a maid. "Not for myself, ma'am," answered the applicant, "only for the missus."

Employer—Has the cashier told you what you are to do this afternoon? Office Boy—Yes, sir, I'm to wake him when I see you coming.

Mr. Goodthing—How does your sister like the engagement ring I gave her? Her Young Brother—Well, it's a little too small. She has a hard time getting it off when the other fellows call.

"So you made him promise to give up smoking?" said one girl. "Yes," answered the other. "But I never knew you seriously objected to smoking." "I don't. But I had to do something to make him show his affection."

The Orator—I ask you—I ask you—what two things are helping mankind to get up in the world. The Sleepy Janitor—The alarm clock and the stepladder.

Gypsy Fortune-Teller (seriously) — Let me warn you. Somebody's going to cross your path. Motorist—Don't you think you'd better warn the other chap?

"Why did you set your cup of coffee on the sofa, Mr. Newcomer?" asked the landlady. "It was so weak," was the reply, "that I thought it would be a good idea to let it rest awhile."

Politician—So you think music has its advantages as a profession? Band Leader—Sure. No matter which way an election goes the leaders of brass bands are always sure of their jobs.

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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, March 28, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday.....	78 1/2 @ 77 1/2	77 1/2 @ 77 1/2
Thursday.....	78 1/2 @ 77 1/2	77 1/2 @ 77 1/2
Friday.....	78 1/2 @ 77 1/2	77 1/2 @ 77 1/2
Saturday.....	78 1/2 @ 77 1/2	77 1/2 @ 77 1/2
Monday.....	78 1/2 @ 77 1/2	77 1/2 @ 77 1/2
Tuesday.....	78 1/2 @ 77 1/2	77 1/2 @ 77 1/2

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday.....	44 1/2 @ 43 1/2	44 1/2 @ 43 1/2
Thursday.....	44 1/2 @ 43 1/2	44 1/2 @ 43 1/2
Friday.....	44 1/2 @ 43 1/2	44 1/2 @ 43 1/2
Saturday.....	44 1/2 @ 43 1/2	44 1/2 @ 43 1/2
Monday.....	44 1/2 @ 43 1/2	44 1/2 @ 43 1/2
Tuesday.....	44 1/2 @ 43 1/2	44 1/2 @ 43 1/2

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	May, 1906.	Dec., 1906.
Wednesday.....	1 26 1/2 @ 1 26 1/2	1 27 1/2 @ 1 27 1/2
Thursday.....	1 26 1/2 @ 1 26 1/2	1 27 1/2 @ 1 27 1/2
Friday.....	1 26 1/2 @ 1 26 1/2	1 27 1/2 @ 1 27 1/2
Saturday.....	1 26 1/2 @ 1 26 1/2	1 27 1/2 @ 1 27 1/2
Monday.....	1 26 1/2 @ 1 26 1/2	1 27 1/2 @ 1 27 1/2
Tuesday.....	1 27 1/2 @ 1 27 1/2	1 27 1/2 @ 1 27 1/2

Wheat.

The general condition of the wheat market is considered as showing some improvement. Advices from the East are that the feeling that the market has struck bottom is becoming more prevalent. Australian shipments fell off about one-half during the last week, and advices from Canada show that she will not be so strong a competitor from now on, as the discrepancy between her prices and those in the East has adjusted itself. It is also advanced by some that crop reports have been too optimistic, as only a small part of the world's acreage has been sown, and a large part of the wheat-raising country is still covered with snow. However this may be, the visible supply of wheat is still large and increasing, and in the absence of any improved foreign demand, it is not probable that prices will change materially, as traders are governed by the visible supply in their transactions. The domestic demand for wheat has not improved. A large proportion of flour mills are either shut down or are running at a low capacity. Millers claim that their wheat supplies are equal to their needs for some time to come, and they do not manifest any disposition to increase their supply. In the absence of any change in the foreign demand for flour, it is hard to see how any relief can be looked for from domestic consumption. Thus it is that dealers are inclined to stand quietly by their holdings, with their eyes on foreign ports, waiting for a sign.

California Milling.....	1 32 1/2 @ 1 35
Cal. No. 1 shipping.....	1 27 1/2 @ 1 30
Northern Club.....	1 30 @ 1 32 1/2
Northern Bluestem.....	1 33 1/2 @ 1 35 1/2
Northern Red.....	1 25 @ 1 27 1/2

PRICES OF FUTURES.

Tuesday, at the forenoon session of Exchange Dec., 1906, wheat ranged from \$1.26 @ —.

Flour.

The flour situation has not improved. There have been no encouraging developments from the Orient and the few inquiries that are received make offers too low for millers to consider. The Australian exports are still an important feature in the situation. The local flour market has commenced to decline under the long spell of dullness and quotations all along the list have dropped from 10 to 20c. per barrel. Several additional mills this week are reported to have shut down.

Patents, California.....	84 65 @ —
Second Patents, California.....	4 40 @ —
Straights.....	4 40 @ —
Superfine No. 1.....	3 50 @ —
Superfine No. 2.....	3 00 @ —
Oregon Bakers'.....	4 10 @ —
Washington Bakers'.....	4 15 @ —
Eastern Patents.....	5 50 @ —

Barley.

Barley has improved a trifle during the last week, owing to the fact that the supplies are known to be running low and there has been some attempt among dealers to obtain larger stocks of it. Reports concerning the new crop are very encouraging and prospects are for a large amount of barley this year if early conditions can be counted on. A slight advance is quoted on brewing, and in other varieties prices are maintained although trading has not been active.

Brewing.....	81 25 @ 1 30
Feed, No. 1.....	1 20 @ 1 21 1/2
Feed, fair to good.....	1 15 @ 1 17 1/2
Chevalier, No. 1 to choice.....	1 30 @ 1 35
Chevalier, common to fair.....	1 20 @ 1 25
December.....	96 1/2 @ —

Oats.

Oats are considered to be somewhat firmer this week, owing to the fact that supplies are running very low. However,

quotations have not changed and dealers are not inclined to go above the listed prices. Reports concerning the growing crop are premature, although the usual acreage will probably be put in.

White oats.....	1 50 @ 1 55
Black oats.....	1 30 @ 1 35
Red oats.....	1 45 @ 1 50

Corn.

Large white corn is this week quoted at an advance and other lines are generally reported firmer. This condition is ascribed to low supplies, as there has not been much trading in this commodity recently.

Large White, good to choice.....	1 25 @ 1 35
Large Yellow.....	1 20 @ 1 25
Small Yellow.....	1 50 @ 1 55
Egyptian White.....	1 35 @ 1 40
Egyptian Brown.....	1 27 1/2 @ 1 35
Kafir.....	1 30 @ 1 40

Rye.

Rye continues to hold at the established quotation. Demand is very weak and supplies are limited. It is not probable that anything can occur in the near future to stimulate trading in this commodity.

Good to choice.....	— @ \$1 55
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Buckwheat.

There is scarcely any trading in buckwheat and prices remain as last quoted.

Good to choice.....	1 50 @ 1 55
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Beans.

The bean market seems to be demoralized. The continued dull state of the Eastern market has at last started quotations declining. The demand for local consumption is also light and the market is dull. Small white beans seem thus far to have escaped the decline and are experiencing a fair demand. Crop prospects are good, and this may possibly have an influence in causing holders to crowd stocks into the market.

Small White, good to choice.....	82 90 @ 83 25
Large White.....	2 25 @ 2 40
Pinks.....	1 50 @ 1 75
Pinks, damaged.....	1 00 @ 1 25
Bayos, good to choice.....	1 25 @ 1 40
Red Kidneys.....	3 50 @ 3 75
Reds.....	3 00 @ 3 25
Limas, Southern California.....	4 15 @ 4 25
Black-eye Beans.....	4 25 @ 4 50
Cranberry.....	3 20 @ 3 35
Garbanzas, small.....	3 10 @ 3 25
Garbanzas, large.....	3 50 @ 3 85
Horsebeans.....	1 25 @ 1 50

Dried Peas.

Dried peas present no change this week. The market continues firm and, with a fair demand under limited supplies, verging on strong. The indications are for a complete clean up of the present stocks by the time new peas come in.

Green Peas, California.....	82 15 @ 82 50
Niles.....	1 90 @ 2 25

Hops.

The hop situation has not changed. Scarcely any dealing in this commodity is reported lately. Dealers do not experience any demand from brewers at present and it is improbable that any change in the market can take place until the warm weather sets in. The heavy rains have been beneficial to the hop vineyards, and it is reported that the roots are in fine condition, pointing to a good quality of stock for the coming season.

Medium to fair.....	5 @ 6
Good brewing.....	6 @ 7
Prime.....	7 @ 8
Prime to choice.....	8 @ 9

Wool.

Wool is considered somewhat stronger this week and an advance is quoted on California spring wools. Shearing, which had to be suspended on account of the recent rains, has now started up again at full blast. There is an active demand for the spring clip and dealers are looking forward to an active trade in all spring wools.

	FALL	SPRING
Humboldt and Mendocino.....	15 @ 16 1/2	15 @ 16 1/2
Northern, free.....	14 1/2 @ 15	14 1/2 @ 15
Northern, defective.....	11 @ 13	11 @ 13
Middle County, free.....	10 @ 14	10 @ 14
Middle County, defective.....	8 @ 10	8 @ 10
San Joaquin and Southern, free.....	6 @ 10	6 @ 10
San Joaquin and Southern, defective.....	7 @ 9	7 @ 9
Nevada.....	15 @ 19	15 @ 19
Southern.....	14 @ 16	14 @ 16
Middle County.....	16 @ 18	16 @ 18
Northern free.....	20 @ 22	20 @ 22

Hay and Straw.

Shipments of hay to the San Francisco market for the week show practically the same total as last week—3,050 tons. The situation holds very strong and, although there is no material advance in prices, yet some grades are bringing a strong 50c. per ton more than they were two weeks ago. This change can be hardly noticed in the list of this week's quotations, the advance being on grades that fall below the outside figures. Crop prospects are promising and it is a bit difficult to understand why there should be any advance under such condition. It has always been a noticeable fact, however, that the hay market does not seem to be affected by crop prospects, but is regulated from day

to day by the supply and demand on this market. Alfalfa has been somewhat more in evidence during the past week and is rather dull and neglected on account of the plentiful supply of grass. Stock hay also is in but moderate demand. Choice wheat hay has been sent to market more freely during the past week, but it finds ready sale at top quotations. The interior demand continues strong and it is becoming more and more evident that carry-over stocks will be very light this year, much less than was generally conceded when account of stocks was taken on November 1, 1905. In some interior points heavy rains have so affected transportation as to cause temporary shortages, and prices in these localities have experienced some fluctuations.

Wheat, choice.....	814 00 @ 16 00
Wheat, other grades.....	8 00 @ 13 00
Wheat and Oat.....	8 50 @ 12 00
Tame Oat, fair to choice.....	8 00 @ 12 00
Wild Oat.....	7 50 @ 9 00
Barley.....	7 00 @ 9 50
Alfalfa.....	8 00 @ 11 00
Stock hay.....	7 50 @ 8 50
Straw, 1/2 bale.....	30 @ 50

Millstuffs.

The market in millstuffs continues weak with transactions still falling off. The use of green feed has practically cut off the demand from the interior. However, there has been no further decline in prices.

Alfalfa Meal, 1/2 ton.....	22 00 @ 22 00
Bran, 1/2 ton.....	18 00 @ 19 00
Middlings.....	25 00 @ 26 00
Shorts, Oregon.....	20 00 @ 21 00
Barley, Rolled, choice.....	25 50 @ 26 00
Cornmeal.....	27 50 @ 28 50
Cracked Corn.....	28 00 @ 29 00
Oilcake Meal.....	39 00 @ 40 00
Cocoanut cake or meal.....	24 50 @ 25 50

Seeds.

Seed quotations have not changed during the last week. The change to bright weather, which was expected to reveal a good demand for seeds, seems to have developed the fact that the seed season is practically at a close. The ground is not yet dry enough for planting, but dealers are nevertheless of the opinion that not much more seed will go in this season.

Alfalfa.....	812 50 @ 13 00
Flax.....	3 25 @ 3 50
Mustard, Yellow.....	3 75 @ 4 25
Mustard, Trieste.....	4 50 @ 4 75
Canary.....	6 @ 6 1/2
Rape.....	2 1/2 @ 3
Hemp.....	5 1/2 @ 6
Timothy.....	5 1/2 @ 6

Honey.

The honey market is not receiving much attention at present. Scarcely any dealing in this commodity is reported. Bee men are reported to be greatly benefited by the recent change in the weather, as it has enabled the bees to work. As yet it is too early for any forecast regarding the new honey.

Extracted, Water White.....	4 1/2 @ 5
Extracted, White.....	4 @ 4 1/2
Extracted, Light Amber.....	3 1/2 @ 4
Extracted, Amber.....	3 @ 3 1/2
Extracted, Dark Amber.....	2 1/2 @ 3
Extracted, Hawaiian.....	2 1/2 @ 3
White Comb, 1-frames.....	10 @ 12 1/2
Amber Comb.....	9 @ 10

Beeswax.

Beeswax continues quiet. There is little demand for it at present, although a few transactions with the lighter grades is reported; but supplies of this kind are rather scarce.

Good to choice, light 1/2 lb.....	27 @ 28
Dark.....	25 @ 26

Live Stock and Meats.

The meat market is considered a shade easier this week on young stock, which has begun to arrive in better quantities. Spring lamb is now coming in more freely and is quoted at 12 @ 13c. Veal has also been received in larger quantities and has met with a slight decline. Mutton is now quoted at 11c. The hog situation is unchanged. High prices continue and no sign of any change has been yet discovered by packers. Beef is stronger this week and is quoted at 6 1/2 @ 7 cents.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net 1/2 lb.....	6 @ 7
Beef, 2nd quality.....	5 1/2 @ 6
Beef, 3rd quality.....	4 1/2 @ 5
Mutton—ewes, 100; wethers.....	11 @ —
Hogs, hard grain, 150 to 250 lbs.....	7 @ 7 1/2
Hogs, large, hard, over 250 pounds.....	6 @ 6 1/2
Hogs, small, fat, under 150 lbs.....	6 1/2 @ 7
Hogs, soft.....	5 @ 5 1/2
Veal, large, 1/2 lb.....	7 @ 8
Veal, small, 1/2 lb.....	8 @ 9
Lamb, spring, 1/2 lb.....	12 @ 13

Hides, Skins and Tallow.

The hide and skin market continues unchanged. Dealing has been light under light supplies and a fair demand for first quality stock. Second quality stock moves very slowly, although nothing has developed to warrant the expectation of lower prices. Eastern markets for both hides and leather continue firm.

Nothing but select hides, clean and trimmed,

will bring full figures. Culls of all kinds either from grubs, cuts, hair slips side brands or murrain, are not always readily placed at the lower figures.

	Sound.	Culls.
Heavy Steers, over 50 lbs.....	13 @ —	12 @ —
Medium Steers, 48 to 50 lbs.....	12 @ —	11 @ —
Light Steers, under 48 lbs.....	11 1/2 @ —	10 1/2 @ —
Heavy Cow Hides, over 50 lbs.....	11 1/2 @ —	10 1/2 @ —
Light Cow Hides, under 50 lbs.....	11 @ —	10 @ —
Stags.....	8 1/2 @ —	7 1/2 @ —
Wet Salted Kip.....	12 @ —	11 @ —
Wet Salted Veal.....	13 @ —	12 @ —
Wet Salted Calf.....	14 @ —	13 @ —
Dry Hides.....	23 @ —	20 @ —
Dry Kip and Veal, 11 to 16 lbs.....	20 @ —	18 @ —
Dry Calf, under 4 lbs.....	24 @ —	22 @ —
Pelts, long wool, 1/2 skin.....	1 50 @ 2 00	1 50 @ 2 00
Pelts, medium, 1/2 skin.....	90 @ 1 25	90 @ 1 25
Pelts, short wool, 1/2 skin.....	50 @ 75	50 @ 75
Pelts, shearing, 1/2 skin.....	20 @ 40	20 @ 40
Horse Hides, salted, large prime, each.....	3 25 @ —	3 25 @ —
Horse Hides, salted, medium.....	2 75 @ —	2 75 @ —
Horse Hides, salted, small.....	2 25 @ —	2 25 @ —
Horse Hides, dry, large.....	1 75 @ —	1 75 @ —
Horse Hides, dry, medium.....	1 50 @ —	1 50 @ —
Horse Hides, dry, small.....	1 25 @ —	1 25 @ —
Tallow, good quality.....	4 @ 4 1/2	4 @ 4 1/2
Tallow, poorer grades.....	3 1/2 @ 3 3/4	3 1/2 @ 3 3/4

Bags and Bagging.

The bag market has developed no interesting feature during the past week. Dealers are shipping a few bags to the interior, but the volume of business done in bags and bagging is not great at present. The general idea is that in common with all jute products bags will be high this year.

Bean Bags.....	5 1/2 @ 6
Fruit Sacks, cotton, No. 1, 8 @ 8 1/2; No. 2.....	7 1/2 @ 8
Fruit Sacks, jute, as to quality.....	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 22x36, spot.....	7 1/2 @ 7 1/2
Wool Sacks, 4-b.....	35 @ 36
Wool Sacks, 3 1/2-b.....	33 @ 33

Poultry.

Receipts of poultry from local sources have been light this week and the demand has been light as well. A decline on large hens is quoted. This is probably on account of Eastern shipments, which continue to arrive and supply the market. The beginning of this week saw four cars of Eastern poultry land here, and as a large part of this stock was hens the price on this variety declined a trifle. Turkeys continue in very light supply and a slight advance on live turkeys is noted. Game is also in very limited receipt, considering the good demand.

Turkeys, dressed, 1/2 lb.....	18 @ 20
Turkeys, choice Young, 1/2 lb.....	— @ —
Turkeys, live gobblers, 1/2 lb.....	15 @ 17
Turkeys, live hens 1/2 lb.....	18 @ 20
Hens, small, 1/2 dozen.....	4 50 @ 5 50
Hens, large.....	5 50 @ 6 50
Roosters, old.....	4 50 @ 5 00
Roosters, young (full-grown).....	6 50 @ 7 50
Fryers.....	5 50 @ 6 50
Broilers, large.....	4 50 @ 5 50
Broilers, small to medium.....	3 00 @ 4 00
Ducks, old, 1/2 dozen.....	6 00 @ 8 00
Ducks, young, 1/2 dozen.....	7 00 @ 10 00
Geese, 1/2 pair.....	2 00 @ 2 50
Goosings, 1/2 pair.....	2 50 @ 3 00
Pigeons, old, 1/2 dozen.....	1 25 @ —
Pigeons, young.....	2 50 @ —

Butter.

A further decline in butter is quoted this week. Butter receipts have been very large during the last week, resulting in a declining market. Buyers are still cautious, evidently expecting some further decline. The decline started last Saturday and the market has been weak since that time. Butter now ranges from 17 1/2 to 22 1/2c., only the very best bringing the high figures.

Creamery, extras, 1/2 lb.....	22 1/2 @ —
Creamery, firsts.....	23 @ —
Creamery, seconds.....	21 @ —
Dairy, select.....	21 @ —
Dairy, firsts.....	20 @ —
Dairy, seconds.....	19 @ —
Mixed Store.....	17 1/2 @ —

Cheese.

Cheese has been in more liberal receipt this week and large supplies are offering. A further decline of about 1c. is noted all along the line. Dealers, however, are not surprised, as they hold that cheese has been too high for a long time.

California, fancy fat, new.....	12 @ —
California, good to choice.....	11 @ —
California, fair to good.....	10 @ —
California, "Young Americans".....	12 1/2 @ 13
Eastern, new.....	15 @ 16

Eggs.

The egg market continues firm. Favorable weather has sent in larger supplies, but it has allowed storing to run at full blast, which has kept up with the supply. It is reported that egg buyers are now operating in the egg producing centers, and, as they are offering good prices, it is expected that this will have the effect of reducing the receipts in this market. An advance is quoted on California select. While the balance of quoted varieties is considered not so firm, continued favorable weather is apt to advance the quotations further.

California, select, large, white and fresh.....	20 @ 21
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secure feeling. However, it is known that large stocks are still in existence, and these are apt to keep down the price for some time to come. The arrival of new potatoes has not helped the situation in old stock, particularly as they are reported to be in a very satisfactory condition. Some attempt to ship to Texas has been going on, but it has not been of large enough proportions to affect the market.

River Burbanks, 3 cental.....	60	@	90
Salinas Burbanks.....	1 10	@	1 40
Oregon Burbanks.....	80	@	1 25
Tomatoes.....	90	@	1 00
Sweet Potatoes.....	1 75	@	2 00
Early Rose, Oregon.....	1 35	@	1 50
Early Rose, California.....	1 25	@	1 35

Vegetables.

The vegetable market is firmer this week under large receipts and good demand. Onions, however, are considered easier, though no decline in quotation has taken place. Asparagus has been arriving more freely, but canners' buyers take all that can be had at 5c., which has had the effect of holding up the price. Rhubarb is very strong and has advanced to 85c. @ \$1.25. String beans are easier and are arriving in larger quantities. Other varieties remain firm at the old quotations.

Celery, 3 dozen.....	40	@	50
Radishes.....	10	@	—
Lettuce.....	10	@	20
Asparagus, 3 lb.....	5	@	7
Rhubarb.....	85	@	1 25
Green Peppers, southern.....	20	@	—
Cucumbers, hothouse, 3 dozen.....	75	@	1 50
Summer Squash, southern.....	2 00	@	—
Turnips, yellow.....	1 50	@	—
Turnips, white.....	1 20	@	—
Cauliflower, 3 dozen.....	40	@	75
Beans, String, 3 lb.....	15	@	20
Cabbage, choice garden, 100 lbs.....	85	@	1 00
Egg Plant, 3 lb.....	10	@	15
Garlic, 3 lb.....	4 1/2	@	5
Onions, Oregon, 3 ctl.....	1 00	@	1 50
Onions, Australian, 3 ctl.....	3 25	@	—
Peas, Green, 3 lb.....	8	@	10
Tomatoes, 3 box or crate.....	1 50	@	2 00
Artichokes, No. 1.....	50	@	60
Artichokes, No. 2.....	35	@	50
Carrots, 3 sack.....	80	@	1 00
Hubbard Squash, 3 ton.....	25 00	@	—

NOTE.—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top, with hand holes in the ends, and weigh when filled from 50 to 60 lbs gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 35 lbs. gross.

Fresh Fruits.

The supply of fresh fruits is steadily crumbling away, and common varieties of apples have almost entirely disappeared from market. The better grades are rapidly taken at the prevailing quotations. Reports concerning the growing crops of fruits continue to pour in. While many tell of damage, the majority are to the effect that a good crop is expected. Up to the present time the only shortage that can be counted on is in apricots. Cherries, too, have suffered, but not in all localities.

Apples, choice to select, 50-lb bx.....	1 50	@	2 50
Apples, good to choice, 50-lb. box.....	75	@	1 25
Apples, common.....	40	@	50
Pears, Winter Nelis.....	2 75	@	—

Dried Fruits.

Dried fruits are in good demand and are moving at a very satisfactory rate. Apples are now in very limited supply and are quoted at an advance. Apricots and prunes are also in good demand, but as yet no advance is quoted.

EVAPORATED OR BLEACHED.

Apples, 50-lb boxes, rings, pressed, good to choice.....	9 1/2	@	9 3/4
Apples, extra choice to fancy, 50-lb boxes.....	10	@	10 1/4
Apricots, Royal, good to choice, 3 lb.....	8 1/2	@	9 1/4
Apricots, Royal, fancy.....	9 1/4	@	10
Figs, 10-lb box, 1-lb cartons.....	55	@	62 1/2
Nectarines, White and Stanwick, 3 lb.....	8	@	8 1/4
Nectarines, red, 3 lb.....	—	@	8
Peaches, unpeeled, good to choice.....	8 1/4	@	8 3/4
Peaches, unpeeled, fancy to extra fancy.....	9	@	9 1/4
Pears, standard, 3 lb.....	—	@	8 1/4
Pears, choice to fancy.....	10	@	12
Plums, Black, pitted.....	5 1/2	@	6 1/4
Plums, Red, pitted.....	7	@	8
Plums, Yellow, pitted.....	6	@	8
Prunes, Silver, good to fancy.....	6 1/2	@	8 3/4
Prunes, in bags, 4 sizes, 40-50s, 5 1/2 @ 5 3/4; 50-60s, 4 1/2 @ 5; 60-70s, 4 1/4 @ 4 1/2; 70-80s, 3 3/4 @ 4; 80-90s, 3 1/4 @ 3 1/2; 90-100s, 3 @ 3 1/2; small, 2 1/2 @ 3c.	—	@	—

COMMON SUN-DRIED.

Apples, sliced.....	5	@	5 1/4
Figs, White, in bulk.....	3	@	3 1/4
Figs, Black.....	3	@	3 1/4

Raisins.

The raisin market is firm and strong. A good demand is experienced and a slight advance is probable. No new developments concerning a combination among raisin growers are reported, and the general belief is that for this season at least raisins will be sold in the same way as other farm produce.

(Fresno delivery except otherwise specified.)

London Layers, 2-crown, 20-lb box.....	1 50	@	—
London Layers, 3-crown, 20-lb box.....	1 60	@	—
Fancy Clusters, 4-crown, 20-lb box.....	1 75	@	—
Dehesas, 20-lb box.....	2 00	@	—
Imperial, 20-lb box.....	2 50	@	—
2-Crown Standard loose Muscatel.....	5	@	—
3-Crown Standard.....	5 1/4	@	—
4-Crown Standard.....	5 1/2	@	—
Seedless Thompsons, 50-lb boxes.....	4 1/2	@	—
Seedless Sultanias.....	4 1/2	@	—
Seedless Muscatels.....	—	@	—
Fancy 16-oz. Seeded.....	6 1/4	@	—
Choice, 16-oz. Seeded.....	6 1/4	@	—
Fancy 12-oz. Seeded.....	5 1/4	@	—
Choice, 12-oz. Seeded.....	5	@	—
Fancy Seeded, bulk.....	6 1/4	@	—
Choice Seeded, bulk.....	6	@	—

Citrus Fruits.

Large supplies of oranges have arrived this week, but were taken by the trade at the prevailing quotations. Favorable weather for orange selling has created an active demand and a strong market with an upward tendency is looked for. Grape fruit and lemons remain firm at last quotations.

Oranges, large navel.....	2 75	@	3 50
Oranges, fancy.....	2 25	@	2 75
Oranges, choice.....	1 75	@	2 25
Oranges, standard.....	1 25	@	1 75
Oranges, Seedlings.....	1 25	@	1 50
Lemons, California, fancy, 3 box.....	2 00	@	2 75
Lemons, California, good to choice.....	1 25	@	1 75
Lemons, California, standards.....	60	@	1 00
Grape Fruit, 3 box, new.....	1 00	@	1 50
Grape Fruit, seedless.....	2 00	@	2 50
Limes, 3 box.....	3 50	@	4 00

Nuts.

The nut market continues firm under a slightly improved demand. No further inquiry is experienced from the East, however, and the demand is chiefly for local consumption.

Peanuts, fair to prime.....	4 1/4	@	5 1/4
Cal. Walnuts, No. 1 soft shell.....	—	@	13
Cal. Walnuts, No. 2 soft shell.....	—	@	9
Cal. Walnuts, No. 1 hard shell.....	—	@	12 1/2
Cal. Walnuts, No. 2 hard shell.....	—	@	8 1/2
Almonds, IXL, 3 lb.....	12	@	13
Almonds, Ne Plus Ultra, 3 lb.....	12	@	12 1/2
Almonds, Nonpareil, 3 lb.....	12 1/2	@	13
Almonds, Languedoc, 3 lb.....	8 1/2	@	—
Almonds, Golden State, 3 lb.....	9	@	9 1/4
Hard Shell, 3 lb.....	5	@	—

A man lost a leg in a railway accident, and when they picked him up the first word he said was: "Thank the Lord, it was the leg with the rheumatism in it!"

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Notice to Stockholders of Century Mercantile Company.

Notice is hereby given, that in pursuance of a resolution and order by the Board of Directors of the Century Mercantile Company, a corporation organized and existing under the laws of the State of California, unanimously adopted at a meeting of said Board, duly and regularly called and held on the 1st day of March, 1906, at the office of said corporation, No. 14 Sansome St., in said City and County of San Francisco, State of California, all the members of said Board being present and acting, a special meeting of the stockholders of said Century Mercantile Company is hereby called and will be held at the office of said corporation, No. 14 Sansome St., in said City and County of San Francisco, State of California, said place of meeting being at the principal place of business of said corporation, and at the building where the Board of Directors usually meet, on Wednesday, the 16th day of May, 1906, at 10 o'clock A. M. of said day, for the purpose of considering and acting upon the proposition to increase the capital stock of said corporation from \$20,000.00, divided into 2,000 shares of the par value of \$10.00 each to \$100,000.00, divided into 10,000 shares of the par value of \$10.00 each.

By order of the Board of Directors of Century Mercantile Co.
Dated March 1st, 1906.
J. H. CONGDON,
Secretary of Century Mercantile Co.

ALBERT C. AIKEN, Attorney-at-Law, No. 802 Mills Bldg., Attorney for said Corporation.

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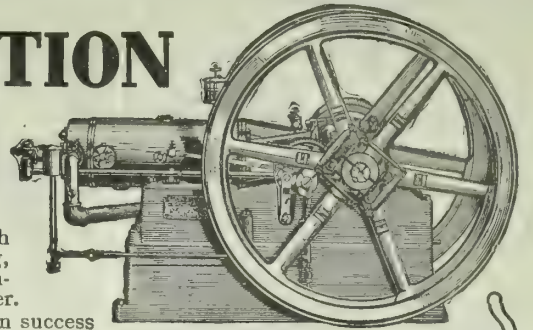
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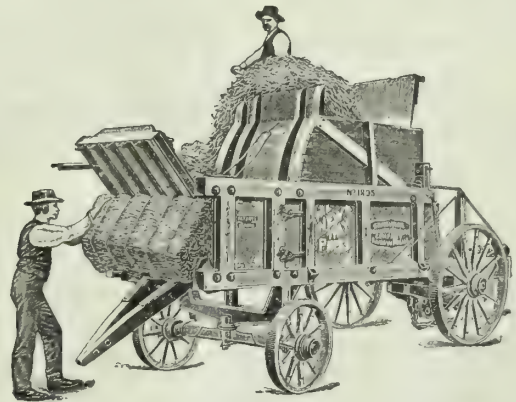
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Patrons of Husbandry.

The Grange in California.

TO THE EDITOR: The Patrons throughout the State will be glad to hear that there is a marked increase in the interest taken in the Grange work. Two new Granges have been added to the list, three old ones have been revived, back dues are being paid, and good work is being done all over the State.

In southern California, farmers' fire insurance has been made a special feature of the Grange. This will be a great boon to the Patrons of that vicinity if the insurance problem proves as successful (there isn't a doubt as to its success with such capable men as Brother John Tuohy at the head of it), as farmers' mutual fire insurance is and has been in Sonoma county.

The Granges in Sonoma county are striving to carry out that part of the plan endorsed by State and National Granges favoring parcels post and the use of convict labor on the public highways.

Resolutions favoring parcels post have been sent to the Congressman from their district, and a committee composed of Patrons from the various Granges in the county met with the board of supervisors and urged it to provide some plan for the employment of convict labor on the public highways in said county.

The Worthy Master has sent a very encouraging letter to the Patrons and the Worthy Lecturer's letter contains much good advice which, if heeded, will make the Grange work more uniform.

EMILY L. BURNHAM,

Secretary California State Grange.
Healdsburg, Cal.

Grange Notes.

TO THE EDITOR: Things move along quietly in the Granges. Letters come occasionally indicating some life and activity. From Potter Valley, Mendocino county, the word is quite encouraging; also from Oakland Grange.

Last Saturday Napa Grange was to have an all-day meeting, inviting the public to one of the sessions that they might see what Grangers look like, and hear our principles set forth. The guests of honor were Past Master of State Grange, Bro. H. C. Raap, and Bro. Winans, who has proved a successful organizer. It is difficult to see how Napa could have done better for speakers and workers.

Manteca Grange, through its efficient Master, Bro. L. M. Larsen, is arranging for a visit from the State Lecturer, without any expense to State treasury. It is hoped that a revival of interest will result.

The Executive Committee will meet next month. Anyone desiring to communicate with the members can write to the State Secretary, Miss Emily L. Burnham, Healdsburg.

A circular to all Lecturers has been issued from my office, to which careful attention is respectfully requested.

No doubt the wet weather has interfered with attendance. But we must "make hay" before the sun shines too hotly and farmers are at their busiest.

We have not yet received the literature asked for from the Lecturer of the National Grange, showing the advantages of our Order, what it has done and is doing. It will be useful for distribution among enquirers. I am glad to hear that the Question Box is freely used.

J. W. WEBB,

Lecturer State Grange.
Modesto, March 20.

For Rabbits Injuring Trees.

The Minnesota Experiment Station says that some experienced tree growers recommend the following treatment as protection against rabbits and mice:

Make a thick whitewash, about the consistency of cream, to which add enough blue vitriol to give a 'robin's egg blue' color. Pass between two rows and apply with a brush, coating that side of each row which is next to the operator.

Another remedy recommended is to make a poisonous solution, using one part of sulphate of strychnine, one-third of one part of borax, one part of white syrup, ten parts of water. This mixture is put into a large, wide-mouthed bottle and well shaken. Now cut fresh twigs from the kind of trees that are being attacked, and with a small brush paint them lightly with the poison, especially the terminal buds. These are said to kill mice and rabbits without endangering birds and other animals. Scatter in runways frequented by the rodents.

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Soils of Sacramento Valley.

The Bureau of Soils of the United States Department of Agriculture will undertake a systematic soil survey of the Sacramento valley commencing in May of this year. Dr. Milton Whitney, Chief of the Bureau, writes to the Sacramento Valley Development Association that he is planning to assign a party to the Red Bluff area in this valley. This party will consist of Macy H. Lapham and H. H. Bennett, who will leave Washington on or about May 1, and come direct to California.

Dr. Whitney asks of the Sacramento Valley Development Association that an area of about 500 square miles in which it is desired to have this soil survey started be marked out on the topographic sheets.

This soil survey is undertaken by the Department of Agriculture at the request of the Department of the Interior and is an essential part of the irrigation investigations now being conducted in the valley and watershed of the Sacramento by the Department of the Interior. The survey has also been requested by Governor Pardee, representatives of California in the Senate and House of Representatives and by numerous organized bodies and prominent citizens of this State. It will be valuable as showing the character of the lands which may be irrigated in this valley and determining in a measure the value of irrigation to them.

This soil survey was discussed with Dr. Whitney in person by Secretary W. A. Beard, of the Sacramento Valley Development Association, on the occasion of his recent visit to Washington, and the Association, which initiated the movement in this State, has volunteered to co-operate as may be desired by the Department.

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THE POULTRY YARD.

Preserving Eggs.

R. W. Thatcher, chemist at the Experiment Station, Pullman, Wash., has given careful attention to the preservation of eggs, having investigated methods used in several other States. The experimental work is described in Bulletin 71 in detail, and the following conclusions may be of much value to our readers, says the Horticulturist:

Eggs can be kept in good condition for home use at least eight months by immersing them either in a water-glass solution or in lime water and salt brine. Those preserved in water glass this year appeared to come out in better condition than those kept in the lime and salt mixture. Other experimenters have succeeded in keeping eggs to their entire satisfaction in solutions of water glass as dilute as five per cent, but the author's experience this year was that a stronger solution gave a better preservation. It seems probable that a solution half-way between the two which were used, in strength, would be better than either of these, since it would doubtless give a better product than the weaker solution and would not deposit sediment, thereby gradually losing strength, as the stronger solution did.

The cost of preserving eggs in a water-glass solution of the strength just described—exclusive of the cost of the containers—would be less than one cent per dozen. Water glass can be obtained of any wholesale drug firm at a cost of about ten cents per pound, and a pound of it properly diluted should be sufficient to cover 12 or 15 dozen eggs, the exact amount required depending upon the size and shape of the container.

Any vessel which will hold water, and which can be covered tightly enough to prevent evaporation will do as a container for eggs put up in this way. Stone jars are preferable, as they are very easily cleaned and prevent evaporation almost perfectly. Wooden kegs can be used, but in case this is done care must be observed to see that the solution does not become too strong on account of the water absorbed from the solution by the keg.

DIRECTIONS FOR PACKING EGGS IN WATER-GLASS SOLUTION.—Use only perfectly fresh eggs. Stale eggs will not keep by any method of preservation. Clean out the vessel in which the eggs are to be packed (preferably a stone jar) by scalding with boiling water. Prepare the solution, using water that has been first boiled and then cooled to ordinary temperature.

To each 15 quarts of water add one quart of water glass. Pack the eggs into the jar and pour the liquid over them, covering the eggs completely. Do not wash the eggs before packing them, as this may injure their keeping qualities by removing a natural protective coating on the outside of the shells.

Keep the eggs packed in this manner in a cool, dark place, such as a dry, cool cellar.

Each day's gathering of eggs may be packed immediately after gathering by placing them in the jar and pouring over them just enough of the solution to cover them. This is better than to hold the eggs for several days at the risk of their becoming stale in order to have a sufficient number to fill the entire vessel at one time. In some of the warmer sections of the State, during the summer months, the temperature often rises high enough to start incubation in eggs. In such localities eggs must be packed soon after they are laid or kept in some cool place until they are to be packed.

Water glass is a somewhat alkaline liquid, but the diluted solution is not injurious to the hands if they are dipped into it in packing successive gatherings of eggs, or in removing the eggs from the solution.

Eggs packed by this method will keep for some time after they are removed from the preservative solution.

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New Patents.

DEWEY, STRONG & Co.'s SCIENTIFIC PRESS
PATENT AGENCY, 380 Market street, San Fran-
cisco, has official reports of the following United
States patents issued to Pacific Coast inventors:

FOR THE WEEK ENDING MARCH 6, 1906.

- 814,499.—HARROW—E. C. Abraham, Santa Cruz,
Cal.
814,502.—SPEED-GEARING—J. Anderson, Seattle,
Wash.
814,313.—WRENCH—G. W. Austin, Hollister, Cal.
814,507.—CHECKREIN-FASTENER—C. W. Barrett,
Hanford, Cal.
814,370.—DREDGING-MACHINE—C. E. S. Burch,
Seattle, Wash.
814,589.—DRILLING AND CUTTING-MACHINE—C. K.
Davis, Ely, Nev.
814,523.—REFRIGERATOR—S. DiVecchio, San Fran-
cisco, Cal.
814,646.—PRODUCTION OF SMUDGE—G. Griffiths,
Los Angeles, Cal.
814,204.—DREDGER—N. R. Harris, San Francisco,
Cal.
814,452.—METAL-LEACHING—T. B. Joseph, San
Francisco, Cal.
814,462.—TWINE-HOLDER—B. Levison, San Fran-
cisco, Cal.
814,656.—HORSE-BLANKET—C. Loughrey, Los An-
geles, Cal.
814,307.—NON-REFILLABLE BOTTLE—E. Mandon-
net, San Francisco, Cal.
814,228.—PIPE-VISE—A. W. McGahan & O. K.
Ascher, Los Angeles, Cal.
814,468.—WINDOW ATTACHMENT—R. Mohr, San
Francisco, Cal.
814,069.—PACKING-BOX—I. Naylor, Los Angeles,
Cal.
814,311.—FEEDING APPARATUS—R. C. Nelson,
Healdsburg, Cal.
814,622.—TRAMWAY BUCKET—B. C. Riblet, Spo-
kane, Wash.
814,091.—OIL BURNING SYSTEM—I. E. Smith, Sac-
ramento, Cal.
814,410.—PASTE PRESS—S. Tofanelli, San Fran-
cisco, Cal.
814,175.—SECTIONAL TIRE—F. G. Urfer, Portland,
Ore.
814,484.—INHALING APPARATUS—A. Velschow,
Oakland, Cal.
814,177.—WINDOW-FASTENER—C. B. Warren and
D. E. Meyers, Lordsburg, Cal.
814,003.—GATE—R. C. Wessels, Cotati, Cal.
814,580.—VEHICLE WHEEL—G. H. Williams, Los
Angeles, Cal.

Notices of Recent Patents.

Among the patents recently obtained through
Dewey, Strong & Co.'s SCIENTIFIC PRESS United
States and Foreign Patent Agency the following
are worthy of special mention:

WINDOW AND SCREEN ATTACHMENT.—No. 814,468. March 6, 1906. Rosalia Mohr, San Francisco, Cal. The object of this invention is to provide vertically slidable windows with screen attachments which may be readily engaged with or disengaged from the respective sashes, and heads or pockets above and below the windows into which the screens are slidable, and within which they are retained and concealed when not in use. Engaging and disengaging devices between the sashes and screens are provided, and means by which screens of greater longitudinal dimension than the pockets may be contained in such pockets.

PASTE-PRESS.—No. 814,410. March 6, 1906. S. Tofanelli, San Francisco, Cal. One-half assigned to L. C. Dibert, of same place. This invention relates to improvements in paste-presses such as are used in the manufacture of macaroni and like products. The principal objects of the invention are to provide a cutter in conjunction with the press, which may be operated automatically and co-ordinately with the rate of discharge of the tubes to cut the tubes into any desired length, to drive a follower fast or slow in either direction, and to devise means for automatically reversing the movement of the follower when traveling in either direction. It consists in all the various details of mechanism and construction necessary to bring about the desired result.

INHALING APPARATUS.—No. 814,484. March 6, 1906. Asger Velschow, Oakland, Cal. This invention relates to an inhaling apparatus, and is especially designed for use at night and for the purpose of providing a constant supply of fresh air to the lungs. The object of the invention is to provide a continuous source of pure air for breathing purposes without exposing the person to too great a degree of cold and making it necessary to increase the bed-coverings to such an extent as to impede the cutaneous exhalations. The device may also be the vehicle for applying remedies which can be made the subject of inhalation.

AUTOMATIC BASKET MACHINE.—No. 813,773. Feb. 27, 1906. S. L. Casella, San Francisco, Cal. This invention relates to an apparatus which is designed for the purpose of manufacturing veneer baskets and completing the whole in a single continuous operation. The object of the invention is to provide an apparatus in which a plurality of thin veneer sheets previously prepared are carried to a common center, crossed or overlapped, and bent so as to form the upturned sides, and a means by which folded strips of metal are brought into position with relation to the folded veneers, bent, applied to the upper edges of the veneer, overlapped, compressed, and locked in position, and the baskets thus finished finally discharged at the end of the machine.

WINDOW CLEANER.—No. 813,800. Feb. 27, 1906. Annie M. Johnson and D. H. Rowe, Oakland, Cal. The object of this invention is to provide a cleaning device which enables the operator to get at the outside of the window without exposure to the danger of a fall. The device comprises a rectangular body portion, a handle secured thereto, a spring pivoted intermediate of its ends to said handle and arranged to swing laterally of the body, and a presser-plate carried by said spring and arranged to impinge upon the back of the body, and other details of construction.

STREET AND STATION INDICATOR.—No. 813,895. Feb. 27, 1906. D. A. Holsberg, San Jose, Cal. This invention comprises in a street or like indicator a carrier comprising horizontally journaled disks having holes around their peripheries, cards with pins entering and loosely turnable in the holes, mechanism for intermittently rotating the disks, stops against which the cards contact after passing the vertical plane from the top of the carrier, said cards being individually released by each forward movement of the carrier, elastic latches engaging the lower edges of the cards as they fall into a pendant position, and rollers against which these edges move when passing downward.

THE IRRIGATOR.

Reclamation and Irrigation.

From a report by C. E. GRUNSKY, consulting engineer, to the Director of the Geological Survey.

In response to your request for my views on the resolutions adopted by the California Miners' Association at its annual convention recently held at Nevada City, California, I desire to say that the swamp and overflow lands of the State of California were ceded to that State by the United States in 1850 for the purpose of reclamation. These lands in California, as in other States, were disposed of to private parties under laws intended to encourage their drainage and reclamation either by individual owners under district organization or when a number of tracts owned severally appeared susceptible of reclamation by one system of works.

Under these laws attempts to reclaim lands along the larger rivers have been mainly directed to the construction of embankments or levees, which serve as barriers to the spread of the water. Protection work of this character has generally been constructed at the sole expense of land owners. Some State aid has been extended, as in California, and in some cases, as along the Mississippi river, the work done by the United States has been a material feature of the land protection work. The measures thus far provided have led to only partial success. Proper attention has rarely been given to the drainage problems. The works for local benefit have gradually restricted the natural water ways and submersible areas, and this reduction of water way, which has in some cases been aggravated by other causes, has forced the flood plane above its original height, and has added to the difficulty and expense of further land protection. This is the situation in California at the present time. The natural main drainage lines, though reinforced by levees, are inadequate to carry the floods to the sea. Hundreds of thousands of acres are still submersible at ordinary flood stages, and other hundreds of thousands of acres, though in a measure protected, are subject to dangers which make their cultivation possible only at a great risk. These lands are all privately owned. It is not a question of improving the public domain.

HARMONIOUS ACTION IMPOSSIBLE.—Harmonious action by the land owners has in the past been out of the question, mainly due to the vastness of the areas, which should be included in single drainage projects. Those who believe themselves favorably located prefer a partial protection, according to their own ideas and at their own expense, to a participation in one comprehensive project. Disasters have been so frequent under this system that efforts are being constantly put forth for relief. One project after another has been suggested, but thus far without satisfactory result. There seems to be no general agreement that the main difficulty lies in harmonizing conflicting ideas relating to the best course of action.

It seems reasonable that rivers, such as the Sacramento river, which lie entirely within a single State, should be entitled to the same consideration by the Federal Government as the rivers, such as the Mississippi, which are interstate streams, and it would be eminently appropriate and proper for Congress to adopt the same general plan of treatment

for rivers of the former class, thereby aiding and facilitating the work of land reclamation.

The impression seems to prevail among the interested parties in the Sacramento valley that the United States may upon a further investigation undertake a plan of river rectification on a larger scale than contemplated in the past, which, while improving the navigability of the waterways in the Sacramento valley, will at the same time fit in with a general drainage project and materially reduce the cost thereof.

SUGGESTS A POLICY.—A wise, sound and safe policy to be adopted by the United States in cases where land is to be reclaimed by drainage would be to assist: First, by outlining drainage projects and supervising their execution.

Second, by advancing the funds required for the execution of such approved project, all money thus advanced to be returned to the United States Treasury, in a series of years, upon completion of the project.

Third, by waiving interest on the money invested by the United States in such reclamation work.

The fundamental principle should be that the cost of reclaiming lands and protecting property from damage by floods should fall upon the land reclaimed and upon the property protected, in proportion to the benefits conferred.

Action by the United States in any special case, if such a policy be adopted, presupposes request by the land owners for such action. No project should be carried out without a satisfactory pledge that the cost of the work will be returned to the United States within 20 years. Under such conditions as prevail in the Sacramento valley, the reclamation work by irrigation might well be united with that of drainage, but the work there would be of such magnitude and should be carried forth with such energy that the utilization of the reclamation fund for this purpose is entirely out of the question. This fund has already been allotted practically to its limit.

PROPOSES A METHOD.—If such law be enacted, it would authorize the Secretary of the Interior to make necessary examinations and surveys, and should place at his disposal and make immediately available not less than \$200,000 for this purpose.

If drainage works are to be carried out in the Sacramento valley on the lines now approved by State authority under co-operation of the United States, the State and the drainage district, then at the proper time the problem of disposing of mining debris on some of the overflowed lands of the valley may properly be called to the attention of the engineers who pass upon the final plans of the required works.

If, on the other hand, Federal authorities are put in sole charge of the work, then the examination of any comprehensive Sacramento valley project would necessarily be extended to and would include all such features as the delivery of mining debris upon the basin lands of the valley.

THE FIELD.

Want Free Sacking for Hops.

At a meeting of the Sonoma county hop exchange a petition was circulated by Mr. Durst directed to Mr. Payne, chairman of the ways and means committee, at Washington, asking that single warp bagging for the baling of hops



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grown in the United States be admitted free of duty, or that being denied, then to be admitted under the provisions of paragraph 344 of the Tariff Act of July 24, 1897. Previous to that year 1902 single warp jute bagging of 16 threads or less to the square inch was admitted under the above paragraph, the duty being .005c per square yard. The importation of single warp jute bagging made in the year 1902 and thereafter has been appraised under and made to pay duty under the provisions of paragraph 41 of the Tariff Act of July 24, 1897. This paragraph carries a duty of 5c. per pound and 15% ad valorem.

The United States might easily grow the hops for the world if the industry were subject to a little fostering care. The imposition of an excessive duty, and yet, which does not stimulate domestic manufacture of the protected goods is un-American; it is a hardship which is unjust to the hop grower; it is discrimination against a large class of agriculturists; it is unwise and an unpolicy species of special taxation.

Formalin for Smut.

Prof. J. C. Arthur botanist of the Purdue University Agricultural Experiment Station says of the treatment of seed for smut and one now extensively used, is to treat the seed grain with a weak solution of formalin. Secure at the drug store a half pound of formalin, add to it 30 gal. of water. Spread the seed grain on the barn floor and sprinkle the solution over it, making it thoroughly damp. Shovel together into a pile, cover with sacking or other convenient material and leave for two to twelve hours for the chemical to act. Sow at once, or spread out and dry and sow after a time.

Thirty gallons of the solution are

enough for 100 to 150 bu. of grain. While the seed should be moist, it ought not to pack in the hand. Formalin is often called formaldehyde. It looks like water and has a pungent odor like ammonia.

PATENTS

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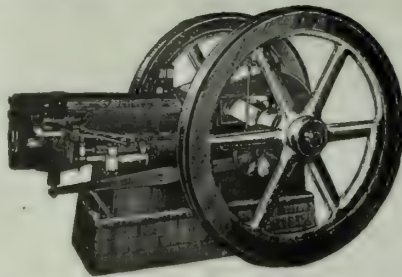
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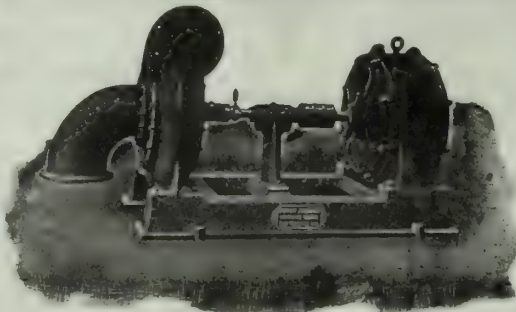
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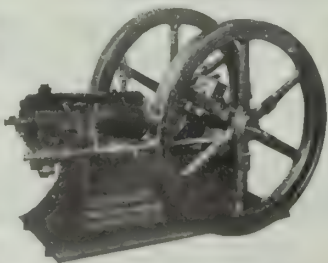
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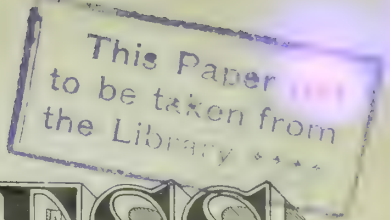
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AND CALIFORNIA FRUIT BULLETIN.

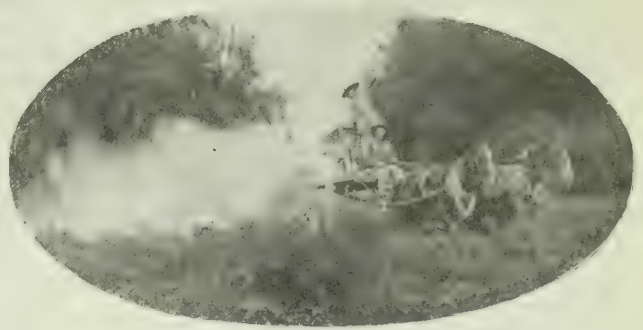
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The Victory Over Asparagus Rust.

We give much space in this issue to the victory over the asparagus rust, because it is one of the most conspicuous of recent instances of a successful appeal by industry to science for relief and protection from impending evil. About three years ago the attention of asparagus growers and canners was attracted by the spread of a fungus known as asparagus rust, which is a close relative of grain rust. It was not a new enemy to the asparagus plant, because it had wrought havoc at the East and abroad. It was, however,

new in California, and of greatest importance here, because our asparagus interest was greatest and because the California canned asparagus was in such demand in other parts of the world. Investment in asparagus planting and in the erection of canneries was free, and great confidence was felt by those in the business. When the rust appeared, however, the whole situation changed. Those who had made large investments were fearful and further investment was arrested. The growers and canners appealed to the Experiment Station of the University for help, and generously offered to fur-

nish funds for the prosecution of experimental work of which the University fully recognized the importance, but for which it had no funds. Several thousand dollars were quickly subscribed and the University engaged Prof. R. E. Smith, a plant pathologist, who had done much with the study of the disease at the East, to come to this State and



On the Firing Line on the Asparagus Field.

take up the pressing local problems. This he did with great vigor and devotion, studying the disease from practical points of view, and succeeded so well that within a year he had demonstrated so clearly the feasibility of successfully fighting the disease that the whole industrial aspect of asparagus growing changed, confidence was restored, investment was renewed, and the asparagus industry, which seemed so seriously imperiled, was restored to its prominent place among our agricultural specialties. This is the reason why we refer to the result as one of the most striking recent instances of a successful appeal of industry to science for relief and protection. There are many others in the agriculture of California, but this one seems particularly striking because of the imminence of the peril, its recognized capacity for inflicting great losses, and because, also, it has been swept away by experiment and investigation in so short a time. These things are so sharp and clear as to be almost dramatic.

In this issue we give interesting facts of how the asparagus industry has been shown how to protect itself. Materials for fungus killing and policies in the treatment of asparagus plantations are clearly set forth. It is shown that one line of fighting is best in one section and another best in another, and that various efforts are successful.

One matter has, of course, helped greatly to success, and that is the high value of the acre product which makes it possible to indulge in considerable cost of labor and material. For this reason one can fight asparagus rust while warfare against grain rust would not pay for its powder. The profit in the crop is also on the side of the expert, because he finds growers willing to undertake so much to protect it. These are, however, merely incidental circumstances of which the expert is entitled to take advantage.

The pictures on this page will serve to emphasize the points we are trying to make. The vignette shows how thoroughly the sulphur can be thrown through the top growth of the asparagus to protect it from the threatening rust. The larger pictures show the contrast between a treated and an



Fig. 1. Field of Asparagus Which Received Sulphur Treatment on the Farm of William Boots of Milpitas.



Fig. 2. Field Which Received No Treatment, Adjoining the Scene in Fig. 1.

Continued on page 221.

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The Week.

Four or five days of northwind and higher temperature have apparently turned weather conditions into spring channels and we may now get something better to grow in. Surplus moisture is disappearing from all lands, but those kept wet by high streams and overflow. Frosts have occurred here and there and probably some fruit, which pulled through the bad blooming season and the good time for fungus, has been nipped. The outlook is still for only a fractional crop of all early blooming fruits on the whole, and it should be a year of good prices. Just what it will amount to more than that can hardly be seen yet.

Speaking about fruits, there is some comfort in the statement that the court decision that the carrier and not the shipper had the power to route the cars, has not done the harm which was anticipated with this year's orange shipments because the carriers have not insisted upon the rights which the court awarded them. It is said indeed that railroad officials have promised to carry out the present programme of advantageous routing in favor of the citrus fruit men, pending a conference of the league executives and railroad representatives. This is good of them, is it not? But then possibly it would be quite as well if our people would look at the railroad managers as rational beings, who do not really wish to get the fruit shipments all tangled up, and really desire to have the distribution so arranged that sales shall be good all around, so that shippers and growers will have something to pay freight and other bills with. There are many indications that the old, arbitrary attitude of the railways toward their patrons has passed away and that modern management is intended to be promotive of production and producers and not destructive of them. The conference of distributors and railroad representatives as to what can be done for the good of the whole trade has a good look to it—for the present at least.

About fruit again, the courts have made more decisions, and this time in the way of recognizing disciplinary power in growers and shippers organizations. If there is to be co-operation, co-operators must certainly co-operate. Hitherto organizations were

ineffective because they could not hold their own membership to doing what was agreed to. A Los Angeles county superior judge has decided that a fruit grower who becomes a member of a fruit exchange, signs the by-laws and agrees to sell his product through the exchange only, must comply with the obligation or pay the penalties provided by the by-laws of the organization. The case in point was that of the Pomona Fruit Growers' Exchange against a fruit grower, who became a member of the organization and then declined to sell her crop through the exchange, and was sued by it to recover the imposed penalty of 50c. per box on the 600 boxes which she sold to another fruit exchange. Obviously an organization for selling cannot do anything unless it can hold those who sign with it. Most of our failures in this line have been caused by people who agreed to do something and then did something else. People ought to be more careful what they sign; but, when they enter into an agreement, stick to it, unless they find it to be an immoral undertaking.

The election of Mr. J. A. Filcher to the secretaryship of the State Board of Agriculture is a recognition of Mr. Filcher's zeal and ability in securing an adequate and creditable display of California products whenever suitable occasion arises therefor. He has succeeded in doing that notably well for a decade or more. His entry upon the work of the State Board of Agriculture just at this time is particularly fortunate, because he can make just the kind of a State Fair which Governor Pardee has described as worth making—a broad and creditable display of industrial products and natural resources which shall have high educational value for our own people, who wish to know what is really good and how to secure it, and for the newcomers to the State who wish to see to what useful ends the distinctive natural advantages of the State can be brought by their effort and investment. We shall be disappointed if Mr. Filcher does not secure for the coming State fair a wider display of products and a vaster popular patronage than have been seen in this State for many years. The fair will be held the last week in August. Get ready for it.

Our energetic young friends sometimes make us weary by the things which they proclaim as new to the State, and fit to furnish forth new industries. The latest is the pistachio nut, of which a considerable number of seedlings has been secured and of which one of our contemporaries writes:

There is no doubt whatever that it will grow here and be profitable. Its present home is in Syria and the Mediterranean, and the price for imported nuts is 95 cents per pound. As the trees bear as much as 250 pounds each, it would evidently be a very profitable crop, and one that it would be well worth the while of our orchardists to become interested in.

Such a statement is fit to inflame a graven image! We shall not play with the figures. We cannot, however, refrain from stating that the pistachio tree has been in California for at least 30 years and repeated introductions have been made since the beginning. Pistachio trees have been regularly listed by some of our nurserymen all that time. At the present time there is a trial planting in Santa Clara county which has been cherished for three years. No one has yet made a dollar from the nut. We do not say they will not ultimately be successfully grown here, but we do say that to excite people over the pistachio as a new thing, and a thing inordinately profitable is not wise.

The University of California is now making plans for a course in forestry. For some time past the University has been giving instruction in subjects, generally included in the forestry courses, in the departments of agriculture, botany and engineering. In fact, it is now possible for a student in the University to complete work equivalent to the first three years of study in any standard school of forestry. By arranging these subjects, it may be possible for California students to secure advanced standing in the Eastern schools and take the last year of study in their major subject in any of the reputed Eastern schools. This arrangement will be a help until our University is able to equip a full forestry course, which it certainly will do as soon as funds can be provided.

QUERIES AND REPLIES.

About Figs and Fig Growing.

TO THE EDITOR: I wish to get some information about figs: 1. Best variety to use for drying? 2. At what age do they begin to bear? 3. At what age do they produce a crop that will pay? 4. Who have large fig orchards in California? I will visit them when I return from Mexico. 5. Will a little alkali in the soil harm the fig? 6. Do they require much irrigation while growing?—CALIFORNIAN, Durango, Mexico.

The best source of special information on drying figs is the publications of Mr. George C. Roeding, Fresno. Mr. Roeding has a large fig orchard in bearing. Following his example, quite large acreage has been planted in the San Joaquin valley at various points from Fresno to Modesto, and an especially large tract in Ceres, in Stanislaus county, although the trees in the latter have hardly reached bearing age as yet. The oldest trees are on Mr. Roeding's place at Fresno. There is also a considerable planting of drying figs in the upper part of the Sacramento valley, in Butte and Tehama counties. There are only one or two best varieties for drying, and they come from Smyrna. These varieties are sold by leading California nurserymen.

Fig plants will endure a little alkali, but nothing but an actual test will demonstrate whether the plant's idea of a little coincides with the planter's idea thereof. The tree requires much less irrigation than the evergreen trees, like the orange, and yet it must have moisture enough to be vigorous. Excessive irrigation would produce rank growth of the tree and soft fruit, which would not be desirable. Here, too, we have an issue between the tree and the planter as what constitutes much.

Mottled Leaf of the Orange.

TO THE EDITOR: I send you a sample of my orange tree leaves, and the oranges are dry and tasteless. Do you know what is the trouble with them, and what I can do to help them?—GROWER, Bangor, Butte county.

Your orange trees are affected with what is generally known as the 'mottled leaf.' The cause of this trouble lies either in the soil or in the root, and the abnormal appearance of the leaf is not due to a disease, but to unfavorable growing conditions. Sometimes it is probably caused by lack of plant food in the soil, or by excess of it; sometimes by excess of water. There is nothing that you can do for it immediately, but you should dig down into the soil next summer and ascertain whether your irrigation is applied in excess and whether the lower soil has turned into mud by excess of water. If so, perhaps drainage should be supplied for the trees, in order that this surplus water may escape. If you find the moisture conditions fairly good, you should try an experiment with the application of fertilizers, and for this purpose a fair application of barnyard manure would answer. But if you have already been using fertilizers, it is possible that you have used too much. The whole thing is a struggle to get growing conditions just right.

Summer Crop on Tough Land.

TO THE EDITOR: Our locality is in the middle of the Sacramento valley, and the soil here is rather poor, mostly red land and adobe, and quite shallow, from two to three feet to hardpan. It dries out very quickly and in summer the red land bakes together very hard. In fact, it is impossible to stick a spade into this red land in summer. Do you think any of the varieties of rape or millet would do here? What is red and white Kaffir corn? Is it what is commonly called Egyptian corn?—FARMER.

The land which you describe is very ill adapted to the growth of any summer crop. Kaffir corn, which is an upright growing variety of Egyptian corn, will probably give better summer growth than any other plant which can be named. For its growth the land should be well plowed as early in the spring as possible without working it too wet, and then harrowed and allowed to lie, giving a shallow cultivation, or disking, when the Kaffir corn is sown, and this should be sown as soon as the danger of frost passes away. None of the sorghum family can stand frost, but they will endure a great amount of drouth and heat. The success of the crop will be largely conditioned on how good a cultivation is given to prevent loss of moisture by evaporation. Usually the best

thing that can be done with such land as you describe is to get a growth of grain or pasturage during the rainy season.

The English Sparrow.

TO THE EDITOR: It is now 17 years since united action was urged against the English sparrow, and I wish to secure a broad knowledge of what has been accomplished. What is your experience with the bird and its extermination?—ENQUIRER, Worcester, Massachusetts.

The English sparrow has not proved widely troublesome in California orchards because of its choice to live near the habitations of mankind, and an infinitely worse bird, from a fruit grower's point of view, is the *Carpodacus frontalis*, or so-called 'California linnet.' This bird appears in flocks even in the most unfrequented region and disbuds fruit trees in the most shocking manner. The English sparrow does the same sort of work in suburban places where fruit is grown, and not only disbuds but seems to amuse itself immensely picking off blossoms as fast as it can pick them, apparently making no use whatever of the blossoms except as it gratifies its own taste for sport or deviltry. At the present time the ground under our cherry trees is practically whitened by the blossoms picked off by the English sparrow. It seems to be an exceedingly fortunate thing that this bird does not move at large, as the above-noted finch does, and that districts apart from our cities and towns do not seem to be visited by it, so far as our observation goes.

Potatoes for Export.

TO THE EDITOR: We are very much interested in this subject of potato diseases as we have a large demand from Australia for California potatoes, and, our people there inform us that a potato infected with *Phytophthora infestans* is denied admission into that country. What can we do about it?—MERCHANT, San Francisco.

The *Phytophthora infestans* is the common potato blight, which occurs on the tomato also. It should be emphasized that this disease is comparatively rare in California, because of the dry summer air. The districts which show most of it are near the coast, and if you should get supplies for export from the uplands of the interior valleys they should be free from this trouble. If you could get a sight of the field from which you get supplies before the potatoes are dug it would be easy enough to get clean tubers, because the disease always manifests itself by discoloration of the tops or vines.

Poison Hemlock.

TO THE EDITOR: Find inclosed weed that grows on the Merced river. Is it injurious to cattle if they eat it, and how does it affect them?—SUBSCRIBER, Livingston.

Mr. H. M. Hall, assistant botanist of the University Experiment Station, assures us that the plant is poison hemlock (*Conium maculatum*). This has long been known as a poisonous plant; probably the one which the old Greek philosopher, Socrates, drank. The poisonous principle is most plentiful in the seeds and in the leaves. The plant is most dangerous at and after flowering time. The symptoms of poisoning are lack of muscular power; great bodily pain, as indicated by restlessness; bloating; loss of appetite; salivation; rapid, feeble pulse. The permanent of potash and sulphate of alumina remedy is recommended. The plant is introduced in California, is easily recognized by its peculiar odor when once known and may usually be eradicated by pulling by hand or otherwise destroying before it sets seed.

Removing Moss From Forest Trees.

TO THE EDITOR: Could you suggest anything to rid oak trees of green moss—very fine moss—that completely wraps the trees?—SUBURBAN, Mill Valley.

We have no tested knowledge concerning the removal of moss from oak trees. All these lichens are readily removed from deciduous fruit trees by a spraying of caustic soda (one pound to six gallons of water), but we are not sure that this wash would be safe upon trees in foliage at the time of its application. It would also be a matter of very great expense to subject forest trees to such treatment. We had always supposed that the moss upon forest trees was a picturesque object and rather to be desired than otherwise, and never heard before of proposi-

tions to remove it. It will be necessary for you to undertake some little experimentation if you desire to accomplish the freedom of the trees from this natural companion of theirs.

A Rabbit Fence.

TO THE EDITOR: My new vineyard is seriously injured by rabbits eating the new vines, and I wish to find some way of protecting the vines from their ravages, or destroying the pests themselves, and wish you to suggest a remedy. The worst—in numbers, at least—are the cottontails; there are a few jackrabbits, also, which are very destructive to the tender shoots of the grafted vines, as they first make their appearance. My place is in the mountains and entirely surrounded with chaparral brush. I have thought that a two-foot wire fence would best serve my purpose, but do not know whether it would be effective or not. What would you say as to this method?—VINEYARDIST, Santa Clara.

Concerning a fence to exclude rabbits, a two-foot chicken fence placed near the ground and one strand of good barbed wire just at the ground to prevent the rabbits from digging under, and two strands of barbed wire close together above, so that if they undertake to jump the chicken fence they will be thrown back by the barbed wire above, is usually held to be a very effective means of excluding these pests. Then if one keeps a greyhound or two, it will be easy for them to dispatch the few rabbits which manage to get into the enclosure.

Another Case of No Rust.

TO THE EDITOR: I herewith enclose a sample of wheat affected with some kind of blight or rust. Kindly examine these samples and let me know what it is, as it seems to affect a great deal of the grain in this vicinity—both wheat and barley. It appears mostly on light soil in low places.—READER, San Miguel.

The trouble with the young wheat which you send is not rust; it is leaf spot (*Helminthosporium*), an entirely different fungus, which generally thrives during the cool, wet weather, and disappears with advancing heat. It has no connection with rust, but rust may appear later, when the heat increases, as the conditions favoring rust are heat and moisture combined. There is nothing whatever that you can profitably do to prevent rust. If conditions favor it, you will have to suffer. Fortunately, in the interior districts we do not often have conditions favoring a destructive occurrence of the disease.

Spots on Plums.

TO THE EDITOR: For the last two years I have noticed on my plums a sort of brown place, with small spots on it. This brown part is only on one place on plums. I have thought it was some kind of mildew or fungus. I am thinking of spraying the trees as soon as the fruit has formed. How strong can I make the bordeaux mixture so that it will not burn fruit or leaves? Kindly let me know at once, as I wish to spray as soon as possible.—GROWER, Vacaville.

We cannot tell you from the description what sort of trouble your plums have, nor whether the use of the bordeaux mixture will be a preventive, but in answer to your question we can tell you that the old bordeaux mixture formula—4 lb. of lime, 4 lb. of blue-stone and 40 gal. of water—is not injurious to foliage or very young fruit, though there is danger of spotting as the fruit becomes more advanced.

Black Wattle and Other Good Blooming Acacias.

TO THE EDITOR: I enclose leaf and blossom of an acacia. Can you give me the variety or species as noted in the catalogues? Is it a rapid growing tree, and would it be suitable for a street tree?—GROWER, Galt.

The acacia which you send is molissima, or 'black wattle.' It is scarcely distinguishable from *Acacia decurrens* or 'green wattle,' and from *Acacia dealbata* or 'silver wattle.' In ordering molissima from nurserymen one is as likely to get one of these species as another, but since they are very like in habit and characteristics this makes very little difference. All of these are rapid growers, but have too large a spread to be good for street trees except along broad streets in the country.

Curculio Not Here.

TO THE EDITOR: I am endeavoring to ascertain the geographical distribution of the plum curculio. Will you inform me whether the insect is found in your State or not; if so found, is it generally or

locally distributed? Any other information regarding the distribution of this insect will be gratefully received.—ENQUIRER, Madison, Wisconsin.

We have been on the lookout for this insect for the last 30 years, and have not yet seen one in this State.

Crude Oil Paint.

TO THE EDITOR: I notice on page 182 (March 24) Mr. Baumert, of Camp Meeker, recommends crude oil and Prince metallic brown for chicken houses, etc. Would this make a good paint for barn or house roofs? What objection is there to its general use for roof paint? Would it fix and hold the metallic brown so it would not wash off? Would it injure the rain water for household use, say four or six weeks after its application? How long would the smell of crude oil last?—READER, Campbell.

A very full account of this paint for farm buildings generally was given in the PACIFIC RURAL PRESS of July 9, 1904. It is good roof paint, so far as preserving shingles and keeping out water is concerned. What the effect is upon the rain water we do not know.

CALIFORNIA WEEKLY WEATHER BULLETIN.

Report of the U. S. Weather Service for Week Ending April 3, 1906.

ALEXANDER MOADIE, Forecast Official and Section Director.

Sacramento Valley.

The week was one of heavy rains and stormy weather. High southeast winds prevailed Friday night and Saturday, changing to northwest gales at the close of the week. Heavy rain fell on the 26th, 30th and 31st. The rainfall at many points in the valley amounted to five inches or more during the week. Strong north winds at the close of the week caused considerable washing of the levees, but all things considered the damage has been small. Thunderstorms occurred on Monday and Saturday. Afternoon temperatures reached as high as 70° on Tuesday and Wednesday. The snowfall in the mountains is heavier than it has been for years. The week closes with a prospect of fair and somewhat cooler weather.

Coast and Bay Sections.

Numerous rainsqualls occurred during the week, with very heavy rains at the beginning of the week and also on Friday and Saturday. Amounts ranging from one inch to nearly two inches were recorded in 24 hours, ending Saturday morning. The wind attained velocities ranging from 36 to 72 miles per hour from the northwest along the coast north of San Francisco. A small amount of snow fell on Mt. Tamalpais at the close of the week. On Thursday afternoon temperatures reached 74°. Notwithstanding the high wind light frost occurred Monday morning.

San Joaquin Valley.

Cloudy, stormy weather prevailed throughout the week, with rain on four days. The rain was not as heavy in this section as elsewhere in the State, and fair weather on Tuesday and Wednesday allowed the high waters in the rivers to gradually lower. Afternoon temperatures reached as high as 74°. Heavy frost occurred on Monday morning. Much snow is reported in the mountains. Thunderstorms were reported in the vicinity of Lodi.

Southern California.

The week began with heavy rain and brisk southwest wind throughout the entire country south of the Tehachapi. In the 48 hours ending Tuesday morning the rainfall in the vicinity of Point Conception amounted to nearly two inches. At Los Angeles more than an inch and a half fell. All of the reservoirs are filled and there is every prospect of an abundant supply of water for the coming season. Fair weather prevailed on Wednesday and Thursday, followed by cloudy weather and moderate showers until Saturday. During the month of March more than seven inches of rain fell at Los Angeles and nearly five inches at San Diego. The temperatures were high during most of the week. On Thursday afternoon maximum temperatures of 80° were reported. The close of the week was marked by much cooler weather, with minimum temperatures of 40° and possibly lower in some places.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, April 4, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.	Total Seasonal Rainfall to Date.	Total Seasonal Rainfall Last Year to Same Date.	Average Seasonal Rainfall to Date.	Maximum Temperature for the week.	Minimum Temperature for the week.
Eureka.....	2.26	32.00	30.50	40.22	72	38
Red Bluff.....	2.42	28.90	31.08	32.51	68	36
Sacramento.....	2.71	20.16	18.35	17.33	68	44
San Francisco.....	0.82	16.20	20.07	20.41	68	44
San Jose.....	0.61	12.95	15.18	.....	74	35
Fresno.....	0.20	9.90	10.06	7.92	74	34
Independence.....	0.03	5.55	3.78	3.48	66	30
San Luis Obispo.....	0.98	22.86	20.50	19.02	74	40
Los Angeles.....	0.20	17.88	18.22	13.79	80	39
San Diego.....	0.02	12.75	13.67	8.67	74	42
Yuma.....	0.00	5.85	8.53	2.79	82	40

HORTICULTURE.

The Apple, and How it Should be Handled.

By E. H. MILLS, of Sebastopol, at the Fruit Growers' Convention at Santa Rosa.

The apple, some one has said, was the fruit that caused our 'Mother Eve' to commit the great sin. If so, it must have been that beautiful apple known as the Snow or Fameuse, the most delicious of all apples for eating, and most captivating in appearance when grown in a cold climate, and if put on our markets would outsell all others for table use. This apple is not too large for packing in our common boxes. The tree should be cut back and thinned out to make all nice four-tier fruit, which will command the very highest price in any market. It is a very good keeper, lasting into the winter months. I know of only one tree in this section. Mr. Wm. Mather, a nurseryman near Sebastopol, has taken pains to grow quite a number of trees for sale, which are now ready to set out. This tree bears fruit in four or six years. The meat is as white as snow, is most delicious in taste and has a very thin skin. This apple should not be wasted by letting it fall and drying; it is too valuable. Pack it, ship it, and sell it for eating. Give the people in cities something that will cause them to say they can get a good eating apple in this State, instead of saying, as we so often hear, that they cannot get a good apple in the cities.

Then I would recommend the Gravenstein next to the Snow apple. The Gravenstein needs to be treated well, so that it will grow to a good size. It is good for any purpose, but light to dry, yet makes fancy dried stock when properly handled. Keep the small apples out of the market. Let them stay on the trees and grow large. If they fall, dry those which are over two inches in diameter.

I claim that it is wrong and an injury to the dried-apple trade to use apples smaller than two inches in diameter. In this we need to educate the apple-growers, and especially those who dry for the trade. Take an apple under two inches, peel it and take out the core, and what is left? The shadow of the peeling. This helps to condemn our dried fruits. We should pack nothing but clean, good-sized and well-colored fruits. Why? Because the trade requires it. The people demand it and the price guarantees it. What is the result of the careless handling of apples? The market is filled with poorly packed, unripe, uneven, small, wormy, scaly, knotty apples, and they glut the market. No one will buy and pay enough to cover expenses; still they put a damper on the good fruit as soon as plenty of apples are in the market. The buyer drops the idea of paying a remunerative value for his goods. I say send nothing to market but good goods, nothing that a man would be ashamed to own, and every one will be better off.

But how is this to be stopped or remedied? Only one way is left. Have a responsible inspector; allow nothing to go on sale but what is right, and have one, two or three qualities, but have all clean and good. How many will take the third quality?

But, oh, how hard to find that honest man who knows what he should know for this office? If this is not needed in the fruits, why is it needed in milk, meats and other inspected articles? I want to say that there should be a good man appointed by the Government to see and compel every man or woman who has fruit trees to have them free from scale and pests? But what a howl this would make! So many are careless. One will say: "I am a free man in a free country." Yes, free to do right, but not to do wrong to himself or his neighbors; no law against right, but all against wrong. How much better if all would keep their orchards well pruned, well sprayed, well cultivated, all weeds down out of sight. If every orchard were this way, this country would soon be sold into five-acre lots and would be populated so thick we would want a high school in every town five miles apart.

Now I must say regarding dried apples, is it apples or that which is often called dried apples? I think it is scaly peelings, worm holes and rotten pieces of apples, and no doubt some small portion of the trees get in at times. This is one of the great industries of Sonoma county, but more particularly of Anala township. I think we cure two-thirds of all the dried apples in the State. Then, why not do it right and well. I believe in doing well everything that is worth doing at all, as the boy said. To have dried apples what they should be is to have them all peeled, all worm-holes taken out, all rotten spots cut off, all cores taken out, no apples under two inches, properly bleached, well dried, no moisture left in, the apples kept in a clean, tight, dark room, and packed in good, clean, well-faced, papered boxes. All should be packed at least once a week, and stored where there is no dust or moths.

And how are we to get all men to make this fancy article? Inspect, condemn and throw away the stuff unfit to be allowed to be on sale. But so many will say that their common apples sell as well as others, or pay better than spending so much time. This may be true one year out of three, but at the same time this is not right. They are putting out dried fruit

that they would not use themselves. Then, again, when the low-price year comes around they cannot sell while there is anything better than theirs. The good goods always sell readily at outside prices. Then, again, every man making dried fruits for sale should have ambition enough to strive to outdo his rival, and how soon would our dried-fruit product show a marked improvement. No man can do anything just right unless he takes pleasure and has pride in doing it.

Now let me close by insisting that the apple tree and its fruit be handled properly by all. Prune the trees right; spray the trees right every year; plow your ground right; hoe around every tree every year; cultivate as long as the trees will let you get under them, and then commence to pick when the fruit is large enough for four tiers, and ripe enough. Pack good and solid, leaving no room to shake around in the box. Pack nothing but good, clean, sound, well-colored apples. Then dry when ripe. Make all fancy goods sell for good-paying prices. Dry the peelings, cores and trimmings. These should be put in trays every day, and not allowed to remain in a pile over night, as they will heat and turn dark in color. Keep them bright, and they sell much better; these sell for making jellies. But there are the small apples. Well, pick them up as fast as they fall and sack them, and sell them in sacks to make jellies.

This cleans up the apple crop. Do well all that you do, and great will be your gain.

That Peach Trouble Again.

TO THE EDITOR: The peach orchards around Fresno are again suffering from a severe attack of shothole fungus. I have examined a number of orchards, some sprayed with sulphur, lime and salt and some with bordeaux mixture, and find them suffering to about the same extent as those unsprayed, consequently these sprays are being condemned as useless for this disease. One badly infected orchard had been sprayed both this and last year with sulphur, lime and salt as per formula. Possibly we have a complication requiring some other remedy. Can you explain why this disease has severely attacked our peach trees only in the past two years, although present in adjoining apricot orchards many years previous?—H. W. WRIGHTSON, Oleander.

We cannot add much to what we said in the Query and Reply columns last week. Quite in contrast with the reports that the fungicides we have recommended are not effective, we also have reports that properly sprayed trees are escaping the trouble. One of these is at Selma and we have a letter from a man who did not spray saying that his neighbor has a fine crop, because he sprayed as we advised him, and he expects to follow his example and get a good crop next year. We are slow to believe that the sulphur, lime and salt wash and the bordeaux mixture will not hold shothole in check, and feel inclined to blame the users for not making it strictly as per formula, although they think that they have done so. We still believe that right spraying and better seasons will bring the trees out all right. It ought not to be anything like the pear blight experience.

An Almond Trouble.

TO THE EDITOR: I send you by mail a few small limbs of almond trees. Can you tell us the trouble and what to do for it? Many of our trees are affected in this way.—ALMOND GROWER, Davisville.

To a certain extent this is analogous to the peach trouble, of which we have had so much to say. There is a shothole fungus present (for the almond has one of this class of its own) but its work is slightly injurious thus far and in that way the case is not like that of the peach. The main trouble, as it seems to us, is too much cold water and too little heat. The sap flow is slack, and the growth of leaves and small fruit started with the sap in the wood is not being pushed as it ought to be by more sap from below. The leaves and young nuts are simply drying up. Less rain and more sun will bring out trees which are not too badly hurt in the root by standing water.

Grafting the Walnut.

TO THE EDITOR: I saw a piece in your paper March 24 about walnut growing in California, stating it to be so hard to graft them on black walnut, and thought my experience might be of some interest. I do not pretend to be an expert. Last year was my first although I had helped a little before that. When I bought this place some of the trees were four or five years old and I have planted seeds every year since, so I had all ages to graft. I have grafted about 100 trees and got over half to grow. I put in from two to six grafts to a tree, according

to size of tree. In some trees every one grew and most of them had at least two.

I prefer small trees, they make better union. I find on examining the dead grafts that in nearly every case the trouble is in not being careful with them. I wrap them with good cloth and then cover with wax, for I find the wax will not hold well alone. It cracks and the graft is sure to die. I have grafts that grew from five to six feet the first year and had walnuts besides. I have grafted 100 or more trees this year but it is too early yet to tell what they will do. I may not have good luck this time. I use the bud-grafts—find they are the best.

A SUBSCRIBER.

Tres Pinos.

This is interesting. Please tell us what you mean by the "bud-graft," or cut one just as you use it and send it in a letter so that we can see just what the form is.—Ed.

Preparing the Apple for Market.

By C. H. RODGERS, of Watsonville, at the Fruit Growers' Convention at Santa Rosa.

In keeping with this progressive age, together with keener competition, owing to increased output, we find the 'trade' more exacting than formerly in its requirements concerning quality and appearance of the apple pack. No longer will the market submit to the old-time rough box, faced top and bottom with good apples and the center filled with an inferior quality. Today satisfactory returns are obtained only by sending out large, choice apples of even grade throughout and carefully packed according to certain rules in neat white-wood boxes. Though there is a demand for inferior grades to be used for canning, for jams and jellies, for the dried product, and for cider and vinegar, the prices ordinarily obtained for such fruit scarcely justify the growing.

Having the aim in view of securing best results in the outcome, the initial step in preparation is winter pruning; judicious cutting out of superfluous growth and fruit-bearing wood is a prime requisite. This operation insures to the remaining limbs a vigorous flow of sap, giving size to the apple and free access to sunlight and circulation of air, which are necessary to high coloring and rich flavor.

Choicest apples cannot be grown on diseased or insect-infested trees. If those troubles exist and winter treatment is practicable, the application of the remedy should follow between the time of pruning and the bud-bursting period in the spring.

Apples, particularly the late varieties which constitute the bulk of the commercial orchards, make their greatest draft on the soil during the driest period of the season—September and October. At this time, just prior to ripening, the fruit makes its most rapid growth, and at this period the soil is least able to respond to the demands unless due care has been bestowed upon the conservation of the soil-moisture. Hence it is of great importance that the orchard receive the most careful cultivation during the spring and early summer in order to effect such conservation. It has not been the practice to resort to the irrigation of orchards in the leading apple-producing districts of this State, but there is no doubt that judicious irrigation would be of value as an aid to large growth of fruit.

As our trees are prone to over-bearing, thinning of the fruit is generally necessary to attain good size. Best results are obtained by thinning to one apple in a place and distributing the fruit on a limb not closer than four or six inches apart.

The codling-moth, the apple-grower's worst insect enemy, must be reckoned with from early spring until picking-time, since the best of apples become culls when penetrated by the larva of this insect. Fortunately for the apple-grower, the State University authorities, after three years of assiduous experiments, have found the use of arsenate of lead a sovereign remedy for this universal pest. Also, the parasite of the codling-moth, recently introduced through the efforts of our State Commissioner of Horticulture, affords hope that the codling-moth may be kept largely under control.

The apple having reached full maturity should be promptly harvested, but it is unwise and impolitic to gather and market immature fruit—a practice which has been more or less prevalent in this State.

In the matter of picking, experience has evolved a number of rules which should be strictly adhered to. The more important of these are the following:

(1.) Do not pull the apple off the tree. By so doing, the stem may be detached from the apple, thus making a second grade of what otherwise would be choice.

The proper method of plucking the apple is to grasp it with the full hand, not with the fingers only, and by a gentle twist and lateral movement detach it with the stem attached. Especially must finger pressure be avoided in the picking, as bruises thereby produced injure the value.

(2.) The apple must never be dropped from hand to receptacle or from box to box. The fruit should be transferred from the picker's receptacle to the orchard box as carefully as so many eggs. This pre-

caution must be observed in order to retain the keeping quality of the fruit.

(3.) Under all circumstances use vehicles having springs in moving the fruit.

Once within the packing-house the more perishable varieties should be handled immediately and forwarded to market, while the long-keeping varieties, especially those intended for export, should be held at least a month before sorting and packing. This latter precaution enables the packer to discover and eliminate all diseased and defective fruit—a thing that would be impossible if the fruit were packed at an early date after picking.

Special care by skilled help must be given in the

each apple in a piece of paper prepared for the purpose.

The apples must be so packed in the box as to permit the nailing firmly of the lid at each end, and at the same time allow a gradual swell of about three-fourths of an inch at the middle of both top and bottom. On account of the resultant shape of the boxes, they can be stacked up with safety only on their sides.

The packed boxes, after being neatly labeled, are next transferred to the cars and stacked four or five tiers high. An air space of three or four feet is left between the top tier and the roof of the car, also the entire space between the doors is left vacant for the

THE FIELD.

The Warfare Against Asparagus Rust.

Prof. R. E. Smith of the University of California Experiment Station has just published a bulletin giving further experience in asparagus control work which he has been pursuing for two years or more. The following are the methods employed during 1905 and the results attained thereby:

The present bulletin presents new information in regard to asparagus rust treatment, obtained from



Fig. 1. Seed-Sower, as Adapted for Applying Sulphur.



Fig. 4. Outfit for Spraying Asparagus with Liquid Spray.

sorting, as the sorter is the sole judge of both quality and size.

Three grades or qualities are recognized in the 'trade'—first, second and third. First grade includes only perfect fruit. Second grade includes the fruit having a trivial surface blemish or stem absent. The third or cull class includes all wormy, badly bruised or skin-broken apples.

Though grading for size varies somewhat in differ-

better circulation of air. The boxes, after being systematically placed in the car, are so braced with timbers as to prevent any movement. The usual carload consists of about 650 boxes. Refrigerator fruit cars are employed mainly for apple shipment, but no ice is used.

In reviewing the various items dwelt on above, the entailed expense becomes apparent, and in some details the care and cost might not seem justifiable;

the practical work of various growers during the past season, and from some special observations and experiments made in connection with Mr. Wm. Boots, Jr., who has been the mainstay of this work from the beginning. It seemed most necessary to determine in particular the following points: number of times necessary to sulphur, best times for application, how much sulphur to use, what kind of sulphur is best for the purpose, and how to treat the fields in the River



Fig. 2. Sulphur Blower for Treating Asparagus.



Fig. 3. Outfit for Treating Asparagus by Sacramento Method.

Consisting of pump and barrel on one-horse sled, one man to pump and drive, two to spray with liquid, and two to apply sulphur from buckets by hand.

ent localities, in the Watsonville district, the leading apple-producing center of the West, there are but three sizes recognized. These are 3½, 4, and 4½ tier. The unit of size is the 4-tier, which comprises all apples running from 2½ to 3½ inches in diameter, and derives the name from the fact that when packed in the box there are four rows of four apples each, both vertically and horizontally across the end of the box. Apples in excess of 3½ inches are classed as 3½ tier size. The third size, or 4½-tier, includes those apples ranging between 2½ and 2½ inches in diameter. Both the 3½-tier and 4½-tier are packed in the manner known as 'diamond' pack or 'pear' pack. Apples smaller than 4½-tier are thrown into the cull pile. The sorter ascertains the size by passing the apples through circular holes in a board.

In this State the standard box is made of pine. Its measurements are 9½ by 11 by 22 in., and it holds about 50 lb. of fruit. A modified box of extra thick material, reinforced by iron straps, is frequently used for export trade. Redwood boxes are used only for cheap grades of apples packed for the local market.

After being sorted, the apples are passed to the packer, who, before placing them in the box, wraps

but the best markets insist upon certain exactions, which must be complied with, and for the observance of which liberal reward is assured. The chief exaction, aside from quality of fruit, is attractiveness. This applies to the appearance of the package as a whole—inviting contents, skillfully packed, and new, clean box, with artistic label.

The aim to please the eye as well as the palate should be borne in mind through the various steps from early pruning until the fruit is ready for the consumer.

That the extra care and expense incident to the preparation of a fancy pack is a paying investment, the fact is cited that for this quality there is a brisk, unlimited demand at high prices, as against an indifferent market and poor returns for the product of neglected orchards and inferior pack.

WATER boils at sea level at 212° F. With increasing altitude the boiling point becomes lower, until at a sufficiently high altitude the hand can be immersed in boiling water without injury. This fact is sometimes employed in determining altitude, but like the barometer, many corrections have to be made to arrive at the correct result.

district where there is very little dew in summer and the rust appears late in the season. The procedure and results in a few typical cases may be described as covering these points.

EXPERIENCE AT BOOTS RANCH, MILPITAS.—Asparagus cutting stopped at Milpitas about the first of July. Rust was less abundant than usual on uncult tops early in the season, but developed very vigorously after the beds grew up. In the Boots field special efforts were made to keep down wild growth about the edges, which in previous years had caused a large amount of infection early in the summer. This had a very beneficial effect, giving all portions of the field a chance to develop equally, except one corner which bordered on a badly rusted field. After the end of the cutting season and the usual plowing and cultivation, the field was irrigated, in order to start up as vigorous a growth of tops as possible. About August 1 heavy dews occurred, and the first sulphuring was started. Using the seed-sower arrangement devised by Mr. Boots, going in every fifth row (seven feet apart), 70 sacks (110 lb. each) of sublimed sulphur were put onto the 75 acres, in three mornings. About three weeks later (August 20 to 25), a second application was made. At this time, going in

every third row, 60 sacks of sulphur were put on. Mr. Boots had, in the meantime, improved on the machine somewhat, principally in the sheet-iron hood over the vent, which threw the sulphur more downward into the rows, thus producing a saving in material. After another three weeks (September 12 to 15) the third and last sulphuring was made, using 50 sacks of sulphur. Mr. Boots had still further improved upon his machine, by broadening the hood and curving it over more on the sides than is shown in Fig. 1, with radiating flanges set in on the under side to equalize the spreading of the sulphur and confine it somewhat to the three rows of asparagus. The sower was also set over to the middle of the bed, and run by a long shaft with chain gear on both wheels. The field was heavily irrigated and well cultivated during the summer, in order to strengthen and force the growth as much as possible, irrespective of rust treatment.

The results of Mr. Boots's work can be most easily indicated by a comparison of the field as compared with those not sprayed. (See first page of this issue.)

EXPENSE.—The cost of this treatment amounted to about \$425 for sulphur, and \$25 for labor, or \$6 per acre for the season's work on 75 acres. From the season's experience the sulphur bill can be reduced to \$300 in the future.

Mr. Boots also grew a seed-bed during the season, producing as fine a lot of young plants as one often sees. From the time the seedlings appeared above ground until fall, he kept the rows well sprinkled with sulphur, and succeeded in keeping out all but a trace of rust during the season, the plants making a splendid growth. This was probably the only bed of plants grown successfully in that section since the rust first started.

EXPERIENCE OF R. S. BARBER, MILPITAS.—Mr. Barber, who has nearly the same acreage of asparagus as Mr. Boots, is another progressive grower in the Milpitas district. The treatment and condition of his fields previous to 1905 have been alluded to in Bulletin No. 165. Mr. Barber's method of applying sulphur was somewhat different from that of Mr. Boots. He had made the machine shown in Fig. 2, a high-bodied, two-wheeled truck, with a blacksmith's centrifugal blower worked by hand, and a sheet-iron hopper, from which the sulphur, as it falls from the bottom into the pipe, is blown through the three arms, each opening over an asparagus row. The man who runs the bellows also turns a stirrer in the hopper, which pulverizes the sulphur and keeps the supply running down into the outlet. Several of these machines have been made locally for asparagus growers, and one of the 'dust sprayer' manufacturing firms has attempted an asparagus duster along somewhat similar lines, using one of their machines with a cog-wheel gear on the wheel, and pipes behind for treating three rows. So far as the writer is informed, Mr. William Meek was the originator of this idea.

This machine will not throw nearly the amount of sulphur put on by the seed-sower used by Mr. Boots, and is open to objection on that point. Its greatest capacity produced only a dribble of sulphur on each row. On the other hand, less sulphur was required by this method of application, as it all went on the rows, and the machine could not be made to spread a large amount, like the seed sower. The latter can be adjusted to throw any amount, small or great, but scatters the material more than the pipe arrangement. In the case of the latter, frequent applications were made by Mr. Barber during the summer—four or five in all—so that the total amount of sulphur used was fully as much or greater than that required in Mr. Boots's method. This field was irrigated and cultivated during the summer, and was never allowed to suffer in any way for lack of care.

Mr. Barber's results were fully as satisfactory as those of Mr. Boots. His asparagus made a beautiful, heavy growth, and remained green until late in fall, with no damage from rust. Nearby fields in all directions which received no treatment suffered very severely. Both these growers had every reason to feel satisfied with their efforts.

Other Milpitas growers used more or less sulphur on asparagus during the season, with results in every case proportionate to the efforts put forth. The utility of sulphuring after the rust becomes well developed in the fields was shown here again, as has been the universal experience.

SACRAMENTO EXPERIENCE.—The Sacramento growers had reason to feel that they had solved the problem of rust control from their experience of 1904, when the combination liquid-spray and dry-sulphur treatment gave absolute control of the rust. In 1905 almost all of them carried out the same line of treatment, and with results equal to those of 1904.

Mr. E. Rider used sulphur alone, as before, putting it on with a hand blower on dewy mornings, and kept his fields green until late fall. The growers using the combination treatment made an improvement on their original method, adding whale-oil soap to the bordeaux spray, as recommended. This made a marked improvement in sticking the sulphur to the tops. Their method of work was that of 1904, using a one-horse sled between the rows, carrying a barrel and pump, one man pumping and driving, one or two spraying, and two following close behind with buckets of sulphur (which had first been sifted with a flour

sifter), sprinkling it on by hand. Fig. 3 illustrates this method.

The work of O'Brien brothers is a typical example of what was done at Sacramento. These growers sprayed and sulphured their beds between July 15 and 25, doing the work very thoroughly and carefully. On their 15 acres of asparagus they used 22 sacks of sulphur. One month later (August 22) they put on about 40 sacks of sulphur alone, sprinkled on by hand on wet mornings (3 to 9 A. M.). Only these two applications were made by these and the other growers using the same method. It is also worth noting that 30 rows in the field received only the one treatment of soap-bordeaux and sulphur in July, and nothing further during the season.

The results of this treatment were as good as in 1904, the rust control being practically perfect. The tops in untreated fields were killed early and completely, rust was active and abundant on all sides, but all the well-treated beds kept green and free from the disease. The 30 rows which had but one treatment were particularly examined by the writer, and found to be as free from rust as the rest of the field.

Some spraying with bordeaux mixture done at Sacramento in 1905 had the usual result of affecting the rust only to a very slight extent. The Olsen fields at Sixteenth and Twenty-third streets, north of the railroad, were thoroughly sprayed by the present owners, who originated the outfit shown in Fig. 4 for the purpose. Straddling one row, with two men standing on the bridge behind spraying three rows with the double nozzles, and one man to pump and drive, this is the most useful contrivance for spraying asparagus which the writer has seen. The outfit proved somewhat top-heavy, and would be improved by having the wheels farther apart.

A few of the Sacramento growers started the season by spraying with the bordeaux alone, when the majority were both spraying and sulphuring. The result was thoroughly typical of all experience along this line. All the sprayed fields began to show rust abundantly, while those which had sulphur in addition, situated on all sides of the others, with only fences or roads between, kept clean (as before stated) all through the season. The growers who had used bordeaux alone then made a heavy application of sulphur, and succeeded in preventing the rust from attacking the later growth, though this can not be counted upon under all circumstances. In these small fields with rows close together and very thick growth, a thorough treatment by hand gives better results than can be expected in working on a larger scale.

Most of the Sacramento growers have decided upon the following treatment for future use: Three weeks after cutting stops, start spraying with whale-oil soap and water (6 lbs. to 50 gal.) and dust on 1½ sacks of sulphur per acre; one month later apply two sacks of sulphur per acre (on dewy mornings). This treatment, from two years' experience, is an absolute rust-preventive in that locality.

EXPERIENCE IN THE RIVER DISTRICT.—The study of rust control in the great island and river asparagus ranches has not reached the stage of completion attained at Milpitas and Sacramento. This is mostly due to the fact that it is still a question whether the cultural methods and ways of taking advantage of climatic conditions are not sufficient to prevent any serious injury from rust in most of these regions. At such places as Jersey Island, Andrus Island, Grand Island, the Pearson district, and, to nearly the same extent, Bouldin Island, the rust may be so held in check by keeping down all early wild growth which would allow the fungus to start, and by keeping the fields exposed to the full drying effect of the prevailing wind, that expensive methods of fungicidal applications (sulphuring, spraying, etc.) have not yet been demonstrated to be necessary.

It is still a question in much of this region whether the slight attack of rust late in the season is of any serious consequence, and whether it is necessary or would be profitable to try to prevent it. It is an enormous undertaking to make any thorough application to these great fields of hundreds of acres. The sulphur treatment as practiced at Milpitas would be difficult, on account of the distance apart of the rows and absence of dew. Thorough preliminary spraying with a liquid is not very attractive, unless extremely necessary, on account of the size of the fields. It is quite certain that one application, in August, of the Sacramento spray-sulphur treatment would control the rust sufficiently. Apparatus can be obtained or devised for doing this rapidly if it proves necessary, but the latter is still a question. Some experiments along this line were made at Vorden this season, but owing to the late and slight development of rust were not conclusive. Some sulphuring was also done there and at Bouldin island—in the latter instance with a seed-sower—but this was late in the season when the rust had already appeared, and no very definite results were seen.

The situation, as it looks to the writer, is about this: At Milpitas and Sacramento the rust has been completely and practically controlled by the methods described. If not checked, the disease ruins the beds in a few years. The method in either case consists essentially in getting a good coating of sulphur on the tops before the rust appears and keeping it

there through the rest of the season. On the river there is a doubt whether this is necessary. If so, practical means must be found for making the same application and doing it thoroughly, rapidly and cheaply. It is simply a question of making the sulphur stick to the tops before the time when the rust usually appears.

Crosspollinizing Cherries.

TO THE EDITOR: I have acquired some very expensive knowledge from 14 years' experience with a non-bearing 10-acre Royal Anne cherry orchard. I have demonstrated beyond a question that my orchard failed from the lack of pollinization, also that cross-pollinization is more difficult than is usually supposed—or better, that it is not intelligently practiced in California. The chance of securing the peculiar pollen necessary by an indiscriminate selection of different varieties of cherries and planting or grafting into a Royal Anne cherry orchard, is very slim indeed. I have grafted and experimented with 15 or 20 varieties before finding the right pollen. This cost me years of time and a great deal of money. This can all be saved to the grower by this simple experiment: During the blooming season of the cherries secure blooming branches two or three feet long from all the different varieties of cherries grown in a reasonable distance from the orchard and suspend these branches in separate trees, properly labeled, in fruit jars of water. Care in selecting the branches and expedition in the transmission of them to your trees are essential to the success of this valuable experiment. If you are successful, there will be heavy clusters of cherries in the immediate vicinity of the suspended branches, but not elsewhere. The time of blooming of the different varieties does not differ so much as is generally supposed, and will not interfere with the success of this experiment. This experiment should continue during the blooming season, but the pollen should be ripe in the tree and the suspended branches, or nearly so.—ENG. B. ANDERSON, Walnut Creek, California.

We regret that the publication of this suggestion has been accidentally delayed. As it is late for this year, it may be held in mind for trial next year.—Ed.

Formalin for Seed Bed Fungi.

Those who have trouble from damping-off or any other fungus invasions in their seed beds may like to try a formalin treatment proposed by the Ohio Agricultural Experiment Station. In old plant beds when the weeds are about cleaned out the young tobacco plants often damp off and destroy the stand while giving, out of those remaining, plants with sore-shin sickness. These diseased conditions arise from parasitic fungi which develop in the soil and accumulate from year to year until plant growing becomes difficult in the old beds. A similar difficulty confronts greenhouse lettuce growers and infests both the plant bed and the house beds or areas in which the crop is brought to final development. The difficulty has been greatly reduced, or overcome, by sterilizing the soil of these beds. While steaming is a most excellent method for this, a solution of formalin in water applied to the soil by sprinkling with this solution has also been fairly effective. For this reason it seems worth while to try the formalin method on old tobacco plant beds, at least in an experimental way. One and one-half or two pints or pounds of formalin is to be added to 50 gal. of water (or in like proportion to smaller amounts) and thoroughly stirred. The solution thus made is to be applied upon deeply stirred bed soil until the whole is thoroughly wetted to a depth of six to eight inches. This will require approximately three-fourths to one gallon of water solution per square foot of surface area. After the treatment the soil is allowed to dry for about a week, or for a longer period, after which the seed may be sown in the usual manner. If sown too soon after treatment with formalin, seed germination may be impaired. The treatment is simply to destroy the fungous parasites contained in the soil.

The Pea Bean.

TO THE EDITOR: What varieties of pea beans are grown in California, and are they commercially important?—ENQUIRER, New York.

In California there is only one bean grown on a commercial scale which is known as a 'pea bean.' It is a small, white, roundish bean, which has been grown in California for the last 50 years. It has a very thin, transparent skin, which sloughs off easily in cooking. It is not one of our great beans, commercially, but still is grown to considerable extent in some localities. As a commercial crop, however, it has been largely substituted by what is called the 'small white bean,' which is understood to be the same that is known as the 'navy' bean in the East, and is particularly popular in Boston, to which point quite large shipments are made from California.

Agricultural Review.

Butte.

STORM KILLED GOATS.—Chico Record: This week a band of Angora goats, some 2,000 in number, passed through Chico from Manton, going south. They were overtaken by the heavy storm of Wednesday, and before shelter could be secured 200 of them had become so chilled that they perished. The loss is quite a heavy one, as the animals have a value of \$4 per head.

Fresno.

CANNERS' ASSOCIATION ENTERS RAISIN FIELD.—Sutter County Farmer, Mar. 30: The California Cannery Association, which has entered the raisin field in active competition with the Mercantile Packing combination, has advanced the price of raisins to 3½c. per lb. The Mercantile people announced that 3c. was all they would pay. The cannery says they will build packing houses of sufficient capacity to handle the entire raisin crop.

FARMERS ORGANIZE.—Fresno Republican, Mar. 25: C. J. Skeen of Oklahoma, is here organizing locals of what is known as the "Farmers Educational and Co-operative Union." This institution was organized in Texas three years ago. Since that time it has been established in seventeen states (having state organizations in each state) and is incorporated in thirteen states. It has 2,000,000 members at this time.

The objects of this new organization

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are similar to that of the Farmers' Alliance, with the objectionable features eliminated. In this Union the discussion of politics is forbidden, and it is strictly provided that it shall never enter politics as an organization. It is contended that because the Farmers' Alliance went into politics it went to its death.

Since his arrival in this neighborhood, Mr. Skeen has organized three locals.

Humboldt.

EDIBLE PEAS.—Arcata Union, March 21: Seely & Titlow Co. signed a contract with C. C. Morse & Co. Santa Clara valley seed growers for the growing of 70 acres of edible peas. The seed is furnished by the company, and the grower contracts to return a like amount of seed, and receive pay for the difference. The peas can be planted and threshed the same as ordinary field peas. The variety and acreage to be planted are enumerated as follows: American Wonders, 10 acres; Gradus, 20 acres; Notts Excelsior, 10 acres; Stratagem, 5 acres; Telephone, 10 acres; Thos. Laxton, 10 acres; Yorkshire Hero, 5 acres.

Kern.

THIRTEEN CARLOADS OF HORSES.—Kern Echo, March 29: The Stockdale ranch has received thirteen carloads of blooded horses from the Del Paso ranch at Sacramento. There were 291 animals in the shipment, three of them being stallions and the remainder mares and colts.

The horses are all being removed from the Del Paso ranch, which has been one of the famous stock ranches of California. Many of the best animals have been shipped to J. B. Haggins' stock ranch in Kentucky and the remainder have been brought to Stockdale.

Sacramento.

CANNING ASPARAGUS.—Sacramento Union, March 19: The asparagus cannery belonging to the California Fruit Cannery Association at Vorden, started for the season. The cannery has been improved by new apparatus, and the output this season will be increased. There are at present about 250 hands employed. The largest part of the asparagus is grown on the land of P. J. Van Loben Sels. This ranch contains about 4,000 acres, and there are about 700 acres of it in asparagus. On account of the cold weather of the last day or two the grass has not come up very fast. At present there are about 200 men cutting, but when the weather moderates this force will have to be doubled.

San Bernardino.

NOTED ORCHARD SOLD.—Hollister Bee, March 26: The Big Four ranch, in North Rialto, consisting of 213 acres, of which 145 are in bearing orange and lemon trees and 15 in Valencia, was sold by E. J. Marshall of Los Angeles to E. F. Van Luven, J. B. Shepherdson and J. Barnhill of Colton for \$60,000. This is one of the most important ranches in this section. Land experts value the land at \$100,000.

BET CROP AT CHINO.—Chino Champion: There are now under contract to the Chino factory 10,200 acres of beets, of which 6,200 acres are planted, as compared with 1,400 acres planted at this time last year. Thinning has commenced and the stand so far is good. A number of new improvements are in contemplation in the factory and will keep the present force of men—some 50—busy until the sugar campaign.

ORCHARD SALE.—Highland correspondence of San Bernardino Sun, March 16: F. H. Welton has sold the 10-acre ranch south of town to J. Yarnell, the price paid being given as \$3,300. The land is mostly set to deciduous fruits and has a good water right.

San Diego.

OLIVE FACTORY.—Oceanside Blade, March 24: A building permit has been taken out by C. M. Gifford for the construction of a building at San Diego at a cost of \$7,000, to be used for the purpose of packing and canning olives and making olive oil. The structure will be 100 ft. square and of brick. The main floor will be cemented and will be used for making olive oil and pickling and canning the

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fruit. On the second floor will be the packing and storage rooms. The new plant will be the most complete in the State and will have double the capacity of the Gifford's present factory at Jamaica.

San Joaquin.

ESCALON LAND SALE.—Stockton Independent, March 24: Twenty acres of bare land, adjoining Escalon, was yesterday sold at \$75 an acre. J. H. Jackson was the seller, and John Hogan, from Michigan the buyer. Less than a year ago Mr. Jackson bought the land at \$50 an acre.

TOMATO CROP RUINED.—Lodi Sentinel, March 17: Tomato blight is in southern California, near La Habra, and there hundreds of acres of tomatoes, promising a splendid crop, were ruined.

VINEYARD PLANTING.—Stockton Mail: C. E. Buck and W. J. Thomayer, who set out a vineyard of Tokay grapes four years ago, adopted a novel plan which has proved of great value. Instead of setting out one cutting at each point, they set out two. After one year the weaker one was pulled up and the vineyard was left with strong, young vines. It is said they were recently offered about \$600 an acre for the property.

WINE SOLD.—Lodi Herald, March 17: The Woodbridge Vineyard Association on Monday sold West & Son 135,000 gal. wine. The sale about cleans up the product of their cellar for the season of 1905. West & Son will fortify the wine before shipping it to their own cellars.

Santa Clara.

PISTACHE TREES.—Stanislaus News, March 23: C. M. Wooster of San Francisco will try to establish the pistache industry in California. The Agricultural Department at Washington has determined to ascertain what can be done with the pistache nut in this State, and has been communicating with Mr. Wooster. The outcome of this is an arrangement to send 10,000 pistache nut trees, natives of the Nile region, to Mr. Wooster. Five acres will be planted to the pistache at San Martin, Santa Clara county, and five acres at Lindsay, in Tulare county. The value of the pistache nut is from \$1.25 to \$1.50 a pound. The nut is used in making flavors by confectioners.

Solano.

CANNERY FOR VACAVILLE.—Los Gatos Mail, March 29: Oakland capitalists are incorporating a company to erect a modern plant of large size in Vacaville. It is planned to handle principally tomatoes and apricots this season. Later an effort will be made to pack the high-grade cherries and to create an Eastern demand for a finer grade than is on the market.

Sonoma.

INCUBATORS FOR ALGOA BAY.—Petaluma Courier, March 28: The Petaluma Incubator Co. has just received an order for incubators and brooders for Algoa Bay. Algoa Bay is in the extreme southern part of South Africa—Cape Colony. The order consists of eight incubators, three of which are for hatching ostriches.

PLANT ASPARAGUS.—Sebastopol Times, March 24: A number of farmers in Green valley have made up their minds to plant out many acres of asparagus next season. The Green Valley Canning Co. gives assurance that it will pack all the grass brought to its big plant. W. Armstrong has clearly demonstrated the fact that asparagus raising is a profitable industry here.

Yolo.

FAVOR BINDERS.—Yolo Mail: At the Farmers' Institute held in Woodland last Saturday, one of the most interesting features was the discussion of the relative merits of the combined harvester and the binder. President S. Montgomery made the first remarks and favored the binder. He said that there was much dissatisfaction among ranchers all over the State and he attributes it to the harvester. He mentioned that 40 binders had been sold recently at Lodi and that several had been sold in the vicinity of Woodland. Little milling wheat is now being produced and the harvesters are responsible for the loss of gluten. The binder is also a guarantee against trouble from north winds as it takes up the grain before the green leaves the neck. While the expense to harvest grain with the binder may be greater than with the harvester, the former costs much less and is more readily operated. The binder will also probably restore labor conditions to their former status.

The Home Circle.

'Cross Lots.

Straight it ran through buttercups,
Blue-eyed grass and timothy,
Clover, where the wild bee sips,
And the tall weed waving free:
Just a little trodden lane,
Narrow as a mower's swath.
Oh, to set my feet again
In that little brown footpath—
'Cross lots!

By a little well it led,
Deep and dark, with mossy brink:
Half a mile my feet have sped
Just to get one cooling drink!
Daisies nodded, bright and wet
From the dipper's sprinkling bath.
Oh, once more my feet to set
In the little brown footpath—
'Cross lots!

Strawberries grew wild and sweet;
You could smell them in the grass!
Crimson red the dewy feet
Of each barefoot lad and lass.
Oh, to hear the whetting scythe!
Sweetest note that music hath!
Some glad morning, gay and blithe,
I will find that brown footpath
'Cross lots!

—Anna Burnham Bryant.

Three Wishes.

An infant in its cradle slept,
And in its sleep it smiled—
And one by one three women knelt
To kiss the fair-haired child;
And each thought of the days to be
And breathed a prayer half silently.

One poured her love on many lives,
But knew love's toil and care;
Its burdens oft had been to her
A heavy weight to bear.
She stooped and murmured lovingly:
"Not hardened hands, dear child, for thee."

One had not known the burdened hands,
But knew the empty heart;
At life's rich banquet she had sat,
An unfed guest, apart.
"Oh, not," she whispered tenderly,
"An empty heart, dear child, for thee."

And one was old; she had known care,
She had known loneliness;
She knew God leads us by no path
His presence cannot bless.
She smiled and murmured, trust-
fully:
"God's will, God's will, dear child,
for thee."

—British Weekly.

The Curse.

God said, "Let thorns and briars spring
up,
For man has sinned. Let labor be a
curse."
But God's great heart of love could not
content
Itself with justice done. His mercy
yearned
O'er wretched man, so helpless in his
fall.
The briars, God made bloom and bear
Sweet fragrant flowers and luscious fruit,
And labor, man's great primal curse, He
made
A blessing great, as he who labors with
his hands has found.
So great, that he who labors, finds
Rich health, sweet, peaceful rest, and
grand content.
And as each day, he tills the fertile soil,
He feels, in every fiber of his being, God
is good!

Ethelyn Dyer.

His Maiden Case.

"The first year after my admission,"
said the judge, "I was elected State at-
torney. My maiden case was one of
petit larceny. Bill Dawkes, one of
those trifling, good sort of fellows—so
called because good for nothing—had
been found in possession of a carcass of
mutton which the owner left hanging out
over night, and which was *non est*—that
is to say, 'turned up missing'—in the
morning.

"I drafted the indictment with great
care, charging William Dawkes, yeoman,
with stealing one carcass of mutton, the
personal property of one Pelatiah Potts,
out of the possession and against the will
of the said Pelatiah, feloniously and with
force of arms, did steal, take and carry
away.

"What's the matter?" I asked sharply

when my friend Bob C. burst out laugh-
ing on hearing me read this, my first pro-
fessional production.

"It's the best joke of the season," said
Bob.

"What is?"
"Why that pun—calling a sheep thief
a yeoman."

"My office was a scene of confusion at
the end of five minutes. Bob's head had
gone through the glass door of my book-
case, two of my three chairs lay with
broken legs, and Bob and I had a pair of
black eyes between us. It was more than
a month before either spoke to the
other.

"But I'm wandering from the point. In
due time the prisoner was brought up for
trial. Old Polifox appeared for the de-
fense.

"Old P. was a character. The only law
book he had ever read was 'Swann's
Treatise for Justices of the Peace,' but in
that and the Scriptures he was powerful.
He had a way of quoting and applying
the latter, which in a religious community
made it difficult to oppose him without
incurring a suspicion of orthodoxy. His
forte lay in carrying the jury, whom he
generally succeeded in convincing that he
and they were on one side and his ad-
versary on the other. His style of gram-
mar was original.

"I had carefully written out my open-
ing, and when I read it over to Nellie
Wynne, to whom I was paying attention
at that time, she said it was real nice,
which I knew was feminine for bulky, an
encomium I felt not a little proud of.

"When the case came on I spoke my
piece without a blunder. I cited my
authority to prove that he in whose pos-
session stolen property is found soon after
the theft is in law presumed to be the
thief. I was prepared to prove, I said,
that the property in question had di-
appeared at the dead hour of night, when
all honest people were in their beds, and
had been found at early dawn in the
smokehouse of Dawkes, the defendant.

"I put my witness on the stand and
proved the ownership, value and identity
of the property, its mysterious disappear-
ance and subsequent reappearance in the
constructive possession of the prisoner
and rested.

"Old Polifox sat in solemn silence, his
eyes closed and his red bandanna over his
head. He asked no questions and called
no witnesses. I was disappointed at the
old fellow's giving in so easily. It would
take away half the glory of the triumph.
"But I was reckoning without my
host.

"Old Polifox slowly got up on his legs
and removed his bandanna, and, taking
up the Bible on which the clerk had
sworn the witnesses, began:

"I am grieved, my brethering—he al-
ways called the jury his 'brethering'—I
am grieved and sore amazed to hear such
heathenish doctrines in a Christian court-
house as we've just been listenin' to.
What sez the sacred volume I hold in my
hand? Why, it sez, 'At the mouth of
two witnesses let every matter be estab-
lished.' Now, my brethering, let me ask
what two witnesses—what one witness—
seed my client hook this sheep? Echo
answers, Nary one! My deluded young
brother has read profane authors to show
that findin' of goods on the wrong man's
premises is proof of his stealin' 'em. It's
a 'presumption of law,' he says, and a
great piece of presumption it is, my
brethering. Now, in this same sacred
volume we have narrated a case in p'int
—that of one Benjamin, which you all
heard about. A silver cup, with a hun-
dred times as much as this trumpery
sheep, was diskivered not way off in
Benjamin's smokehouse whar Benja-
min moughtn't 'a' been for a week,
but chucked into the mouth of the very
sack he was ridin' onto. Benjamin was
innocent. But, my brethering, if it was
Benjamin's luck instead of my poor, un-
fortunate client's to be this day on trial
before you you would be obliged, accord-
in' to my unexperienced brother, to bring
him in guilty, in spite of Scrip'ter, and
consign him to a place whar he would
have to wear a coat of many colors of a
different stripe from his brother Joseph's."

"I not only lost the case," said the
judge, "but my office at the next election,
my attempt to confute old Polifox's
Scripture argument creating a doubt in
the mind of the community as to the
soundness of my religious views.

"In all soberness," the judge continued,
"if you want to be a successful lawyer,
search the Scriptures. In them you will
find the basis of all that is best and
noblest in human laws. Besides, the
words and the phrases of the Bible are
the language of the popular heart. Its
parables are household words. Its il-
lustrations never miss the mark. I have
given you a ludicrous instance of their
effect, but it is in the field of pathos and
real feeling that their power is irresist-
ible."

A Doggy Doggerel.

The fisherman took his rod,
And the hunter shouldered his gun;
And a sad-eyed dog with liver spots
Went with them to see the fun.

They were clad in breeks and shoon
Of a sporting color and cut,
They had all the paraphernalia
They could possibly manage, but—

The fisherman fished in vain,
Though he angled away all day,
For he carried his bait in a bottle, you
see.

And temperance fish were they.

The hunter was out for birds;
"There aren't any birds," he growled;
The sad-eyed dog with liver complaint
Sat down and dolefully howled.

But a shabby man, in a ragged coat,
And a boy with a bent-pin hook,
Bagged all the birds in sight, that day,
And coaxed the fish from the brook!

—Grace Stone Field.

Fashion Notes.

Apparently the red shades are pre-
ferred to all others. One sees the Ameri-
can Beauty rose shades everywhere. The
flower itself is very prominent in spring
models. Various shades of coral red are
also seen. This color is the red for blonde
women and for those pale women whom
the strong reds seem to extinguish. It is
the fashion to put half a dozen colors
together on a hat, and one seldom sees a
one-tone piece of millinery.

Quite typical was a light yellow straw
modified sailor shape, with a wreath of
lilacs covering the crown. At the back
of the crown were large American Beauty
roses which were allowed to fall from the
brim over the hair. There were five or
six of these roses, which were not com-
bined with leaves at all. There was a
high bandeau under the back brim, and
this was covered with shirrings and bows
of brown tulle.

Naturally, plaid ribbon and shaded
silks are popular as hat trimmings. A
startling little street hat of navy blue lace
straw was, on analysis, a sailor shape with
a rolling brim. It was tilted enormously
from the back, the bandeau being a regu-
lar wedge shape. It was covered with
many yards of plaid ribbon tied into in-
numerable bows. A twist of the ribbon
around the crown terminated in a fluffy
bow at the side, and an immense green
aigrette extended from it toward the
back of the hat.

Excepting lingerie hats, we are told
that the white hat is again taboo. It is
so by fits and starts. Sometimes the
white hat is the only smart thing one can
wear; at other times it is a thing of abhor-
rence. Just now it is considered provin-
cial.

On the other hand, the all-white gown
is to be very much the thing. Never
have so many lovely white muslin and
linen gowns been shown as at present.
Sheer, plain white, without dots and fig-
ures, is the preferred material and hand-
kerchief linen is the favorite above all
others.

The waist patterns ready to be made
up into charming lingerie waists are very
attractive. The newest form of them
have detachable, ready-to-wear collar and
cuff bands. It is admitted that cuffs and
collars of white waists soil much more
quickly than the rest of the garment, and
to have adjustable ones will mean a sav-
ing in laundry bills. The wear and tear
of too frequent launderings will also be
saved. A feature of the new models is
the embroidered yoke, which appears in
the back as well as in the front, in con-
trast to last year's yoke, which was seen
only in the front. Last year the waists
were quite plain, except for a few tucks
in the back, while the entire front was
profusely ornamented. This year the
back is to receive as much or almost as
much attention as the rest of the waist.
The Dutch neck seems to be a favorite.
One sees many net and lace waists, with-
out collars, and also some lovely mull and
handkerchief linen ones.

The newest thing in corset covers is the
boned taffeta and fine jersey waist, tight
fitting, and taking the place of the corset
for many thin people when wearing loose
frocks, and also being worn by those of
full figure as corset covers. Many of
these are laced in the back and on one
shoulder. They are admirable in conceal-
ing the break at the corset top and in
giving the smooth line effects so desir-
able.

The rage for narrow valenciennes lace
has filled up the summer dresses and
bubbled over on the hats and parasols.
Wide ruffles of chiffon and lace will not
be seen on parasols this year. Instead
they will be trimmed with row after row
of val gathered on to form frothy looking

bands. As on the waists, embroidery
may be added. This is a safe bit of fancy
work to indulge in between now and sum-
mer.

To make the spring dress complete it
must have a parasol to match. These are
invariably asked for in small sizes—24-inch
instead of the usual 26-inch. As it is a
late and exclusive fashion, these parasols
are not less than \$5. One may secure a
child's parasol of good silk in any pretty
shade, and, by having a longer handle
put on at small expense, have one for just
half the cost. For ordinary use the plain
colored taffeta coaching parasol is favor-
ite.

WASHABLE HATS.—No article of dress,
whatever it may be, claims a more gen-
eral interest than the lingerie hat. Since
it first made its appearance its field of
wearers has largely increased, until now
it is worn by women of almost any age,
only those who are hopelessly marked by
the ruthless wrinkle consenting to forego
its charm. Hence the latest phase of it
is creating a sensation in the feminine
world, and justly so, for its adjustable
parts are ingenuity itself. Only one ob-
jection has there been heretofore to the
chapeau of lace and embroidery, and
that was the nuisance and expense of
cleaning, for this headgear must be im-
maculate. That problem, however, has
been solved most cleverly, for the new
hat is so made that the covering can be
removed and laundered with the greatest
facility. On a wire foundation, with an
overdress of muslin and lace, is placed
the brim covering, to which is attached
the crown piece by means of buttoned
tabs. Beneath the latter a ribbon is
passed elaborated into a spreading bow
which finishes the front. Can anything
be imagined more practically simple? A
delightful quality of mercerized linen in
every conceivable color is made up in
this, on which are introduced exquisite
designs in heavily padded embroidery,
with deep scallops at the edge. So fine is
the work that one hardly believes that it
is not done by hand. The price astonishes
by reason of its reasonableness, for the
appearance of these hats vies with those
for which four times the sum is asked.

POCKETS.—At last woman is to be the
proud possessor of what has long been
considered man's sole privilege in a sar-
torial line—a pocket. In the newest and
smartest of spring costumes the pocket
is the most important feature. In the
matter of placing, it has become an orna-
ment to the jaunty little coats which are
to be so popular. Think of the comfort
and the possibilities that it offers. It will
do away with all the trouble and incon-
venience of carrying a bag or satchel,
which one is always in danger of losing,
and provide a place of safe-keeping for all
the things a woman finds necessary to
carry about with her. The new pocket
is not to be a tiny little affair, simply for
a handkerchief holder. It is to be a de-
cent, sizable one, put in such place that it
will not mar the outline of a gown, and
yet may be easily reached.

THE SKIRT.—The circular skirt is evi-
dently to be the prevailing mode for the
summer, and we feel constrained to re-
mind amateur dressmakers that it has a
great fault of sagging out of shape, unless
the material is firm, and it is not desirable
for wash goods on this account. It also
needs very great care in the cutting, or
it will hang unevenly. With modern
patterns, many apparently complicated
modes are quite within the powers of an
amateur seamstress, but we think it a
mistake to select unduly elaborate styles,
which only disgust the maker with their
difficulty, and refuse to look just right
after all. Simple models, carefully made
and finished, always look well if colors
and their combinations are well chosen.
The best way to insure this is to plan all
purchases in advance, and thus secure
color harmony at least.

POWDER HANDKERCHIEFS.—Hand-
kerchiefs containing powder puffs is the
latest scheme devised for solving the
shiny nose problem. They look like an
ordinary mouchoir at first glance, but,
upon examining more closely, one dis-
covers a tiny pocket at the center, into
which a small lamb's wool powder puff
has been slipped. The pocket is simply
a square piece of linen, which is hemmed
on one side, with the others turned under
and stitched on the handkerchief.

A small boy was very much afraid of
the dark. His mother stayed by him
some time one night after she had tucked
him up, and, when at last she felt obliged
to go, she said: "Now you mustn't be
afraid, dear, for the angels are all about
you." "Will they be here when you're
gone, mamma?" "Yes, indeed—all
around you!" "Well," said the boy,
with a despairing sigh, "It does beat the
devil how afraid I am of angels!"

Domestic Hints.

INDIAN PUDDING.—One quart milk, five tablespoons meal, two tablespoons flour, one egg, one cup molasses and some salt. Scald the milk. One cup cold milk and raisins stirred in when the pudding has commenced to thicken.

CHEESE STRAWS.—Two cupfuls of grated cheese, one cupful of flour, three tablespoonfuls of melted butter, one-quarter of a teaspoonful of salt and one-quarter of a teaspoonful of cayenne pepper; mix together, roll thin, cut into narrow strips and bake brown.

SOUTHERN CORN MUFFINS.—One pint fresh buttermilk, three quarters pint cornmeal, two eggs, one level teaspoonful soda, one level teaspoonful salt, butter size of a walnut. Beat the eggs together, add the buttermilk, then corn meal; soda and salt sifted together; lastly the butter.

EGG PLANT FRITTERS.—Boil the egg plant in salted water with lemon juice till tender. Then mash it well, add enough flour to it so that it may be moulded, and to each cupful of the mixture add a beaten egg. Season with salt and pepper, put in a little melted butter, shape and fry in boiling fat.

CODFISH A LA CREAM.—Prepare the fish as for creamed fish. Boil six large potatoes; when done wash them and beat in two eggs and a little salt. Beat them up till smooth and fluffy. When ready line a deep dish with the mashed potato. Pour in the creamed fish and cover the top with the remainder of the potato. Bake in hot oven twenty-five minutes.

SALMON AND CELERY SALAD.—Flake enough canned salmon to make one cup. Arrange lettuce leaves around a salad bowl, then mix the salmon with one cup of celery cut in tiny crosswise slices. Make a mound of the mixture in the center of the lettuce and pour on a dressing made from two tablespoons of vinegar, a saltspoon of salt and a dash of pepper.

MOCK CREAM PIE.—Heat two cups of milk in a double boiler. Mix six level tablespoons of flour with a little cold milk and stir into the hot milk. Cook ten minutes, stirring occasionally. Add two well-beaten eggs, two-thirds cup of sugar and a half teaspoon of flavoring. Cook until the eggs thicken, then cool and pour into a crust that has been baked in a deep plate and cover with another baked but flat crust.

TOMATOES STUFFED WITH MEAT.—Plunge ten tomatoes into boiling water for an instant, peel off the skin and let them get cold. Cut the tops off and scoop out the inside, which put into the chopping bowl with a cup of cold meat and one half a cup of bread crumbs. Chop all together, add salt and pepper, and fill the tomatoes with this mixture. Put a small piece of butter on the top and put them into the oven to get hot. Serve on slices of toast.

Hints to Housekeepers.

To relieve hiccough administer a lump of sugar wet with vinegar.

A very few drops of camphor in a glass of water will often relieve sick headache.

A few pieces of horseradish root will prevent mold from forming on top of the liquid in which pickles are kept.

To improve the flavor of coffee sprinkle with a pinch of salt before adding the water. Some add a little sugar to the salt.

When washing glassware do not put it in hot water bottom first, as it will be liable to crack from sudden expansion. Even delicate glass can be safely washed in very hot water if slipped in edgewise.

To remove rust from steel rub the rusted part well with sweet oil and allow it to stand for forty-eight hours. Then rub with a piece of soft leather and sprinkle with finely powdered unslacked lime until the rust disappears.

For corns the best remedy is equal parts of sweet oil and iodine. Shake well and apply with a feather every night until relieved. For soft corns, saturate cotton with pure cider vinegar and bind on the corn. Repeat several times a day.

Tough steak may be rendered more tender by lying for two hours on a dish containing three tablespoonfuls of vinegar and salad oil or butter, a little pepper, but no salt; turn every twenty minutes. Oil and vinegar soften the fibers without extracting the juices.

Sometimes yolks of eggs are left over when making a dish which calls for only whites; drop them gently into a bowl of cold water if you do not want them immediately. They will not spoil if they stand for several days. Handle them carefully so they will not break.

Coffee stains, even when there is cream in the coffee, can be removed from the most delicate silk and woolen fabrics by

brushing the spots with pure glycerine. Rinse in lukewarm water and press on the wrong side with a warm iron. The glycerine absorbs both the coloring matter and the grease.

When sheets have been in use for some time, do not wait for them to begin to split, but cut through the center and turn the outer side to the center, neatly hem the edges and the sheet will last nearly as long as a new sheet. Bolster cases should be cut in two and made into pillow cases for ordinary wear.

Instead of using forty and fifty thread when sewing calicoes, domestics and goods of like texture on the machine, use sixty and seventy, and it will both look better and wear better. The two threads give sufficient strength and the finer thread imbeds itself in the material and becomes almost like a part of it, while the coarse thread being raised above the surface is subjected to more wear.

Except for soup stock, meat should be cooked in a way to preserve its juices. In the first few minutes of boiling it should be subjected to a temperature higher than boiling point, so that a crust will form and keep in the juices. Then the temperature should be lowered, and the meat merely simmered till done. In roasting and broiling the same principle is followed. The meat is put directly into an extremely hot oven or over the flames, and allowed to become seared over the surface, after which the temperature is lowered.

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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, April 4, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday	77 1/2 @ 78 1/2	77 1/2 @ 78 1/2
Thursday	77 1/2 @ 78 1/2	77 1/2 @ 78 1/2
Friday	77 1/2 @ 78 1/2	77 1/2 @ 78 1/2
Saturday	77 1/2 @ 78 1/2	77 1/2 @ 78 1/2
Sunday	77 1/2 @ 78 1/2	77 1/2 @ 78 1/2
Tuesday	77 1/2 @ 78 1/2	77 1/2 @ 78 1/2

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday	44 1/2 @ 45 1/2	44 1/2 @ 45 1/2
Thursday	44 1/2 @ 45 1/2	44 1/2 @ 45 1/2
Friday	44 1/2 @ 45 1/2	44 1/2 @ 45 1/2
Saturday	44 1/2 @ 45 1/2	44 1/2 @ 45 1/2
Sunday	44 1/2 @ 45 1/2	44 1/2 @ 45 1/2
Monday	44 1/2 @ 45 1/2	44 1/2 @ 45 1/2
Tuesday	44 1/2 @ 45 1/2	44 1/2 @ 45 1/2

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	May, 1906.	Dec., 1906.
Wednesday	1 26 1/2 @ 27 1/2	1 26 1/2 @ 27 1/2
Thursday	1 26 1/2 @ 27 1/2	1 26 1/2 @ 27 1/2
Friday	1 26 1/2 @ 27 1/2	1 26 1/2 @ 27 1/2
Saturday	1 26 1/2 @ 27 1/2	1 26 1/2 @ 27 1/2
Sunday	1 26 1/2 @ 27 1/2	1 26 1/2 @ 27 1/2
Monday	1 26 1/2 @ 27 1/2	1 26 1/2 @ 27 1/2
Tuesday	1 26 1/2 @ 27 1/2	1 26 1/2 @ 27 1/2

Wheat.

The local wheat market is considered in better shape this week. There seems to be a little more buying going on and rumors of millers commencing to buy are taking foot. Some have it that large sized orders have been placed in the north for April and May shipments. Reports concerning crop damage continue to come in, but it now appears that the damage to the wheat crop on account of the rain as far as this state is concerned is only slight especially compared with the damage that was experienced two years ago. Damage to the crop in the north however, is more serious as well as more uncertain. In some of the largest wheat raising counties in Washington the crop has been greatly damaged necessitating the replanting of over one half the crop. The tendency, however, has been to exaggerate damage reports from that section as in many places it is still impossible to tell what damage has been done. In regions where it is supposed to be frozen out, it is yet impossible to ascertain for certain, but at the same time some experienced farmers are of the opinion that it is too late to re-sow even if the ground thaws out immediately. Most of the trading in wheat during the last week has been done by millers or for domestic purposes, as exporters have not yet commenced to figure in the market. It is reported that several ships were chartered during last week by exporters in the north, but as this grain was taken from tide water points, the market did not feel it. Eastern and foreign advices are not indicative of higher prices. The belief is even expressed that prices are apt to go lower or that they have only now arrived at a sound commercial basis in distinction to the speculative one of last year.

California Milling	1 37 1/2 @ 1 45
Cal. No. 1 shipping	1 27 1/2 @ 1 30
Northern Club	1 30 @ 1 32 1/2
Northern Bluestem	1 35 @ 1 37 1/2
Northern Red	1 25 @ 1 27 1/2

PRICES OF FUTURES.

Tuesday, at the forenoon session of Exchange Dec., 1905, wheat ranged from \$1.27 1/2 @—.

Flour.

The flour market continues very dull. Local demand is limited and cannot be said to be sufficient to encourage millers. Buyers are inclined to hold back on account of the unsteady condition of wheat, which is calculated to effect flour in their favor. The foreign aspect of the situation has not changed. There have been inquiries received in the north from the Orient, but bids have been too unreasonably low for serious consideration. Millers report that a better feeling exists abroad, but the present prices stand between them and trade. They do not hope for much business in this line unless wheat makes a further decline, but point out that if wheat does decline large orders will be plentiful enough. Some shipments are being made from Portland to Valdivostok, but the Chinese boycott situation has not improved a particle. Australia and Canada are at present supplying China with flour, but this can hardly affect the market before a better European demand makes itself felt.

Patents, California	4 65 @
Second Patents, California	4 10 @
Straights	4 00 @
Superfine No. 1	3 50 @
Superfine No. 2	3 00 @
Oregon Bakers'	4 10 @
Washington Bakers'	4 15 @
Eastern Patents	5 50 @

Barley.

There is not much activity in this commodity at present, as trading in it is of a hand to mouth nature. Supplies are

gradually diminishing, and some varieties are even characterized as scarce. Feed No. 1 is quoted at a decline, however, as the demand for it has been falling off constantly since green feed has become plentiful. Crop prospects at this time of the year are better than for many years past.

Brewing	1 25 @ 1 30
Feed, No. 1	1 15 @ 1 20
Feed, fair to good	1 15 @ 1 17 1/2
Chevalier, No. 1 to choice	1 30 @ 1 35
Chevalier, common to fair	1 20 @ 1 25
December	96 1/2 @

Oats.

Oats are running low in the local market. White oats particularly are scarce and an advance to \$1.80 is quoted on this variety. The general oat market is firm and buyers are always present. Oregon and Washington are importing large quantities of oats from the East and growers who have been holding on to their products have commenced to sell more freely.

White oats	1 50 @ 1 55
Black oats	1 30 @ 1 35
Red oats	1 45 @ 1 50

Corn.

The corn market is somewhat firmer this week. Trading is not of a large volume as stocks are running low. An advance of 5c. on Kafir is quoted this week.

Large White, good to choice	1 25 @ 1 35
Large Yellow	1 20 @ 1 25
Small Yellow	1 50 @ 1 55
Egyptian White	1 35 @ 1 40
Egyptian Brown	1 25 @ 1 35
Kafir	1 35 @ 1 45

Rye.

Rye continues firm at the old figures. Trading in this commodity is limited to the supplying of local needs. Nothing has developed to arouse interest of a speculative nature.

Good to choice	1 52 1/2 @ 1 55
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Buckwheat.

Buckwheat is not an important member of the cereal market at present, owing to limited supplies. Quotations are nominal and are much at variance. It is probable that any considerable trading would reveal higher values as very little is to be had.

Good to choice	1 50 @ 1 55
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Beans.

While the bean market does not show the same activity as it has done during some parts of the year, it is considered in better shape than it has been for several weeks. Limas, however, continue very weak owing to a poor demand in the East. The quiet state of the bean market is ascribed to the fact that the fall and winter Eastern shipments of beans were larger than recorded of any previous year. It is thought that many Eastern dealers took on greater supplies than were necessary for their trade. It is known that owing to the superior quality of last year's crop, California beans have penetrated into the markets farther east than hitherto and on this account bean dealers are confident of better things for the growers. A better demand from the East is expected in the near future, if the usual increased spring demand is experienced this year. Present supplies in California are estimated as follows: Large Whites, 50,000 sacks; Small Whites, 50,000 sacks; Limas, 175,000 sacks; Pinks, 225,000 sacks; Bayos, 40,000 sacks; Black-eyes, 12,000 sacks; various, 15,000 sacks.

Small White, good to choice	2 90 @ 3 25
Large White	2 25 @ 2 50
Pinks	1 50 @ 1 85
Pinks, damaged	1 00 @ 1 25
Bayos, good to choice	3 25 @ 3 40
Red Kidneys	3 50 @ 3 75
Reds	3 00 @ 3 25
Limas, Southern California	4 15 @ 4 25
Black-eye Beans	4 25 @ 4 50
Cranberry	3 30 @ 3 35
Garbanzas, small	3 10 @ 3 25
Garbanzas, large	3 85 @ 4 00
Horsebeans	1 25 @ 1 50

Dried Peas.

This week presents no changes in the dried pea situation. There is a fair volume of business under limited supplies. Quotations remain as last given.

Green Peas, California	2 15 @ 2 50
Niles	1 90 @ 2 25

Hops.

The hop market has not experienced any change during the last week. There exists scarcely any demand at present and trading is almost at a standstill, except for the occasional letting of some hop-grower that has been holding his product.

Medium to fair	5 @ 6
Good brewing	6 @ 7
Prime	7 @ 8
Prime to choice	8 @ 9

Wool.

Interest in wool centers on the new shearing. The rains entirely stopped shearing, and on account of extreme dampness it has hardly gotten under full headway in some locations. Northern wools are much sought after and prices on these varieties give indication of keep-

ing up well. However, the short wools are not much regarded and it will be no surprise to wool dealers if prices on these varieties go down before shearing is well advanced.

FALL.

Humboldt and Mendocino	15 @ 16 1/2
Northern, free	14 1/2 @ 15
Northern, defective	11 @ 13
Middle County, free	8 @ 14
Middle County, defective	8 @ 10
San Joaquin and Southern, free	8 @ 10
San Joaquin and Southern, defective	7 @ 9

SPRING.

Nevada	15 @ 19
Southern	11 @ 16
Middle County	16 @ 18
Northern free	20 @ 22

Hay and Straw.

There has been some little increase in shipments of hay to market during the past week, the total showing 3,570 tons in comparison with 3,050 for the week preceding. In spite of this increase, the situation seems if anything a bit stronger, all grades selling readily at quotations. Crop prospects are still promising, but the good demand, both locally and from coastwise points, helps to keep the market well cleaned up. Country warehouses are still unloading a very good proportion of their stocks to interior points where large contracting work is being done. As the season draws along it becomes more and more evident that the market will go into the new season with practically no carry-over stock. Alfalfa continues in ample supply. Stock hay is in light demand on account of the present good grass supply. Choice wheat hay still continues to bring top quotations, the medium grades of wheat and tame oat showing more activity than any other particular quality.

Wheat, choice	11 00 @ 16 00
Wheat, other grades	8 00 @ 13 00
Wheat and Oat	8 50 @ 12 00
Tame Oat, fair to choice	8 00 @ 12 00
Wild Oat	7 50 @ 9 00
Barley	7 00 @ 9 50
Alfalfa	8 00 @ 11 00
Stock hay	7 00 @ 8 00
Straw, 3/4 bale	80 @ 80

Millstuffs.

Millstuffs continue weak. There has been no change in quotations, although prices are bordering on a decline. Reports from the North show some activity there in millstuffs, but it is not expected that this market will improve during the spring months.

Alfalfa Meal, 10 lb.	21 00 @ 22 00
Brn, 10 lb.	18 00 @ 19 00
Middlings	25 00 @ 26 00
Shorts, Oregon	20 00 @ 21 00
Barley, Rolled, choice	25 50 @ 26 00
Cornmeal	27 50 @ 28 50
Cracked Corn	28 00 @ 29 00
Oilcake Meal	39 00 @ 40 00
Cocanut cake or meal	24 50 @ 25 50

Seeds.

The seed market has not presented any new features this week. Trading is now reduced to a minimum and quotations are nominal in most varieties. The rains have apparently lasted too long to permit of any general resumption of planting.

Alfalfa	12 50 @ 13 00
Flax	3 25 @ 3 50
Mustard, Yellow	3 75 @ 4 25
Mustard, Trieste	4 50 @ 4 75
Canary	6 @ 6 1/2
Rape	2 1/2 @ 3
Hemp	5 1/2 @ 6
Timothy	5 1/2 @ 6

Honey.

Honey quotations have not changed during the last week. Receipts have been very light and the demand has been of a limited character. Reports from the interior show that a good crop is expected.

Extracted, Water White	4 1/2 @ 5
Extracted, White	4 @ 4 1/2
Extracted, Light Amber	3 1/2 @ 4
Extracted, Amber	3 @ 3 1/2
Extracted, Dark Amber	2 1/2 @ 3
Extracted, Hawaiian	2 1/2 @
White Comb, 1-frames	10 @ 12 1/2
Amber Comb	9 @ 10

Beeswax.

Beeswax trading is very limited. Little demand exists and supplies are not large. Quotations remain as last given.

Good to choice, light 3/4 lb.	27 @ 28
Dark	25 @ 26

Live Stock and Meats.

The meat market is easier this week, although no quotable decline is noted. Receipts have been more liberal and buyers are consequently more conservative. Veal and mutton of all descriptions show especial weakness, and a lower market is looked for. The same condition as previously existed holds for the hog market. Supplies are very scarce and prices too high for profitable operation by packers.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net 3/4 lb.	6 @ 7
Beef, 2nd quality	5 1/2 @ 6
Beef, 3rd quality	4 1/2 @ 5
Mutton—ewes, 100% wethers	11 @
Hogs, hard grain, 150 to 250 lbs.	7 @ 7 1/2
Hogs, large, hard, over 250 pounds	6 @ 6 1/2

Hogs, small, fat, under 150 lbs	6 1/2 @ 7
Hogs, soft	5 @ 5 1/2
Veal, large, 3/4 lb.	7 @ 8
Veal, small, 3/4 lb.	4 @ 5
Lamb, spring, 3/4 lb.	12 @ 13

Hides, Skins and Tallow.

The hide market is strong. Trading is active, with a good demand for all sound descriptions. The market has an upward tendency, with favorable conditions for sellers. The market here continues to reflect Chicago conditions.

Nothing but select hides, clean and trimmed, will bring full figures. Culls of all kinds either from grubs, cuts, hair slips side brands or murrain, are not always readily placed at the lower figures.

	Sound.	Culls.
Heavy Steers, over 55 lbs.	13 @	12 @
Medium Steers 48 to 55 lbs.	12 @	11 @
Light Steers, under 48 lbs.	11 1/2 @	10 1/2 @
Heavy Cow Hides, over 50 lbs.	11 1/2 @	10 1/2 @
Light Cow Hides, under 50 lbs.	11 1/2 @	10 1/2 @
Stags	8 1/2 @	7 1/2 @
Wet Salted Kip	12 @	11 @
Wet Salted Veal	13 @	12 @
Wet Salted Calf	14 @	13 @
Dry Hides	22 @	20 @
Dry Kip and Veal, 11 to 15 lbs.	21 @	18 @
Dry Calf, under 4 lbs.	21 @	20 @
Felts, long wool, 3/4 skin	1 50 @ 2 00	
Felts, medium, 3/4 skin	90 @ 1 25	
Felts, short wool, 3/4 skin	50 @ 75	
Felts, shearing, 3/4 skin	20 @ 40	
Horse Hides, salted, large prime, each	3 25 @	
Horse Hides, salted, medium	3 75 @	
Horse Hides, salted, small	2 25 @	
Horse Hides, dry, large	1 75 @	
Horse Hides, dry, medium	1 50 @	
Horse Hides, dry, small	1 25 @	
Tallow, good quality	4 @ 4 1/2	
Tallow, poorer grades	3 1/2 @ 3 3/4	

Bags and Bagging.

The bag market is firmer this week and considerable trading in future deliveries of grain sacks is the principal feature at present. Grain bags show a fractional advance and other varieties manifest a tendency to go up.

Bean Sacks, cotton, No. 1, 8 @ 9 1/2; No. 2	5 1/2 @ 6
Fruit Sacks, cotton, No. 1, 8 @ 9 1/2; No. 2	7 1/2 @ 8
Fruit Sacks, jute, as to quality	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 22x36, spot	7 1/2 @ 7 3/4
Wool Sacks, 4-lb.	35 @ 36
Wool Sacks, 3 1/2-lb.	32 @ 33

Poultry.

The poultry market is in a firmer condition this week and advances on several varieties are quoted. The Easter demand has commenced to make itself felt and a brisk demand for fancy stock is noticeable at this time. This is in very light receipt and prices verge on another advance. Advances are quoted on dressed turkey, hens and roosters.

Turkeys, dressed, 3/4 lb.	19 @ 22
Turkeys, choice Young, 3/4 lb.	— @ —
Turkeys, live gobblers, 3/4 lb.	15 @ 17
Turkeys, live hens, 3/4 lb.	18 @ 20
Hens, small, 3/4 dozen	5 00 @ 5 50
Hens, large	6 00 @ 7 00
Roosters, old	4 50 @ 5 50
Roosters, young (full-grown)	7 00 @ 8 00
Fryers	5 50 @ 6 50
Broilers, large	4 50 @ 5 50
Broilers, small to medium	3 00 @ 4 00
Ducks, old, 3/4 dozen	6 00 @ 8 00
Ducks, young, 3/4 dozen	7 00 @ 10 00
Geese, 3/4 pair	2 00 @ 2 50
Goslings, 3/4 pair	2 50 @ 3 00
Pigeons, old, 3/4 dozen	1 00 @ 1 10
Pigeons, young	2 00 @ 2 50

Butter.

The butter market is easier this week, owing to increased arrivals. However, a much improved demand has saved the market from the decline it must otherwise have experienced, considering the liberal receipts. Favorable weather will probably continue to increase the butter receipts, but the market seems to take it away, especially the inside figure grades.

Creamery, extras, 3/4 lb.	23 @
Creamery, firsts	21 @
Creamery, seconds	20 @
Dairy, select	30 @
Dairy, firsts	19 @
Dairy, seconds	18 @
Mixed Store	17 1/2 @

Cheese.

Cheese is firmer and trading has been quite active during the week. Prices remain as last quoted and present trading does not point to any further decline.

California, fancy flat, new	12 @
California, good to choice	10 @
California, fair to good	10 @
California, "Young Americas"	12 1/2 @ 13
Eastern, new	15 @ 16

Eggs.

Favorable weather has greatly increased the receipts, but active storage operations have been able to receive all the market offered at the lower figures. Prices have declined a trifle and now range from 16 @ 20c. There has also been some speculative buying for the Easter trade and it is probable that a smart advance will take place during the next few days.

California, select, large, white and fresh	19 @ 20
California, select, irregular color & size	17 1/2 @ 18
California, good to choice store	16 @ 17 1/2
Eastern firsts	— @ —
Eastern seconds	— @ —

Potatoes.

The potato market is considered in better shape this week. Prime quality potatoes have been held for top prices and the demand for these varieties has been good at the prices asked. Poorer qualities, however, still remain in large quantities and are yet begging for buyers. New potatoes have been in much larger receipt and are now quoted at

decline is quoted on Early Rose. Reports from the south go to show that large amounts of seed potatoes have rotted in the ground, owing to the excessive rain, and that replanting on a large scale will be necessary.

River Burbanks, 3 cental.....	60 @ 90
Salinas Burbanks.....	1 10 @ 1 40
Oregon Burbanks.....	80 @ 1 25
Tomatoes.....	90 @ 1 00
Sweet Potatoes.....	1 75 @ 2 00
Early Rose, Oregon.....	1 00 @ 1 25
Early Rose, California.....	1 00 @ 1 25

Vegetables.

Vegetables have been in very liberal supply this week. Favorable weather for growing has been responsible for a decline in almost all varieties on the list. Rhubarb is now quoted at 50c. @ \$1. Artichokes range from 20c. @ 40c. Green peas are quoted at 4c. @ 5c., as against 8c. @ 10c. last week. Asparagus, however, has remained at the old quotations, being saved from the general decline by active buying on the part of canning interests on the market. The supply, too, has not increased in the same proportion as other vegetables, owing to the river canneries. Onions are still in oversupply and there is considerable selling pressure. A large quantity of inferior stock still remains on the market.

Celery, 3 dozen.....	40 @ 50
Radishes.....	10 @ 15
Lettuce.....	10 @ 15
Asparagus, 3 lb.....	5 @ 7
Rhubarb.....	50 @ 1 00
Green Peppers southern.....	20 @ 25
Cucumbers, hothouse, 3 dozen.....	75 @ 1 50
Summer Squash southern.....	2 00 @ 2 50
Turnips, yellow, 3 sack.....	1 50 @ 2 00
Turnips, white, 3 sack.....	1 25 @ 2 00
Cauliflower, 3 dozen.....	40 @ 1 00
Beans, String, 3 lb.....	15 @ 20
Cabbage, choice garden, 100 lbs.....	85 @ 1 25
Egg Plant, 3 lb.....	10 @ 15
Garlic, 3 lb.....	4 1/2 @ 5
Onions, Oregon, 3 ctn.....	1 00 @ 1 50
Onions, Australian, 3 ctn.....	3 25 @ 4
Peas, Green, 3 lb.....	4 @ 5
Tomatoes, 3 box or crate.....	1 00 @ 1 50
Artichokes, No. 1.....	30 @ 40
Artichokes, No. 2.....	20 @ 25
Carrots, 3 sack.....	80 @ 1 00
Hubbard Squash, 3 ton.....	25 00 @ 30

NOTE.—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top, with hand holes in the ends, and weigh when filled from 50c. @ 60 lbs gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 30 lbs. gross.

Fresh Fruits.

Apples are running low. Common varieties are no longer to be found on the market while the better varieties are scarce, being offered only sparingly and at the outside figures. A few Winter Nelis pears are still on the market and it seems that holders are trying to see how long they will last into the year. No further damage reports to the growing crops have come to hand.

Apples, choice to select, 50-lb box.....	1 50 @ 2 50
Apples, good to choice, 50-lb box.....	75 @ 1 25
Pears, Winter Nelis.....	2 75 @ 3 00

Dried Fruits.

Dried fruits continue strong at slightly advanced quotations. Apples are very scarce and are said to be collected into the hands of a few jobbers. The price on all varieties of apples is advanced this week 1/2c. Apricots continue in very active demand and supplies are known to be running low in fact of a short crop for this year. Quotations on this variety have advanced 1c. Prunes and other varieties continue strong and supplies are very limited, especially in the East from which section orders are constantly arriving.

EVAPORATED OR BLEACHED.

Apples, 50-lb boxes, rings, pressed, good to choice.....	10 @ 10 1/2
Apples, extra choice to fancy, 50-lb boxes.....	10 1/2 @ 10 3/4
Apricots, Royal, good to choice, 3 lb.....	9 1/2 @ 10 1/4
Apricots, Royal, fancy.....	10 1/2 @ 11 1/4
Figs, 10-lb box, 1-lb cartons.....	5 1/2 @ 6 1/4
Nectarines, White and Stanwick, 3 lb.....	8 @ 8 1/2
Nectarines, red, 3 lb.....	8 @ 8 1/2
Peaches, unpeeled, good to choice.....	8 1/4 @ 8 3/4
Peaches, unpeeled, fancy to extra fancy.....	9 @ 9 1/2
Pears, standard, 3 lb.....	8 @ 8 1/2
Pears, choice to fancy.....	10 @ 12
Plums, Black, pitted.....	5 1/2 @ 6 1/2
Plums, Red, pitted.....	7 @ 8
Plums, Yellow, pitted.....	6 @ 8
Prunes, Silver, good to fancy.....	5 1/2 @ 6 1/4
Prunes, in bags, 4 sizes, 40-50s, 54-58s, 60-64s, 4 1/2 @ 5 1/2; 60-70s, 4 1/4 @ 4 1/2; 70-80s, 3 3/4 @ 4; 80-90s, 3 1/4 @ 3 1/2; 90-100s, 3 @ 3 1/2; small, 2 1/2 @ 3c.	

COMMON SUN-DRIED.

Apples, sliced.....	5 1/2 @ 6
Figs, White, in bulk.....	3 @ 3 1/4
Figs, Black.....	3 @ 3 1/4

Raisins.

The raisin market has not changed during the last week. Dealers have been expecting an advance as supplies on hand are lower than they have been for several years and it is expected that at the present rate of consumption, the new crop will come in on a clean board. No inquiry from Eastern points, however, is experienced at this time.

(Fresno delivery except otherwise specified.)

London Layers, 2-crown, 20-lb box.....	1 50 @ 1 60
London Layers, 3-crown, 20-lb box.....	1 60 @ 1 70
Fancy Clusters, 4-crown, 20-lb box.....	1 75 @ 1 85
Dehesas, 20-lb box.....	2 00 @ 2 10
Imperial, 20-lb box.....	2 50 @ 2 60
2-Crown Standard loose Muscatel.....	5 @ 5 1/2
3-Crown Standard.....	5 1/2 @ 5 3/4
4-Crown Standard.....	5 3/4 @ 6
Seedless Thompsons, 50-lb boxes.....	4 1/2 @ 4 3/4
Seedless Sultanas.....	4 1/2 @ 4 3/4
Seedless Muscatels.....	4 @ 4 1/2

Fancy, 16-oz. Seeded.....	6 1/2 @ 7
Choice, 16-oz. Seeded.....	6 1/4 @ 7
Fancy, 12-oz. Seeded.....	5 1/2 @ 6
Choice, 12-oz. Seeded.....	5 @ 6
Fancy Seeded, bulk.....	6 1/4 @ 7
Choice Seeded, bulk.....	6 @ 7

Citrus Fruits.

Orange receipts have commenced to lessen and the favorable selling weather for oranges has combined to send the prices up. Oranges are now quoted as high as \$3.75, being the price paid for the largest navels. Other varieties of oranges have advanced 25c. all along the line. Under the present weather, a continual upward tendency in oranges is to be expected from now on. The market in other citrus fruits has been without feature during the last week, quotation remaining the same as last given.

Nuts.

The nut market is strong. There is an improved demand for almonds and walnuts for local consumption. There has been more activity in almonds lately, owing to reports concerning damage to the coming crop. It is now known that a large part of the almond crop has been destroyed by unfavorable weather conditions since the blossoming of the trees.

Peanuts, fair to prime.....	4 1/4 @ 5 1/4
Cal. Walnuts, No. 1 soft shell.....	12 @ 13
Cal. Walnuts, No. 2 soft shell.....	12 @ 13
Cal. Walnuts, No. 1 hard shell.....	12 1/2 @ 13 1/2
Cal. Walnuts, No. 2 hard shell.....	12 @ 13
Almonds, IXL, 3 lb.....	12 @ 13
Almonds, Ne Plus Ultra, 3 lb.....	12 @ 13
Almonds, Nonpareil, 3 lb.....	12 1/2 @ 13 1/2
Almonds, Languedoc, 3 lb.....	8 1/2 @ 9
Almonds, Golden State, 3 lb.....	9 @ 9 1/2
Hard Shell, 3 lb.....	5 @ 5 1/2

MAIL ORDER HOUSES.

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AND

THOMAS' PHOSPHATE POWDER

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Write for Pamphlets and Prices.

CAPITAL INCREASED.

Owing to the remarkable increase in the business of the CENTURY MERCANTILE CO., it has been deemed necessary for them to increase their capital stock. Their trade in MERCHANDISE is steadily growing, but their most phenomenal success is in the sale of PRODUCE for country shippers. Their fair methods in this matter seem to meet the approval of producers, and large shipments of PRODUCE are resulting.

Notice to Stockholders of Century Mercantile Company.

Notice is hereby given, that in pursuance of a resolution and order by the Board of Directors of the Century Mercantile Company, a corporation organized and existing under the laws of the State of California, unanimously adopted at a meeting of said Board, duly and regularly called and held on the 1st day of March, 1906, at the office of said corporation, No. 14 Sansome St., in said City and County of San Francisco, State of California, all the members of said Board being present and acting, a special meeting of the stockholders of said Century Mercantile Company is hereby called and will be held at the office of said corporation, No. 14 Sansome St., in said City and County of San Francisco, State of California, said place of meeting being at the principal place of business of said corporation, and at the building where the Board of Directors usually meet, on Wednesday, the 16th day of May, 1906, at 10 o'clock A. M. of said day, for the purpose of considering and acting upon the proposition to increase the capital stock of said corporation from \$20,000.00, divided into 2,000 shares of the par value of \$10.00 each to \$100,000.00, divided into 10,000 shares of the par value of \$10.00 each.

By order of the Board of Directors of Century Mercantile Co.

Dated March 1st, 1906.

J. H. CONGDON,

Secretary of Century Mercantile Co.

ALBERT C. AIKEN, Attorney-at-Law, No. 802 Mills Bldg., Attorney for said Corporation.

Among the good things inaugurated by them in the interests of producers are their

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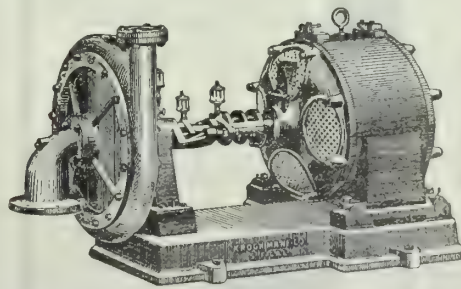
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ECLIPSE HAY PRESS CO., 617 West 7th Street, Kansas City, Mo.

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The Victory Over Asparagus Rust.

(Continued from page 209.)

untreated field. Fig. 1 shows the fine autumn growth of asparagus tops in a sulphured field of Mr. Boots, of Milpitas, as photographed on October 20, while the other picture was taken on the same day in a field of similar age and on similar soil, separated only by a fence from the first. All untreated fields in the neighborhood were badly rusted in September and the tops black and dead in October, when these pictures were taken. As shown in Fig. 2, there was scarcely any sign of asparagus left on the ground except a few blackened, stunted stalks. Professor Smith says the rust was never worse anywhere in its history than at Milpitas this season. The Boots field made a fine growth, the best in years from the testimony of all local observers, and remained green until the normal end of the season, except for some yellowing from insect attacks. There was not enough rust in the field to show any effect upon the tops, except in one corner, next the field shown in Fig. 2. This was started somewhat before sulphuring commenced, and was enormously exposed to infection. The attack was not severe even there, and did not spread out into the field. The tops made a good growth, even in the worst part. The condition of the field as a whole was equal to that shown in the picture.

The asparagus crop of last season in California was a very disappointing one to growers and canners. Many fields had been badly injured by rust, but aside from these effects the cold, wet cutting season, following unseasonably warm weather in February, cut down the crop severely in every district. In fields protected from rust, or in districts not severely attacked, the tops have made a better growth than for several years, and the prospect for this year's crop is excellent.

Patrons of Husbandry.

San Jose Grange.

At a recent meeting of this Grange the question of the protection of birds was the first subject taken under consideration recently by the Grange. A special committee appointed to investigate, and consisting of Worthy Master Hugh Leigh, D. T. Bateman, and Robert Summers, filed a report.

F. W. Crandall, of the Sorosis Fruit Company, gave a talk on his trip through southern California and Death valley. Mr. Crandall's talk was followed by the discussion of legislative subjects which occupied the greater portion of the morning. Equal suffrage and equal rights before the law were the questions mainly involved.

The legislative committee, consisting of Judge B. G. Hurlburt, I. N. Leonard and Mrs. A. R. Woodhams, led the discussions. Mr. Leonard talked on the railroad rate regulation matter that is now being agitated. He gave an able resume of the subject for many years past. Mrs. Woodhams spoke especially of the equal suffrage movement. She told of the progress that had been made toward the acquirement of the desired object.

Judge Hurlburt spoke of equal suffrage and said that it was not a question of policy but one of justice. He said that the prejudice governing old customs were gradually being worn away.

Sonoma Pomona Grange.

Sonoma Pomona Grange met in Petaluma last week for an all-day session. Master of Pomona Grange Peter Hansen presided. Delegates were present from Sebastopol, Santa Rosa, Bennett valley, Two Rock and adjacent towns. The morning session was devoted to routine and the regular monthly business. At noon a feast was enjoyed in the banquet room of the I. O. G. T. hall. The hall was decorated with pepperwood boughs, smilax and green crepe paper. The tables were adorned with smilax and springtime blossoms. Many grangers and their friends enjoyed the banquet, which was delicious. At 1:30 the afternoon session began.

The following programme was rendered: Remarks, Master of State Granges: W. V. Griffith, of Geyserville; recitation, Miss Lillian Lubben; recitation, Miss Cora

Lockwood; piano solo, Miss Dorothy Rodd; vocal solo, Miss Neyda Houx; piano solo, Miss Nellie Grover; vocal solo, Clara Tuttle; vocal duet, M. D. Hopkins and Frank O'Connor.

During the afternoon the matter of getting the county prisoners to work on the county roads was discussed. The committee which recently brought the matter before the county supervisors reported that the proposition was favored by that body and they took the matter under consideration.

The subjects discussed this afternoon were 'Life Insurance in the Grange'; 'Information Bureau in the Grange'; and 'The Exclusion of the Chinese and Japanese.'

Among the visitors present at today's meeting were:

From Santa Rosa Grange—Mr. and Mrs. H. Gregory, Mr. and Mrs. C. F. Conner, Mrs. C. E. Gamble, Mrs. G. W. Rogers, Miss Fannie Gamble, George W. Smith, and M. B. Mac.

From Bennett Valley Grange—Mr. and

Mrs. Peter Hansen, Mr. and Mrs. J. M. Talbot, and G. N. Whittaker.

From Sebastopol Grange—M. Litchfield, J. K. Howard, Curtis Morse and Mrs. Della Moran.

From Two Rock Grange—Mr. and Mrs. T. G. King, Mr. and Mrs. George Gaston, and Mrs. Mordecai.

Master of California State Grange W. V. Griffith, of Geyserville, was also present.

The visitors left for their homes in the evening.

Now Is The Time!

Get A Good Ready For Harvest

You have heard of the cow that gives a big pail of milk and then at the last moment kicks over the bucket and spoils it all?

What about the man who grows a good crop of grain and then *half* harvests it?

You wouldn't waste *half* your crop.

Of course not.

But why waste *any* of it?

Why not get it *all*?

As the boys say, "Every little bit helps."

Every little bit *wasted*, counts—and counts *against* you and your profits.

As a sensible farmer, you can't afford to approach harvest time without making sure that you are ready for it the very minute that your grain is ready.

You cannot afford to depend upon a harvesting machine that wastes even a small part of your grain.

You cannot afford to spend your money for a "may-be-so" harvesting machine—one that may or may not do your work for you in a satisfactory manner.

You cannot afford to start harvesting with a machine that may break down at your busiest moment.

You cannot afford to start harvesting with a machine that will half kill your horses before your grain is cut.

You cannot afford to start harvesting with a machine that is likely to cause delay in your work.

You cannot afford to take chances.

You want to be *sure*, and now is the time to *make sure*.

Go to the Nearest Dealer

Examine for yourself the line of standard harvesting and haying machines for 1906. Get a catalogue and study their construction. You will find in

Champion, Deering, McCormick, Milwaukee, Osborne, Plano

lines harvesting and haying machines that meet your every expectation and fill your every requirement.

They are *right* in principle and design, for they are the product of a half century's inventive genius. Every improvement that the best mechanical experts of the world have been able to discover or devise in 50 years is embodied in their construction. That's why they are so convenient to handle—why they do their work so well. That explains too why they are so easy on man and horse—and why they waste so little grain.

They are *right* in materials, for their manufacturers by co-operation are able to produce and select the best materials. By co-operation they are able to own, control and operate their own lumber camps, their own iron mines, their own coal mines, their own coke furnaces, their own steel mills and other sources of raw materials, thus being sure at all times to have materials for making their machines of the highest quality.

They are *right* in workmanship, because the demand for these standard machines is so great that immense factories are necessary for their production, and their manufacturers are able to equip the factories with the best facilities and the most expert workmen.

They are *right* in reputation, for they have by their own merit survived years of strenuous competition. They gained their popularity solely on their merits. They retain their popularity in the same way. They are used all over the world solely because they have met the demands and filled the requirements of grain-growers and grass-growers.

Is not that just the machine you need for your harvest for 1906? You certainly want a machine with a reputation behind it—you cannot afford to run risks. Where can you find a machine of any kind that has a record of more years of successful, satisfactory work than you *know* these machines to have?

You want a harvesting or a haying machine made of the right materials. No machine can have *better* materials than have these machines—few manufacturers are fortunate enough to secure so good.

You want a machine that is built on the right plan—that "works right"—that is constructed on the right principle. The approval of the grain growers of the whole world—the successful standing of the test of years—the ever increasing popularity of these machines—these things tell the story of how they are built and how they work.

In reputation, in workmanship, in materials, in design—in all that goes to make good harvesting and haying machines they are *right*. They will meet your every requirement.

Can you afford then to go into the harvest with a machine that may fail you?

Can you afford to run the risk of a "break down" at a critical stage of your harvesting?

Can you afford to waste a part—even a small part—of your grain or grass?

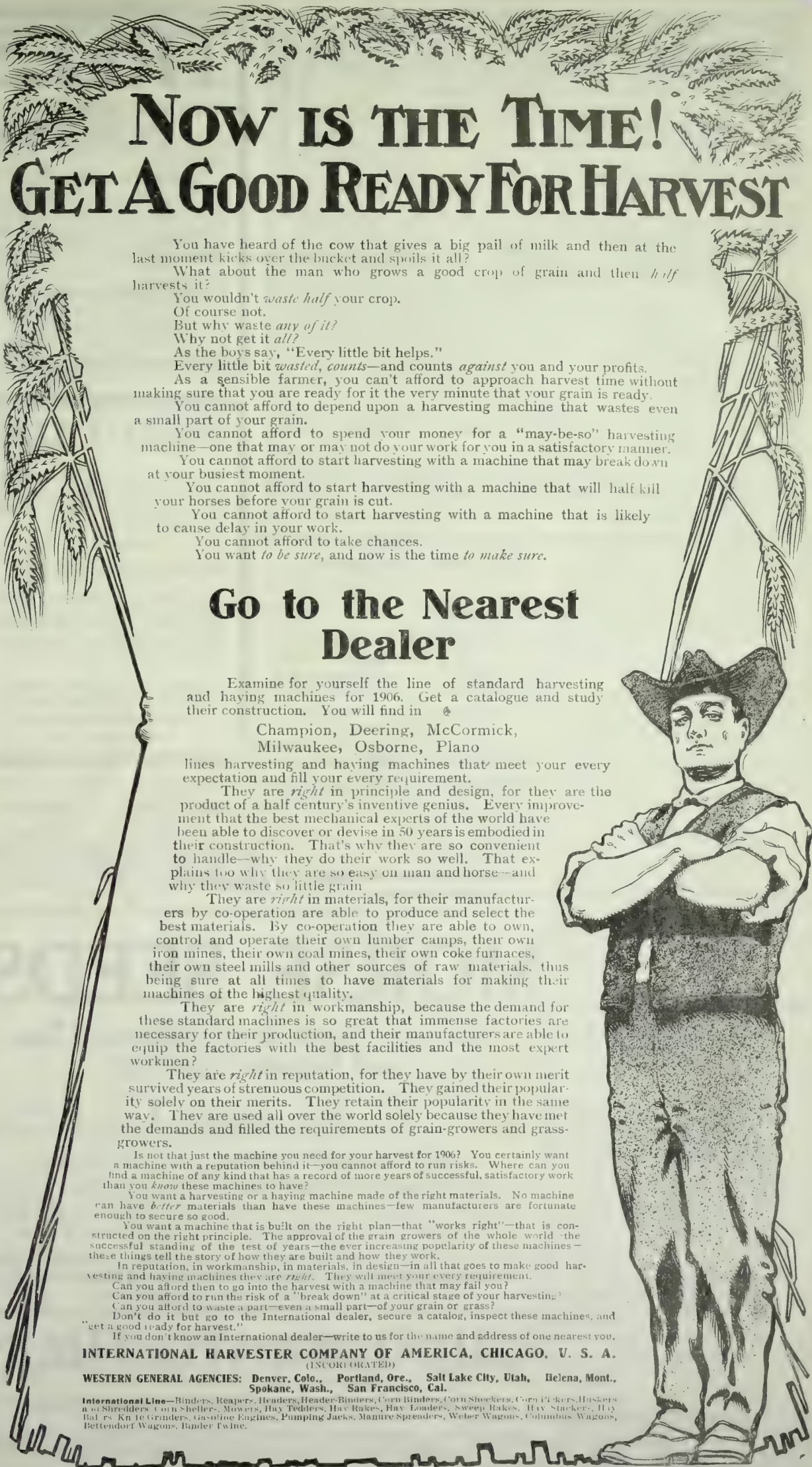
Don't do it but go to the International dealer, secure a catalog, inspect these machines, and "get a good ready for harvest."

If you don't know an International dealer—write to us for the name and address of one nearest you.

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ENTOMOLOGICAL.

Codling Moth Spraying Schedule.

By W. H. VOICK of the University of California for the Santa Cruz County Horticultural Commissioners.

The First Spraying: Use 3 pounds of arsenate of lead to 50 gallons of water. Apply when the majority of the blossoms have shed their petals.

The Second Spraying: Use 1½ to 2 pounds of arsenate of lead to 50 gallons of water. Apply between the 1st and the 15th of May.

Subsequent Spraying: Use 1 to 1½ pounds of arsenate of lead to 50 gallons of water. Apply 20 to 30 days after the second spraying, and follow at intervals of one month until the latter part of August.

The Final Spraying: Use 2 pounds of arsenate of lead to 50 gallons of water. Apply by the 15th of September.

The Application of the Spray: All the sprayings should be applied very thoroughly. Use a power outfit where possible, and maintain a pressure of 140 pounds or more. The extension rods should be as long as men can successfully handle; also they should be provided with a battery of two or three nozzles. The distance between the nozzles is a matter of considerable importance; if too close together the cones of spray will interfere, but if they are widely separated on the T the inconvenience of handling is greatly increased. If the nozzles are set so as to point away from each other at a slight angle the cones of spray will not come together nearly so quickly as when they are set parallel. This result is also obtained by using a nozzle which throws a narrow cone of spray, such as the long-distance Bean. When a hand pump is used it is not practicable to run so many nozzles or maintain such high pressures, but good spraying may be done with such an outfit if sufficient time is taken to insure a thorough wetting of the tree.

Spraying a Tree: Do the inside spraying first, and then, beginning at the top, apply the overshot or outside spray. Do not finish the sides and bottom until the top is thoroughly sprayed. The men should walk completely around the tree, and spray directly at it from all points. Do not try to spray around a corner. Before leaving any part of a tree the men should stand well back and spray the tips of the most extending branches.

The orchardist should insist on the tops of the trees being sprayed first and thoroughly. If this upper work is done well the lower branches will receive almost enough spray from the drip, and they can then be finished quickly, thus avoiding the greater drip loss which comes about through beginning at the bottom. Do not waste spray on the trunk and large limbs which are bare of foliage.

The Material to Use: Arsenate of lead is the only arsenical which has been found sufficiently safe to use in the Pajaro valley. There are a number of commercial brands of this compound and probably several are of the right quality for use here, but from our experiments we can only recommend Swift's Arsenate of Lead and Disparene.

Spraying for Caterpillars: The tent caterpillar is easily controlled with arsenate of lead used at the rate of 1 to 1½ pounds to 50 gallons of water. Spray as soon as the insects appear. Both this insect and the canker worm will be well controlled if the first spraying for the codling moth is applied. The tussock moth, or horned caterpillar, is a much more difficult problem, for after this insect is a few days old it is very resistant to arsenical sprays. The very young caterpillars can be poisoned, however, and some experiments are in progress to determine, if possible, the practicability of very early spraying as a control measure. The thorough (complete) removal of the egg masses during the winter is the only treatment which is known to be successful.

The Apple Scab: For the apple scab use the bordeaux mixture. Apply with the first spraying for the codling moth or before. Use the 5-5-50 formula (5 pounds of bluestone, 5 pounds of lime, and 50 gallons of water) for the first spraying. This is prepared by dissolving 5 pounds of bluestone and 5 pounds of lime in separate vessels of water. Strain the milk of lime to remove lumps, and then pour the two solutions together, agitating thoroughly. The best bordeaux is prepared by diluting the solutions with 25 gallons of water, and pouring them together, a pail full of each at a time. The result will be 50 gallons of bordeaux. Hydrated lime will be found very convenient and satisfactory in preparing the bordeaux mixture as it does not require slaking.

It may also be advisable to use bordeaux with the second spraying for the codling moth. At this time use the 4-4-50 formula, that is, 4 pounds of lime and 4

pounds of bluestone to 50 gallons of water, prepared in the same manner as the 5-5-50 formula. When arsenate of lead is used with the bordeaux mixture it should be added when the bordeaux has been prepared, and at the same rate as if the tank contained water only.

Authorized by the Santa Cruz County Board of Horticultural Commissioners.

C. H. RODGERS,
L. N. TRUMBLY,
F. W. HITCHINGS.

Growth of a Great Horse Remedy

No better illustration can be given of great things coming from small beginnings than Kendall's Spavin Cure. It was compounded and used in a small way about thirty years ago by Doctor B. J. Kendall in the then obscure village of Enosburg Falls, Vt. Since then the name of "Kendall's Spavin Cure" has gone to all parts of the world. The merits, and the merits alone, of the remedy have done it. While Dr. Kendall was practicing he wrote a little book entitled "A Treatise on the Horse and His Diseases." It is safe to say that no more popular work on this subject has ever been produced down to the present day. It was originally handed out to the horsemen with whom he came in personal contact. It is said that now upwards of 12,000,000 of these little books have been published and gratuitously distributed.

Seeds, Plants, Etc.

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Cypress, Blue and Red Gums, Pines transplanted in boxes.

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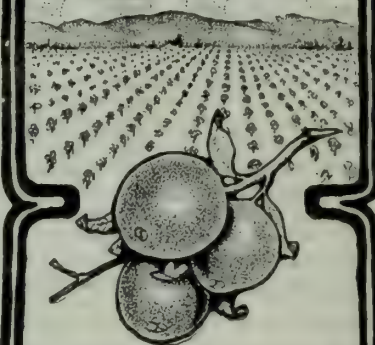
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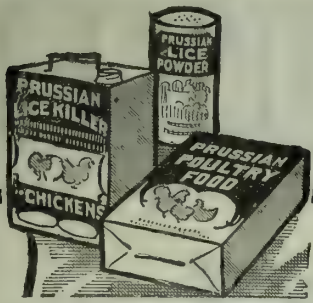
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THE SUGAR BEET.

Notes on Beet Growing.

Mr. T. J. Jones gives the Santa Ana Blade an account of what is being done in Orange county this year:

Sugar beets are finding their place in the fertile soil of the Santa Ana valley, between the Old Newport school and Huntington Beach on the south and Bolsa and Westminster on the north. Here can be found many thousand acres adaptable to the cultivation of any of the most profitable vegetable plants. As an evidence that beet culture is an important one to Orange county, I will mention that 75,000 lb. of beet seed has been given out to growers within the district named above, and nearly all of it planted this year. Some people ask, "Why don't we grow our own beet seed in this country?" Why? Because it is on the free list of imports, and American labor can't compete with that of France and Germany.

The seed is sold to the growers by the factory at 12c. per pound, payable when beets are harvested; value of seed, \$9,000.

For most of the growers this year, the plowing, preparing the soil, and planting is over, and a most excellent stand the result.

Now comes the most important operation of all, which is the thinning, and how to save a stand through the ravages of the thinner, and the cultivation of the garden plant with an implement drawn by a horse unused to so narrow a passageway as 18 in. The operator must see to it that his cultivator does not destroy a single beet in any of the four rows he is or should be watching. How can he, when sitting in front of the knives, as some do?

A perfect stand from six to eight inches apart is what should be aimed at and retained until the harvest, and only one beet in a place. That will give 48,400 beets to the acre. If each beet weighs only one pound the farmer would rejoice in 24 tons to the acre, and it is no trick to have two and three-pound beets. Why, then, do we have so many acres with 12 tons or less? Simply because the grower contracts with the thinners to leave the plants a certain distance apart, starts them at work, and that is often the last attention the thinner gets. His eye is not accustomed to measuring distances, and as he can get along faster by leaving the beets 8 to 12 inches apart, he does it. The grower comes along without his yardstick, and says all right. Then comes the man who cultivates with his span of fast-walking horses destroying thousands of plants to the acre, so by the time the beets are laid by as ready for the harvest, not one field in a dozen will have more than 20,000 to 30,000 beets to the acre. The grower is disappointed that his tonnage is so light. Can this destruction of such a valuable stand be avoided? Certainly; but it must be done by his own or his employed representative, constant presence with the thinners, and always with the yardstick, which he might use as a cane, and see that you get five beets to the yard, or 50 to 10 yd. If you can't get it by quiet measures, raise cane and scatter the crowd. If your land is thin or poor, and won't grow a good tonnage, leave the beets from 8 to 10 in. apart.

This thinning proposition, with weeds properly hoed out, is a much more important one than many growers seem to consider it. Try to stay in the field and be with the thinners the short time it requires to do that part of the work. When such a man sees his work properly done he may be assured that it will make a difference of \$10 to \$20 per acre in his favor. Let him watch the man who is cultivating just as closely, even if it be himself. Stop to uncover a covered beet if it is small, and be assured you will be a gainer thereby.

Catching Pickpockets.

The Sharples Separator Co., of West Chester, Pa., have a man in almost every town who makes it his business to catch pickpockets. Strangely enough, these pickpockets are always caught robbing themselves—and are always farmers or dairy men. The Sharples Separator Company's men do not send these convicted self pickpockets to jail, but show them how to make more money. They prove to them that, if they have not a famous Sharples Tubular Cream Separator, they are picking out of their own pockets one-third to one-half the profits they should make from their milk—that they are, in fact, losing one-third to one-half their cream. All you need do, to find out how much cream your pans or cans lose, is to borrow a Tubular from the agent for a free trial, or take a batch of skimmed milk to the nearest Tubular agent. The Sharples Separator Co., of West Chester, Pa., will tell you more about this.

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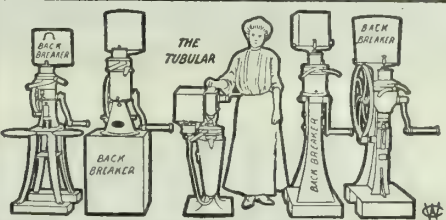
Tislo, S. D., Jan. 23, 1904.
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TUBULAR--or "Back Breaker?"

When you see the waist low Tubular you can't be driven into buying a back-breaking, "bucket bowl" separator. Can and crank are just the right height on the Tubular. Here is the largest Dairy Tubular along side four "back breakers." The girl with her hand on the Tubular is 5 feet, 4 inches tall. This is an exact reproduction from a photograph. Which kind for you? Makers of "back breakers" try to get their cans low by setting the cranks low. High cans break your back backward—low cranks break it forward. Unless you are a double jointed giant, you'll find a high can is no joke. To show you how high these "back breaker" cans really are, when the machines are set high enough to turn easily, we raised these "back breakers" 'til their crank axles were level with the Tubular crank axle. "Back breaker" makers don't like this picture—it's too true. They try to squirm out of it. You wouldn't like turning cranks as low as "back breaker" makers put them.

The low can is only one of many advantages Dairy Tubulars have over all others. Dairy Tubular bowls are simple—"back breakers" are complicated. Tubulars are self-oiling—no oil holes to fill up. "Back breakers" are oil drippers and oil wasters. To learn a lot more about Tubulars, write today for catalog N-131



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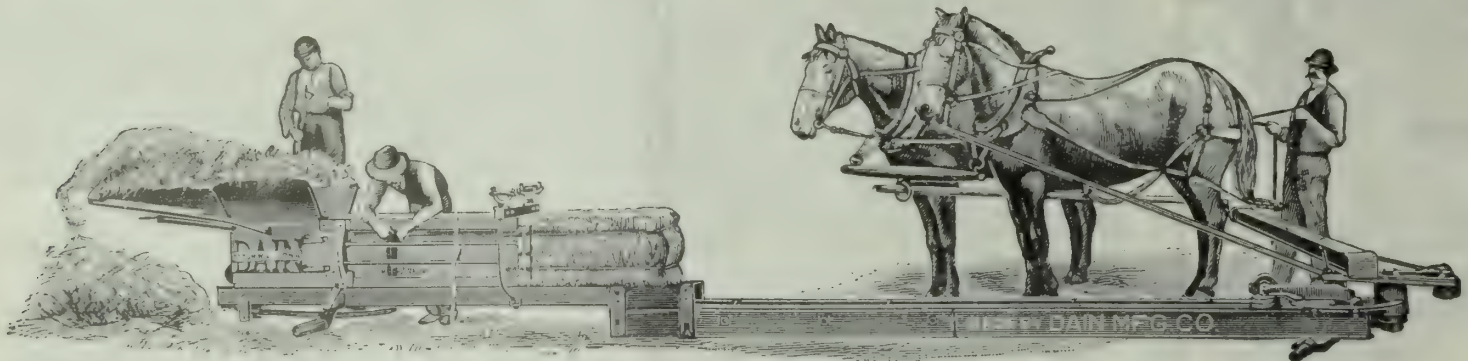
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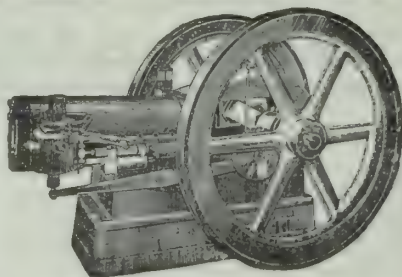
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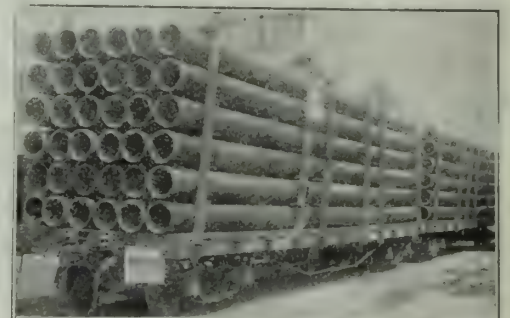
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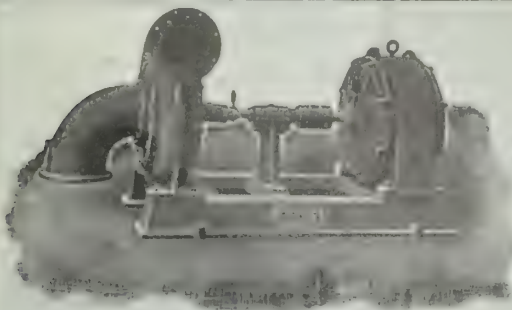
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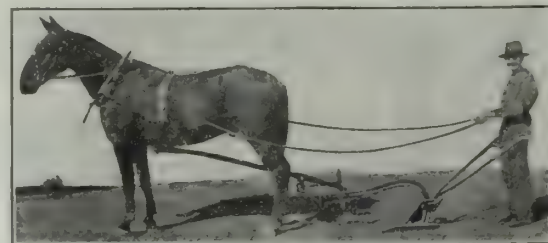
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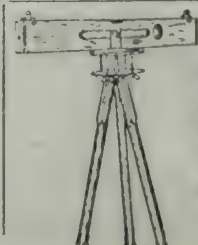
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AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 15.

SAN FRANCISCO, SATURDAY, APRIL 14, 1906.

THIRTY-FIFTH YEAR.
OFFICE: 330 MARKET ST.

Milking by Machinery.

The milking of cows by other mechanical means than by the human hand has been diligently sought for half a century or more, and not fully realized, unless the latest candidates for favor reach such realization as now seems probable. As dairying has advanced as a commercial affair, and as cows have been massed in constantly increasing numbers, the difficulty of maintaining human milkers to attend them has increased and constitutes one of the most grievous burdens of the business. This is true everywhere, and particularly so in the development of dairying in the newly settled regions of the West, where help is scarce and wages high. Ill-behaved milkers and the cost of securing them have nearly crazed some of our dairy proprietors. But it is not alone in the West that the desirability of securing some more economical and trustworthy and cleanly agency for milking clearly appears. In fact, one of the great needs of the agricultural world has long been a milking machine; and, since machines now available are winning much favor, wide interest pertains to them. Prominent California dairymen are now using them and express satisfaction. The picture on this page gives a view of cows being milked in the stanchions and shows the receptacle of the machine itself beside the nearest cow. One gets, however, only a poor idea of the outfit from the picture, for it consists of a pump and pipe-lines for air and tubes for milk which can only perhaps be fully understood by a sight of the affair in operation. We may, however, remark that the system consists of two parts—a vacuum system to supply the suction that draws the milk and the machine by which this suction is made to act on the cow and receive the milk.

A line of pipes runs in front of the rows. Between each two cows is a stop-cock. A vacuum pump, operated by a small electric motor, removes the air from the pipes, the vacuum being maintained by means of a tank with which the pipes connect. The tank is provided with an automatic valve and pressure gauge.

The machine consists of a large conical base holding seven gallons and made strong to withstand the pressure. On top of this is a rubber gasket upon which rests the part from which the tubes lead to the udders and teats of the two cows being milked.



Cows Being Milked by Milking Machine.

This part also has the pulsating arrangement by means of which the suction on the teats is broken and made to imitate the sucking of a calf or the

stop-cock in the suction pipe between the cows being milked when the exhausted air holds it down tight to the base. The tubes leading to the cows are several feet in length, at the end of which are the teat cups made of a conical-shaped tube surmounted by a rubber gasket that fits snugly to the teat. These are of different sizes to suit the size of the teats to be milked. Different sizes can easily be adjusted to the tubes, but, in using the machine, the better plan is to group the cows in order according to the size of the teats, which avoids the necessity of changing the cups too often. The machine is rather simple throughout, and, as in case of all inventions, one wonders why it took so long to invent the essential details which these machines seem to be the first to have. In operating the mechanical milker, one man is able to handle two machines, enabling him to be working on four cows almost at one time.

In a recent test in California, as reported by the *Dairy and Produce Review*, one man milked 50 cows in one hour and forty minutes. He could have cut this down 10 or 15 minutes more but for the fact that several of the cows had to be milked singly.

That Payne Walnut.

Mr. Gillet contributes another interesting chapter

to the discussion on the variety of Mr. Payne's old grafted walnut tree on another page of this issue. No doubt all readers are following this important discussion and will be pleased to see on this page a picture of the tree itself. Its height and breadth can be approximately measured by the stature of the man who stands beside it. Mr. Gillet adopts a rational course in his letter this week by appealing to the fruit of the tree itself. Unfortunately for the demonstration, Mr. Gillet did not gather the fruit from the tree, though he did the best he could to get the authentic speci-



The Payne English Walnut Tree Near San Jose, Discussed by Messrs. Leib and Gillet.

pressure and releasing of the hand. A glass indicator shows the flowing of the milk into the receiving tank or base of the machine. This sets loosely on the base until the suction is turned on at the

mens. It now devolves upon the other side to explain how these nuts should be different and rather inferior, as they certainly are. We would like to have another chapter on that subject.

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SAN FRANCISCO, APRIL 14, 1906.

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The Week.

Our subscribers have had at least a month's foreknowledge of what is now to be seen in all districts where early blooming fruits are produced in large amounts, namely, the rush of the buyers for the product. They will take it fresh or will take it dry; in fact in any way to get it and then make it fit various demands later. For there is a clear market ahead; last year's canned and dried fruits are practically used up, there have been weather conditions at eastern and southern points which will reduce local supplies, and the rush is to secure whatever California has this year for fresh shipments for canning or as dried fruits. Even raisins are being lifted by the general hunger for fruit stock. California can only supply a partial product because of unfavorable conditions which we have already discussed, and all the immediate consolation to growers must be sought in the high prices which are likely to prevail for all kinds of fruits.

One of the most important events in the agricultural history of California has transpired during the week, and that is the location of the University Farm, for the purchase and equipment of which the last legislature made an appropriation of \$150,000. The location includes the Sparks, Hamel and Devlin tracts, amounting to 778 acres, situated in Yolo county, near Davisville. The offer was made by the Davisville Chamber of Commerce, and the price paid was \$104,250. Water rights in the ditches of the Yolo Consolidated Water Company were purchased for the whole tract by the citizens of Davisville and given to the State. The whole acquisition will constitute a most important adjunct to the teaching equipment of the University of California, and will permit the development of instruction on the practical side and the provision of short and special courses in the various branches of farming which it has not been possible to adequately provide hitherto. For these reasons we count this new equipment a great step forward and a means of greatly enhancing the influence and usefulness of the University.

The writer has purposely refrained from discussing the selection of a site for the University Farm in these columns during all the period in which this matter has been pending, because he has had some

personal connection with the undertaking and did not desire to come into conflict with any local interests or desires. Now that the issue is complete, we do not hesitate to say that the selection of the Davisville site is eminently wise. At the close of our first examination of the farms offered, we considered it as the most available, through convenience of access and means of frequent communication, through prominence by proximity to main overland and local railway lines, and because it so fully answered the requirements of the law in the character of the soil, ample and established irrigation facilities, and because it is so thoroughly representative of wide interior valley conditions. There can be no question that the law passed by the last Legislature contemplates just such a situation, and in its action the commission directly carried out the law.

There were, however, some features of other sites which entitled them to attention, and in our report to the commission we took into account some other considerations which led us to commend other sites as alternative with that at Davisville. One of the other Yolo county sites near Woodland stood first, because so many excellent buildings would be acquired with the land, and the utilization of those would save time and money in opening instructional work on the land. Another site which was commended, chiefly because of proximity to the University, was the tract near Walnut creek, but it was for the commission to decide just what weight should be attached to proximity. It is possible that the confusion of interests in Contra Costa county may have obscured the claims of that site. And yet convenience to the University is in fact a matter which should not be too narrowly considered. The University is, and should be, at home everywhere in the State. A grand institution which is teaching the arts, law, medicine, dentistry, pharmacy and practical mechanics in San Francisco; studying stars from the top of Mount Hamilton; studying marine life at Pacific Grove and San Diego bay; studying trees at Chico and Santa Monica; studying plant diseases in the Sacramento valley and at Whittier; studying fertilizers by use of land at half a dozen widely separated places in southern California; studying economic plants and the use of them everywhere that the University investigators can find places to grow them; killing insects at Visalia, San Jose, Concord and Watsonville, and studying the growth of grapes and the making of wine in San Joaquin and Fresno counties—surely an institution thus localized and distributed in its work can find a home for one of its practical activities in such a central and accessible district as southern Yolo county. The University of California should not be centralized. It should do everything it can for the people in the place where it can be best done, and such a course will make it solid with the people.

This ability and disposition to meet the immediate desires of the people is a most important matter, both to the people and to the University itself, dependent as it is for its growth upon funds voted by the representatives of the people. If the commission had disregarded the manifestation of the popular will as embodied in the law which gave them power, the act might have given the institution a setback of a decade, if it had not definitely weakened or dismembered it. It would have equipped an army of enemies, instead of strengthening an army of friends. For this reason, then, if for no other, the commission has reached a decision for which everyone should be thankful. Davisville is chosen as the most available from all points of view and most thoroughly representative of irrigated interior valley conditions which the law contemplated. It is fortunate that a decision has been reached and that the University can proceed with the equipment and utilization of this the most important single contribution which the State has ever made to the development of agricultural education. It is fortunate, also, that the commission has answered what seemed the clear, popular demand that the location be representative of the greatest open area of the State, which is destined to see in the next two decades a development greater than any equal area of the State has yet attained. University instruction and research in agriculture will be one of the factors in this attain-

ment, and, by the action of the University Farm Commission, will be at home in the midst of it.

Under the Adams Act recently passed by Congress, and signed by the President, the Agricultural Experiment Station of the University of California will receive increased funds. The present Hatch Act allows \$15,000 annually to the Experiment Station. The Adams Act increases this allowance \$5,000 for the current year, and an increase of \$2,000 each succeeding year until a total increase of \$15,000 annually is reached. That is, the California Experiment Station will in time receive from the general government \$30,000 annually for research work in agriculture instead of \$15,000 as now. The lines of work which will be taken up at once under the new provision are investigations and experiments in irrigation, research in economic botany, nutrition, viticulture, green manure crops and effects on soils, veterinary science and plant diseases. Important results in all these lines will be sought through the increased funds for research which the Adams Act brings to the Experiment Station.

QUERIES AND REPLIES.

Is It the Oil Smoke?

TO THE EDITOR: I forward you some branches from disused or damaged prune trees. The trees have seemed perfectly healthy until present season—they are about 10 years old. The greater portion of the tops of the trees is devoid of bloom and almost destitute of foliage.

Near the ground they are putting forth both blossoms and foliage, though not so abundantly as other trees in the same orchard. The trees effected are about 70 or 80 in number, situated in the five rows near the northwest corner of my place. The outside row is worst of all. This outside row is within 30 ft. of an engine run with crude oil. This oil burner is certainly a very poor one, for smoke almost constantly pours from the smoke stack. This engine ran during last July, August, September and even later. Is the injury to the trees due to the smoke? —GROWER, Napa county.

We have no definite knowledge of the problem which you submit and cannot find anything on the twigs which you send which would indicate the cause of their death. We have seen a good deal of oil smoke in orchards where pumps have been installed close to the trees for irrigation purposes, and do not now recall any instance of injury, except where it was obviously caused by direct application of heat from the fire. You will have to study your problem when the tree is in leaf, and not from old twigs. Note accurately the extent of the smoke deposit, and study the effect afterward. As for remedy nothing could be suggested except the stopping of the smoke, if that proves to be the cause of the injury, but there are so many failures of fruit trees owing to standing water and other soil troubles that one might be mistaken unless he makes direct connection of the smoke with the failure of the foliage, for if the foliage remains good during the growing season in spite of the smoke, there is little reason to conclude that the smoke is really the cause of the trouble. You must really make close connection between the smoke and the leaves and note the effects. As for these twigs they do not disclose any sure cause of the trouble.

Chemical Analysis not Indicative of Suitability for Particular Plants.

TO THE EDITOR: I have two samples of earth which I have thought of getting analyzed to see if they are suitable for raising strawberries. Would you advise me to have it done? —SUBSCRIBER, Los Angeles county.

We do not look upon chemical analysis as likely to afford safe data for the designation of a soil as distinctively suited to a particular kind of fruit; such as to distinguish, for instance, between the suitability of a soil for strawberries or for most kinds of deciduous fruit trees. The mechanical condition of the soil has much to do with it, because this is related, not only to the growth of the plant, but to the distribution of water, the facility of cultivation and other things on the practical side. Chemical analysis is chiefly valuable as showing whether a soil is amply or moderately furnished with the different elements of plant food, or whether it is scant in any one of them, or again, whether there is present some chemical

substance which interferes with the growth of the plants.

As for general standing of plant food in soils which have been cultivated, the plants themselves which have been grown upon it are the best demonstration of that, and if you have a soil which gives good returns with other plants and is of a loamy character, which experience has shown to be the best for the growth of small fruits, you have even more information than a chemical analysis could give you, and your course would be to make the plantation and to feed the plants by later application of fertilizers whenever they, by their lack of growth or excessive growth and lack of fruiting, seem to require it. On soils which do not sustain desirable plants there is manifestly some defect, and in the determination of just what that defect is, chemical analysis is of very great value. For these reasons we do not advise analysis of soils for the purpose of determining their suitability for any particular kind of plant.

An Interesting Milkweed.

TO THE EDITOR: I am sending you a packet, containing a sample of a plant, which I wish to call your attention to. That this plant has a commercial value I have no doubt. Perhaps you are familiar with the plant and its habits. It is generally designated as 'cotton milkweed,' and grows over the greater part of this State, particularly in dry, warm sections. You will find by examining the fiber that it is equal to flax for strength; and when bleached it as is white as snow. These plants have lain exposed to sun and air for one year. I can furnish seed to you this fall should you want any.—COLLECTOR, San Luis Obispo.

Mr. H. M. Hall, assistant botanist at the University, recognizes the plant as *Asclepias eriocarpa* and he says of it that it is a perennial herb, two to three feet high, with white, woolly stems and leaves and dull-white flowers in clusters. The pods are nearly three inches long, filled with seeds covered with downy hairs, and the juice is milky. It is very common in middle and southern California, often growing in poor, dry soil. The best fiber of this plant is certainly of good strength and color, even when naturally cured, but has never been given a systematic test. Fiber experts have suggested that related Eastern species might be profitable as fiber plants, since their fiber was finer than hemp and nearly as strong. But these species had no advantage over hemp, since they would flourish only on good soil. Our California plant, however, will grow with very little care on ground that is useless for other purposes. It might pay to institute experiments and carry on field observations to determine just the conditions under which the plant will grow, the yield of fiber and its strength. If it has no advantage over ramie and hemp it will be useless to try it until we have an improved machine for the extraction of fiber, since both of those plants can be grown under cultivation in California, but the preparation of their fiber by present methods is too expensive. The milky sap contains a high percentage of caoutchouc, for the extraction of which a cheap method is desired. The plants undoubtedly possess medicinal properties, but aside from general reports we have no information concerning them.

About Shipping Potatoes.

TO THE EDITOR: We thank you for your statement about potato blight. We would thank you if you would give other data regarding the disease.—EXPORTER, San Francisco.

When the disease starts in on a potato field it is manifested by the blackening of the leaves, and if there is then made a good application of the bordeaux mixture it will check its spread, unless it may be in a location where the soil and climatic conditions are particularly favorable, and under such conditions with a variety of potato which is particularly subject to the disease it is pretty hard to arrest it. The disease does not affect the tuber until the plant itself is pretty far gone, consequently the usual efficacy of early applications of the bordeaux mixture. Some of the new varieties of potato which are handled by the seedsmen manifest a resistance of the blight, and this continues generally for a number of years; afterward the variety seems to become weakened in some way and becomes subject to the blight, so that enterprising growers should secure new varieties in small quantities and always have these under test and observation, multiplying any kind which seems

to come strong and healthy while other varieties are suffering from the blight. This matter is recognized of such importance in England, where the blight is exceedingly bad, that new, blight-resistant varieties sometimes sell for incredibly high prices until enough of them are propagated to supply all who desire.

This potato blight proposition is a very old one. It destroyed the potato crop and caused famine in Ireland over 50 years ago, and it has been fought in all other potato-growing countries in these two ways, namely, the early application of a fungicide like the bordeaux mixture, and recourse to new resistant varieties, thus continually having new and strong seed for planting. As we wrote before, California is relatively free from this trouble. It is worst on the moister lands and in the moister air; it is least on rather dry, sandy soils in the interior.

That Rushing Business.

TO THE EDITOR: I have read in the papers that the experiment station was conducting experiments with a juncus rush to be grown in California for Eastern manufacturers of matting. I have land which will grow tules and I would like to try these rushes.—READER, Los Angeles county.

Although experiments with the juncus rush for the manufacture of matting have been in progress for some time, definite results have not been reached as yet. There seems to be some question as to whether such growing conditions as we have found thus far will produce the rush of a length which would be desired by the matting weavers. At all events it is not definitely enough worked out yet to warrant investment, and then these rushes do not grow under conditions which produce tules. They must have an adequate amount of moisture, but not submergence such as favors the growth of the tule.

A Clinger but Not a Parasite.

TO THE EDITOR: I send you some old leaves from a rose bush, with a peculiar whitish covering. Is it a disease, and what shall I do for it?—READER, Campbell.

TO THE EDITOR:—Enclosed find strawberry leaf with something on it. Please tell me what it is and, if harmful, what to do for it.—H., Colony Center, Merced county.

The peculiar appearance upon the leaves which you send is caused by the fungus *Diachaea elegans*, but it is not a parasite; it simply attaches itself to any surface which may be in contact with the ground at the time, creeping up such a surface and producing the appearance which your leaves show, but not entering the tissue of the leaves at all, and therefore, is not to be considered a plant disease. It is interesting, but not important.

The English Sparrow.

TO THE EDITOR: Your statement of the English sparrow's relation to the horticultural interests of this State, I think, essentially covers the case. In writing to answer your Eastern enquirer, I would lay stress on the English sparrow as a factor in the decrease of desirable native species of birds, especially such as affect the neighborhood of dwellings and towns. I have repeatedly observed them destroying the nests and young of native birds. In doing this they almost invariably make concerted attacks, half a dozen or more participating in a raid. I have little hope that this pest will ever be exterminated, however desirable that may be. So far as my observation goes, the English sparrow is a much more destructive element in America than in Europe, although I have not been able to get at the causes.—WILLIAM FREDERIC BADE.

Dr. Bade, well known as an ornithologist, prepares the above note at our request. We shall be glad of all observations on the English sparrow in California.

Who Has a Turtle Ranch.

TO THE EDITOR: Could you kindly tell me if you think it possible to raise and breed terrapin in captivity in California? Do you know of any place in California where such an industry is at present carried on for the market?—ENQUIRER, New York.

We regret exceedingly that we cannot tell you anything about the rearing of terrapin. We have never heard that it had been undertaken in California. Probably the best place to get information concerning this undertaking in any part of the United States would be to address Dr. C. Hart Merriam, Chief Biological Survey, U. S. Department of Agriculture, Washington, D. C.

Peach and Pecan Rosette.

TO THE EDITOR: We have discovered a remedy for peach and pecan rosette and wish to have it tried in California. The cost is 25c. per lb., to be paid back if disappointed.—MANUFACTURERS, Florida.

The only peaches which wear rosettes in California are our young ladies, and you do not get anything back if disappointed. The disease known at the East and South as 'peach rosette' has not yet been detected in California. As for 'pecan rosette,' we are at the present time growing too few pecan trees to make it worth while to exploit a remedy. So far as we know, no pecan rosette has been found in this State.

CALIFORNIA WEEKLY WEATHER BULLETIN.

Report of the U. S. Weather Service for Week Ending April 9, 1906.

ALEXANDER MOADIE, Forecast Official and Section Director.

Sacramento Valley.

The week began with generally clear, pleasant weather, except that strong north winds prevailed. The north wind continued until Thursday. On Friday abnormally warm weather occurred. In the northern portion of the valley maximum temperatures above 80° were reported. At Red Bluff the maximum temperature was 83° on the 5th and at Sacramento 74°. There was no rain. The river fell from a stage of 28.6 ft. at Colusa at the beginning of the week, almost the highest water on record, to a stage of 22 ft. at the close of the week. Considering the large volume of water in motion, very little damage resulted. At Sacramento the river reached a height of 27.4 ft. at the beginning of the week and at the close of the week was below 25 ft. The snowfall in the Sierra was light during the week, but a large quantity of snow remains on the ground and is disappearing very slowly. At Summit at the close of the week 194 in. were reported on the ground, while last year at the same date the amount was 38 inches.

Coast and Bay Sections.

Seasonable weather, without rain, prevailed during the week, except on Thursday, when abnormally warm weather occurred. At San Francisco a maximum temperature of 76° occurred and equally high temperatures occurred at other points. Strong northwest winds were blowing at the close of the preceding week and diminished slowly on Monday and Tuesday. A southeast wind of 34 miles per hour occurred on Tuesday at Eureka and a north wind of 36 miles per hour on Wednesday morning at the same place. At the close of the week the mornings were cloudy, but afternoons and nights clear.

San Joaquin Valley.

The weather was somewhat unsettled, but with much more sunshine than the previous week. The rains of the preceding week saturated the ground thoroughly and there is probably more water available and in sight than for many years past. The following report is given by the correspondent at Tulare: "March has been a rain record breaker in Tulare. On the afternoon of the 30th the storm of rain, hail and thunder broke the record for this county. Clouds from the southwest, with heavy thunder but no lightning, were seen coming for more than an hour before the storm broke. When it came the oldest inhabitant had never seen its equal here. Rain was followed by three days of high, cold northwest wind."

Southern California.

The week was showery, with some unusually heavy thunderstorms on the 4th and 5th. Other portions of the week were clear, with moderate temperatures. An unusual feature was a thunderstorm at San Diego on the 4th, which the Observer says was the sixth thunderstorm in any April for 35 years. The prevailing winds were from the southwest. The correspondent at Poway reports a temperature of 37° on the morning of April 2. At Los Angeles a minimum temperature of 40° was reported. There was considerable interruption of rail travel during the week, as well as during the preceding week. Heavy rains caused a number of washouts. The country roads are reported to be in bad condition from the late heavy rains. The week closed with clear, cold weather and drying northerly winds.

Rainfall and Temperature.

The following data for the week ending 5 A. M. Wednesday, April 11, 1906, are from official sources and are furnished by the United States Weather Bureau for the PACIFIC RURAL PRESS:

CALIFORNIA STATIONS.	Total Rainfall for the Week.	Total Seasonal Rainfall to Date.	Total Seasonal Rainfall Last Year to Same Date.	Average Seasonal Rainfall to Date.	Maximum Temperature for the week.	Minimum Temperature for the week.
Eureka.....	0.24	32.24	30.50	41.22	66	44
Red Bluff.....	0.04	28.95	31.14	23.06	84	46
Sacramento.....	0.46	20.38	18.35	17.82	74	46
San Francisco.....	T	16.20	20.07	20.85	76	48
San Jose.....	0.15	13.16	15.18	.....	76	40
Fresno.....	0.20	10.02	10.06	8.08	76	42
Independence.....	T	5.57	3.78	3.50	72	32
San Luis Obispo.....	0.00	23.02	20.50	19.39	72	42
Los Angeles.....	0.38	17.33	18.22	14.07	70	48
San Diego.....	0.56	13.53	13.69	8.83	64	48
Yuma.....	0.83	6.26	8.53	2.80	88	40

HORTICULTURE.

Mr. Gillet's Investigation of the Payne Walnut Tree.

TO THE EDITOR: I am glad that by writing you on the walnut in California I have stirred up matters pertaining to that tree, as it cannot be but beneficial to the subject under discussion. But I had no idea that to define an obscure point in regard to the variety he grafted on his big California black walnut tree Mr. Payne would require the services of an attorney, when the whole matter could have been disposed of in a few minutes, as I will show further on.

Mr. Leib, in his communication, published in your issue of March 31, speaking of Mr. Payne's walnut tree, which Mr. Payne asserted in most positive terms in 1900 to have been grafted to the "true Santa Barbara soft shell," while in 1905 it turned out to be the Santa Rosa, as declared in Mr. Burbank's paper, said: "I am sure Mr. Gillet would not wish to do either of these gentlemen, Messrs. Payne and Burbank, any injustice, and had it occurred to him to drop a note to either of them as to the apparent discrepancy in the name of the large walnut on Mr. Payne's premises, he would have received an explanation in reply which would at once have been entirely satisfactory to him."

I will tell Mr. Leib that I did better than that. Before writing my article and producing Mr. Payne's letter of February 13, 1900, I directed a friend of mine, well acquainted with Mr. Payne, to enquire from the latter what variety of walnut he had grafted on his big tree. Here was my correspondent's answer: "I have asked Mr. Payne several times what kind of a walnut was grafted on his big tree, but he always said that he did not know. At the Fruit Growers' Convention they said that it was the Santa Rosa soft shell. Messrs. Burbank and Leib have been to see it several times to note its progress." That was all the satisfaction I was able to get as to the variety grafted when directly addressing myself to the owner of the tree. Well, then I did what Messrs. Leib and Burbank should have done at the start to satisfy themselves whether it was really the Santa Rosa variety that had been grafted on that tree instead of the Santa Barbara. I sent for the very product of the tree itself, and obtained samples without the least difficulty, my correspondent writing as follows: "I went to Mr. Payne and asked him to give me samples of the nuts that were raised on the big tree that has been talked so much about, and you will see from the samples that I have sent you that they are not all of the same variety, but he told me positively that they were all of the big tree. Now, what do you think of the samples?"

As my correspondent said, sure enough there were two distinct varieties of walnuts among the samples sent. Mr. Payne being positive that all came off the big tree, it is clear that two varieties of walnuts had been grafted on that tree. The largest nuts were easy to recognize, for they were as true specimens of the Santa Barbara soft shell seedling as were ever raised in southern California, where the variety originated. Rather large; sharp pointed, though broad above the point; prominent seam and coarse shell. The others were smaller, more oblong, also with prominent seam, sharp pointed and with a somewhat rough shell, but of a lighter, yellowish color. Apropos, I must say that the richer the soil, the coarser the shell, and vice versa. Well, when compared to the Santa Rosa soft shell nuts sent to me from Sonoma county, as true samples of Mr. Burbank's offspring, they did show most conclusively that both of them belonged to other varieties than the Santa Rosa, and well could I exclaim: What's the use in being called an expert and authority on the walnut, and not be able to tell the difference between the nuts of Mr. Payne's tree and Mr. Burbank's Santa Rosa!

Mr. Payne was correct in 1900 in calling the variety he grafted on his tree the "true Santa Barbara soft shell," and he was positive then that it was, and his samples of nuts fully corroborate his assertion. Now, if since 1900, he grafted another variety on his big tree, he should say so. But if the tree was positively grafted, as Messrs. Leib and Burbank assert, to true Santa Rosa from the start, then I say: The less that is said about the Santa Rosa, the better, if I have to judge from the samples given to my correspondent by Mr. Payne himself.

I do not wish in the least to do any injustice to either Messrs. Payne or Burbank, but I will tell Mr. Leib that there is in that matter more than an apparent discrepancy; aye, a pretty big discrepancy, for it will be very hard to pass those samples of the Payne tree for the nice little Santa Rosa walnuts of Mr. Burbank. The whole affair should be regarded as a matter of public interest, and not merely as a matter of friendship. Now, suppose that nuts or grafting wood from that big tree are bought for propagating purposes with the belief and assurance that the tree had been grafted to true Santa Rosa walnut, which I am satisfied it is not, who would be responsible for the "discrepancy?" Mr. Leib or Mr. Burbank? Such things, I say, should be thor-

oughly investigated in the interest of the public.

I will now describe the Santa Rosa walnut, and if I am wrong in my description I will stand corrected from the powers above: The Santa Rosa is medium large, more round than oblong; broad at the small end, much like the Parisienne, but shorter than the latter; well shaped, the seam slightly prominent, but not more than the Franquette; the shell quite smooth, in fact the external appearance of the nut is much in its favor, and it is surely an improvement on the rough specimens from the Payne tree. Long ago Messrs. Leib and Burbank, who have often gone to see the tree, should have found out through the nuts borne on it that they had no resemblance with the Santa Rosa soft shell. I send you a sample of the two varieties from the Payne tree for you to compare with the Santa Rosa of your own collection. [The nuts are very different from each other and bear out Mr. Gillet's description. They are both unlike the Santa Rosa soft shell as we know it.—ED.]

We must thank Mr. Leib for the interesting information he has been kind to give us concerning the tree that he so often visited. Being planted by itself, close to the barn, and therefore "quite heavily fertilized," in fact, as Mr. Leib says, it had "ideal conditions in which to thrive," such as we cannot expect in ordinary groves and where the trees are planted 40 ft., or say 50 ft., apart, as it should be with trees grafted on California black.

Looking over the record of the tree under discussion, since it has been given such a widespread publicity, it occurs to me that there must be, notwithstanding the ideal conditions surrounding it, something wrong about it; for it did well till 1900, increasing its crops every year, and bearing on that year 600 lb. of nuts, but ever since the crops have decreased, and in 1905, after having had five years more growth, it bore only 268 lb. of nuts, not half of what it did in 1900; surely something is the matter with it, for walnut trees, when not injured by frost or blight, do not act that way. FELIX GILLET.

Nevada City, Cal., March 31, 1906.

The History of California Fruit Growing.

By E. J. WICKSON, in "For California."

California fruit growing is not a new industry. A century ago there was a greater aggregate acreage of fruit trees and vines within the area now comprising the State of California than within the combined areas of the original thirteen States on the Atlantic Coast. The California missions had fruit growing establishments greater in variety and commercial value of fruit products than any similar enterprises on the Atlantic side. The rigors of the Eastern climate, the perils of Indian wars, the struggle with forest displacement on the Atlantic side were in sharp contrast with the mild seasons, the peaceful natives and the possession of open land in California. Nature smiled upon horticultural effort here and frowned upon it there a century ago just as nature smiles and frowns upon the same efforts today. The padres at the missions were first to demonstrate the agricultural advantage of the California soils and climate.

Americans reached California on hunting and trading errands during the two decades preceding the gold discovery in 1848, and saw enough at the down-fallen missions to enable them to discern the horticultural quality of the land. They also had enterprise enough to secure possession of some old mission vineyards and orchards, and restored them to fruitfulness just in time to meet the sharp demand for fruits among the argonauts of 1849, weary of ship fare and sometimes scurvy for lack of fruit acids. There was often more gold in the fruit tree than in the mine, and the modern commercial horticulture of California arose upon the foundation of the mission achievements. In this way the present horticultural eminence of the State, overshadowing the accomplishment of any other State of the Union, and of any foreign country in the world save France, reflects the loftiness of its beginning.

But it was not until a few years after the inrush of gold-seekers in 1849 that horticulture began to attract people to California for the declared purpose of enlistment in it, and it is interesting to note that vegetables, not fruits, made the land famous at the East. The vegetables were so large and abundant, that ordinary records of weights and measurements were declared incredible and credence could not be secured for them until a committee at one of the first State Fairs published its findings in the form of an affidavit duly signed, sealed and certified. But the vegetables were so large and abundant that there were too few people to eat them, and American growers handed this branch of horticulture over to thrifty immigrants from China and the Mediterranean countries for nearly four decades, until the present large export movement began across the mountains and presented an opportunity for large scale production which seemed worth while according to American standards. About the same time the canning of vegetables entered upon its present expanding career, and the attainment may be measured by the present shipments beyond State lines,

which sometimes reach five million cases of canned vegetables and a hundred million pounds of fresh vegetables in a year. Thus it appears that California vegetable growing has realized the greatness which the first achievements prophesied.

California fruit growing since the American occupation has been characterized by a series of headlong onrushes alternating with intervals of reactionary weariness and temporary depression, but each new awakening has disclosed new openings and new courage to possess them. Thus the general course has been onward and upward. There has been a periodicity of about one decade. The enthusiastic planting of the early fifties brought the dullness and apprehension of over-supply of the early sixties. The opening of the first overland railway in 1869 brought great anticipation of Eastern markets, and free planting yielded volumes of fruit of which shipments late in the seventies yielded growers little or nothing, and wrecked houses which gambled in fruit, with high freight rates, slow movement and poor cars all against them. Various causes brought new confidence and a passion for planting early in the eighties, the booming expectations therefrom being largely thwarted by the general depression of the early part of the next decade. For the last ten years, however, the course of fruit affairs has been steadily upward. Unceasing efforts for wider distribution through distant consuming States and countries, constant struggle for cheaper and better transportation and sale; organization and correlation of growers' and dealers' interests to obviate competition in glutted markets; the use of larger capital and better system in preparing and pushing preserved fruit products of all kinds—all these, combined with the actual awakening of the world to the desirability of the products, give fruit planters, preservers and dealers more confidence in the outlook today than they have had since large scale operations began. Though the fruits and fruit products have attained a total annual value of something like sixty millions of dollars, no limitation of advancement is yet discernible.

Each of the fruits which have become commercially great in California has its own local history, which will some day be written. Every one of them had its own rate and method of progress, its own disappointments and surprises, and each to-day offers its beauties and values as tributes to the memories of men and women in the last generation of Californians who foresaw the future and whose labors made its realization possible. The writer had the advantage of being a young man when the horticultural heroes of the last three decades began to lay the foundations upon which the present horticultural greatness of California rests, and enjoyed personal acquaintance with most of them. He cherishes the plan of closing his own life with an effort to transmit the record of their ambitions, their struggles and their successes to coming generations of Californian devotees to horticulture. The interest in such an undertaking will depend upon the place which horticulture will occupy in the future development of the State.

The outlook for California fruits and fruit products involves considerations of much economic interest. California's exports of horticultural food supplies to north European countries are likely to reach values as great as we ever secured for wheat and barley in that part of the world. Besides the development of adjacent territory on the American continent and other Pacific countries may shape the future of California as a fruit producing State in a way which can at present only be dreamed about. It should be remembered that California has a unique character from a horticultural point of view. Not only does the State have a monopoly of semi-tropical conditions of the United States (excepting parts of Florida and Arizona), but California has command of the whole of northwest America and the whole of northeast Asia, not only in the supply of semi-tropical fruits, but in early-ripening of hardy fruits as well. California does not grow tropical fruits; they must come from the islands and the tropical south coast countries. Semi-tropical fruits are, however, vastly more important in commerce than tropical, and a region which successfully combines northern orchard fruits with the whole semi-tropical class commands the fruit trade of all accessible populous regions which have limited fruit capabilities.

Prophets far-seeing in the world courses declare that the Pacific Ocean is to be the arena for commerce greater than the world has yet seen, and Pacific Coast countries are to contain the greater portion of the world's population. This greatest quarter-sphere with its superlative opportunities and activities will have California as its treasure house of fruits and fruit products. During the winter the citrus fruits will afford tonic and refreshment, and before hardy fruits bloom in northern climes the same fruits will appear from the early ripening districts of California. In this traffic California will not only be practically without a competitor, but, sitting beside the sea, there will also be every advantage of water transportation and the sustaining ocean temperatures for the fruits in transit. California dried and canned fruits will render acceptable diet available even through the most arctic stretches along which development may advance in North America and North Asia, while a succession of fresh fruits will

flow to all Pacific ports throughout the year. California, too, will be the winter residence of all the North Pacific millionaires and the haven of rest and recuperation for all who are worn by arctic cold or tropical heat throughout the great circle of the Pacific Ocean. Here the arts will flourish, education will attain its highest achievements and culture will prevail. Then fruit growing, both as a commercial enterprise and as a home delight will attain value, volume and perfection of which present achievements are but the faint foreshadowing.

A Foothill Proposition for Handling Orchard.

Mr. Gerald Geraldson gives the Newcastle *News* his ideas of soil restoration in the foothills which is interesting and suggestive, although we cannot agree with all his reasoning. Our readers can judge it for themselves:

How is our soil worn out? The fertilizer man is always ready to tell us that our trees use up so many pounds of this chemical and so many pounds of that chemical per acre per year, and that, as there are only so many pounds to start with, it is simply a matter of mathematics to tell that the supply will become exhausted.

But, do you remember the seedling that never bore a peach, but always received the same care the other trees did? Didn't the soil around it become worn out just as the other soil did?

Do you remember that block of Tragedys, or K C, or Clymans, that almost never bore? Didn't that soil get worn out just the same? Who among us is there but knows of scores of such instances? Now, these instances prove clearly that the amount of fruit that is taken off a given piece of land is not the only factor in its impoverishment.

HUMUS.—Any 'new' piece of land is full of humus, and is in ideal physical condition, unquestionably on account of the humus. Trees planted in it grow rapidly and with little water. The presence of this humus is due, unquestionably, to the decay of mature vegetation. Nature doesn't attempt to use green grass or leaves for this purpose—she allows them to go on to maturity. We, when we start to cultivate a piece of land, shut off the supply of matured vegetation, but think that we are replacing it by plowing under green instead, which is a great mistake, as green grass is about 99% water and is of practically no value for humus.

No better proof of the correctness of these deductions can be desired than a comparison of the physical condition of the soil of a 10 or 15-year-old orchard, of the kind we are considering, with the same soil at the beginning. At first the soil on a Newcastle hillside is a dark brown color, soft, loose and 'mellow.' It can't and doesn't bake, takes water freely, and produces splendid crops of almost anything. In the second case it is a glaring red, the color of the underlying granite. It bakes hard very readily. After about the third irrigation the water runs through the ditches as though they were lined with cement, and it rarely produces a crop of anything but tree fruit, and that is much inferior, both in quality and quantity, to what it was the first.

Now, I believe that this deterioration has been in exact proportion as the original supply of humus in the soil has been exhausted, and that, had the supply of humus been kept up, there would have been but little, if any, loss of producing capacity. I believe that, if we allow nature her way, she will continue to provide a reasonable supply of whatever chemical elements there were in the soil at first, and that the most we need to do is to see that the waste from animal life (manure) is distributed.

A NEW WAY.—Following out this theory, I, three years ago, started the system of plowing alternately 'middles' on alternate years—that is, of plowing half of the orchard each year and allowing the grass on the other half to grow to maturity.

The first year there was but little grass and the ground got very hard in the unplowed 'middles,' as it was in much the same condition that many other orchards around Newcastle are, near the portland cement stage; but, still, I had only to increase the water supply one-sixth.

The next year there was a noticeable improvement, as the ground that had been unplowed for two years 'broke up' more 'mellow' and turned under some mature grass, as well as a better crop of green grass, caused by the presence of the old grass.

The third year there was a heavy crop of old grass to turn under, and in this old grass was a heavy crop of green grass, which helped a little, so that altogether the ground 'broke up' almost like new land, and later, when irrigating, it took water like a sponge, and did not require as much water per acre for the season as it did before I started the new plan. In addition to this, the water ditches didn't wash any and this winter there were no gullies at all washed in land plowed this way, while I have noticed several in other orchards within a radius of say eight miles of Newcastle.

We must remember that what washes off the land is the cream—in other words, the humus; that it is a vastly better plan to conserve what we have than to waste it and then try to get more.

It is too soon yet to tell positively as to the effect

of this system on the quantity and quality of the fruit, but I see no reason to doubt that the soil will be just as good as it looks.

Triangular or Square.

TO THE EDITOR: In your issue of March 10, you raise the question of square vs. triangular planting. To this I have yet seen no reply.

As to cultivation the *square* has the advantage as the rows are wider. Starting with trees 25 ft. apart on the base line in both systems it will be seen that while the square rows have 25 ft. clear the triangle rows have only about 22 ft. in actual clearance between rows. Running diagonally between the square rows of course narrows them to approximately 17½ ft. but the trees are so much further apart in the rows that the team can "swing" and thus still work to advantage.

The main claim I have heard in favor of the triangular system is the idea of "more trees to the acre." This idea has long been given up as useless by experienced growers. Trees planted any reasonable distance apart will utilize *all* the space as soon as they need it whether planted in squares or triangles.

Another point is that trees planted in the square system can be thinned out by removing each alternate row leaving the balance in true square form still only further apart while taking out alternate rows in the triangular system leaves them in very uneven arrangement.

Occasionally one finds orchards planted with the lines of the squares running diagonally with the lines of the land. Many people confuse this with the triangular method whereas it is merely square planting placed thus so as to allow of future removal of one-half the trees at which removal the orchard will appear to have always been planted in rows parallel with the boundary lines.

HAROLD O. H. SHELLEY.

"Pendene" Cupertino.

Upland Walnuts.

TO THE EDITOR: While you are discussing the walnut situation isn't there a possibility that the native tree which grows on the shallow, rocky soil of the Sierras in El Dorado county, may produce a root better adapted to shallow soils than seed which is a native of other and deeper soils?

Wouldn't it be well for some of these persons thinking of going into the business to investigate a locality where the walnut is a native of a high altitude and a shallow and rocky soil; where the English walnut when once planted, no matter on what root, grows wild in the brush and bears heavily with no care whatever and where land is only a fraction of the price it is in most walnut districts?

E. DUNLAP, JR.

Diamond Springs, El Dorado county.

Yes, if you can get a good, large, handsome walnut under such conditions. As the supply increases the market will be more exacting on style and size.

THE GARDEN.

Damping Off.

TO THE EDITOR: I would like to know what is the matter with my tomato plants. When I plant the seeds they come up nicely, and as soon as they get well above the ground they seem to wither just even with the ground and then fall over and die.—GROWER, Bangor.

The difficulty which you describe with your young tomato plants is due to a disease known as 'damping off.' A full discussion of this trouble is given by Professor R. E. Smith, that you will find fully discussed in the first part of a bulletin he has just prepared on the tomato diseases of California, as follows:

Millions of tomato plants are lost some years in the seed-bed by 'damping off,' or stem rot of the seedlings. This trouble and the conditions which favor it are well known to most growers. During periods of wet, continued cloudy weather in spring, the disease occurs. The little plants growing close together wilt down on the soil and die off in patches or in whole beds. If examined more closely it will be seen that each plant is affected with a soft rot just at the surface of the ground, which cuts it off and causes its death.

Cause.—The cause of damping off is a mold-like fungus, not always the same, which lives in the soil, and does not always develop enough to affect healthy plants. The conditions mentioned of close, wet weather, with little sunshine for some time, favor the fungus and weaken the plant. Thus the former gets the upper hand, develops very vigorously in the soil, and penetrates into the stem of the weakened, delicate seedling. This produces a decay, the stem rots off, and the fungus spreads rapidly over the soil from

plant to plant until a large area may be killed, if favorable conditions continue. When the sun begins to shine again and the soil is thereby dried off and the young plants invigorated, damping off is checked and disappears.

Control.—It should be kept in mind, in considering how damping off may be prevented or checked, that the trouble is caused by soil fungus, which is favored by moisture, cloudy weather, weak plants, and any condition which produces the same effects, while its growth is hindered by dryness and anything which produces it, like sunshine and ventilation. Seed-beds should be made of fresh soil, free from anything connected with previous crops of tomatoes. The seed should not be planted too thickly, as a close, dense growth of the plants greatly favors damping off. After the seedlings appear, the surface of the ground should be kept as dry as possible by stirring, covering the beds during rain, opening to let in all possible sun and wind, and watering as little as possible.

At times when the weather is bad the plants will sometimes commence dying in spite of these precautions. At such times it is difficult to stop the spread of the trouble by any treatment. Some growers have sprinkled sulphur thickly over the young plants, and report some success in checking the disease. A sprinkling of air-slaked lime may also have a beneficial effect by drying and covering the surface of the soil. Further treatment consists in spraying the plants and soil heavily with a weak bordeaux mixture (3 pounds of lime, 3 pounds of bluestone and 50 gallons of water), in order to check the spread of the fungus over the surface of the soil. Such a spraying, combined with a sprinkling of dry sulphur, will check damping off as much as can be done by any means in times of continuous dull weather with conditions favorable to the disease. If a bed becomes badly affected, it is better to let it go altogether and start new plants in fresh soil.

Soil sterilization by means of steam for the purpose of exterminating soil fungi has never been attempted in California, but it is being practiced quite extensively in certain Eastern sections for hot-houses, cold frames, etc. The method is simple, and kills every form of parasitic or other life in the soil treated. Perforated pipe or tile is placed in the soil in a gridiron arrangement, buried to the depth of about a foot, and steam then turned in from a boiler and kept up for some time. The soil becomes permeated with the hot steam and all fungous spores, weed seeds, insects and their eggs, etc., are destroyed. The growth of plants in soil after such treatment is considerably stimulated. For large growers of tomato or other plants who are losing seriously by damping-off, this method is worth considering.

THE VINEYARD.

Iron Sulphate for Vine Diseases.

"Bordeaux mixture for the leaves, with sulphate of iron for the roots, is the ideal combination for grape growers," says a recent French work on the vine.

Chlorosis is a disease itself or the evidence of disease. The distinctive signs of chlorosis in grape vines and other plants consist in the stoppage of growth, twigs remaining thin, the leaves turning yellow and the plant becoming barren.

Gris in 1849 showed that chlorosis is due to lack of iron. In 1869 Sachs called attention to the necessity for iron in healthy plant growth.

The disease has been traced to too rapid growth, poorly aerated soil, excess of lime in the soil. There remain obscure causes for the disease.

Sulphate of iron is in most cases a sure cure for the disease, and the consumption of this material in Europe has reached enormous quantities.

Rassiguier discovered a simple and practical method of combating the disease, which may be best given in his own words:

"The treatment with sulphate of iron, as an antidote to chlorosis, which I invented in 1891 and tried on my own property, has furnished such results that the method has spread and experience has taught its value to both scientists and practical wine growers.

"For the benefit of those who are still unacquainted with the details of the matter, I will review the conditions to be followed as to time, method of operating and quantity of dressing to apply, and recount the influence of a single annual washing on chlorosis, anthracnose and 'short node' on vines, fruit trees and roses.

"To produce the full effect, washing should be performed in autumn, the vines most afflicted with chlorosis being treated first, as soon as the first leaves begin to fall; in fact, I think that such as are very much stunted should be treated before any of the leaves come off. Both are washed immediately after each stock has been pruned.

"All the wounds made in pruning should, without exception, be drenched with the iron solution, and, in order to ensure the curing of the disease, the drenching should extend over the whole surface of

the trimmed shoots (not excepting the buds, these being sufficiently protected by their downy envelope), the branches, and even the stem, as will be explained below.

"There is no need to be afraid of a more or less deep coloration of the trimmed shoots, and if any of these—insufficiently ripened, and therefore liable to perish—should succumb to the washing process, their place will shortly afterward be found taken by vigorous buds—beside or below the dead shoots—which will bear fruit the next year. All vines, well or diseased, may be washed with advantage, as the treatment strengthens growth.

"If postponed until the cold weather sets in, the washing will have little effect, and spring washing is less efficacious against chlorosis than autumn washing.

"An active laborer with a wooden pail and a brush, or, better still, a woolen rag tied up in the shape of a brush, can wash after three pruners. The solution should be a saturated one, that is, containing 40 to 45% sulphate of iron, and may be prepared in a very simple manner by placing 80 to 90 lb. of sulphate of iron in a wicker basket or jute bag slung on a stick and suspending in a vessel large enough to hold 200 gal. of water without overflowing when the basket is immersed. After leaving over night the sulphate will be dissolved and the liquor ready for use the next day.

"Generally the results of the treatment are remarkably beneficial, and in many places a complete cure is effected the first year. However, some soils are less favorable to viticulture and require the treatment to be repeated. Chlorosis has also been cured in fruit and rose trees by washing the pruned surfaces with the same solution.

"Moreover, when the dressing is applied over the entire surface of the stock, it is capable of destroying the germs of oidium, anthracnose, mildew and insects lodged in the interstices of the bark.

"Three years' consecutive treatment of my own vines cured the stocks suffering from short node, that is, those where the nodes on the stocky branches were only a few centimeters apart. These formerly unproductive stocks now yield a large crop, and the internodes are of ordinary length.

"The first year's grafts may be treated with a 20 to 30% solution, the full dose being repeated the third or fourth year.

"Thus all the foregoing maladies are curable by a single annual operation.

"I recommend the pruner to cut through the middle of the bud just above the one destined to bear fruit, so as to leave intact the protecting septum existing at this point, and which, when cauterized at the surface by the action of the sulphate of iron, preserves the adjacent internode from the effects of frost, insects or wet, which might otherwise penetrate the pith; this internode remaining healthy, the fruit bud will be rendered more vigorous."

Cornichon and Emperor.

TO THE EDITOR: Will you let me know through your paper something about the Cornichon grape? I have heard it spoken of as a good shipper, that it is earlier than the Emperor, which I believe it resembles. I have also heard some people say they were afraid to try it. Can you tell me anything for or against it?—SUBSCRIBER, Dinuba.

TO THE EDITOR: The Cornichon grape about which your subscriber inquires is a most excellent shipping grape. It is not so late as the Emperor, but is much superior in quality. It is usually darker in color, being quite black in the coast counties. In Tulare it would probably be purplish, but not so light as the Emperor. The reason it fails to bear in many vineyards is that it is pruned too short. It requires half-long pruning, with spurs of four or five eyes. It is very difficult to prune a vine in this way without putting it on wires or trellis. It can be accomplished, however, by a careful pruner, if he is careful to leave short spurs of one bud near the base of each long spur. These short spurs are to provide fruiting wood for subsequent years and to permit of the cutting back of the arms of the vine, and thus preventing their growing to inconvenient length. The best results, however, would be attained, I think, by using a single or double wire running in one direction through the vineyard.

FREDERIC T. BIOLETTI.

University of California, Berkeley.

FORESTRY.

The National Forest Reserves in California.

By E. A. STERLING, Assistant Forester, Forest Service, in
Water and Forest.

California, with a total land area exceeded by no State save Texas, stands first in the number and extent of National Forest Reserves within its boundaries. Covering the mountain ranges and important watersheds are 17 reserves, extending from the Oregon line nearly to Mexico, and aggregating 18,155,043 acres. This acreage is greater by nearly 6,000,000 than that possessed by any other State.

Colorado is next with 15 reserves, comprising 12,691,145 acres, followed by Montana with 10,517,860 acres. The Sierra reserve alone is nearly as large as the entire State of Massachusetts; while, if combined, the National Forest Reserves in California would make three States the size of New Jersey and have enough left over to cover Connecticut.

The withdrawal of such an enormous area of public forest land for conservative use means that there was urgent need for a protective forest policy and that the National Government was fully awake to the necessity for action along these lines. The people of California have given all possible encouragement to such a policy, and the commercial organizations and mountaineering clubs have consistently advocated Government administration of certain of the State forest and water resources. The result has been the creation of forest reserves wherever they were needed for the protection of drainage basins and timber. The one great mistake was that action was delayed until much of the best timber land fell into the hands of lumbermen. This has limited the possible extent of the forest reserves, and left much private land within their boundaries, but on the whole, they are advantageously situated and of incalculable value to the State.

The first reserve created was the San Gabriel in 1892, and the number has been gradually increased since that time. The greatest progress was made during the past year (1905) when seven reserves were proclaimed by the President. Lands have been withdrawn and reserves are proposed in Monterey county and near San Luis Obispo. The boundaries of the earlier reserves were determined largely from data available in the local land offices, but the location and limits of the newer reserves have been decided upon only after careful field examinations.

That the general object of forest reserves is to protect the drainage basins of important streams and provide for a future timber supply is well known. The means by which this end is attained are, however, less generally understood, and the public is not well informed as to the organization and duties of the administrative force. The administrative work on all forest reserves is now directed by the Forest Service in the Department of Agriculture. This transfer of authority from the Department of the Interior to the Department of Agriculture was effected by Congressional action which took effect February 1, 1905. The keynote of the whole forest reserve policy is perpetuation by conservative use. Protection from fire and trespass is contemporaneous with this prime object.

The aim is not to close the reserves to the lumberman, stock-owner, camper, and others who might profit by their use, but to leave them open for every legitimate purpose. The Use Book of the National Forest Reserves sums the matter up as follows: "Forest reserves are for the purpose of preserving a perpetual supply of timber for home industries, preventing destruction of the forest cover which regulates the flow of streams, and protecting local residents from unfair competition in the use of forest and range. They are patrolled and protected, at Government expense, for the benefit of the community and the home-builder. * * The timber, water, pasture, mineral, and other resources of the forest reserves, are for the use of the people. They may be obtained under reasonable conditions, without delay. * * All the resources of forest reserves are for use, and this use must be brought about in a thoroughly prompt and businesslike manner, under such restrictions only as will insure the permanence of these resources."

It is naturally a task of no small magnitude to properly manage such a series of reserves as California possesses, comprising as they do an area as large as all New England, exclusive of Maine and Connecticut, and scattered through nine degrees of latitude. Their location and general character make the task more difficult, through the lack of convenient facilities for communication and transportation. The demands upon the reserves are many and of varied nature, and the best judgment on the part of the reserve officers is necessary to prevent friction. The greatest source of danger, and the element most difficult of control, is fire, and during the long dry season every precaution is taken to prevent and suppress this evil.

The regular force of forest reserve officers in California is made up of 12 supervisors, six forest rangers in charge of reserves, 112 forest rangers or assistant forest rangers, 27 forest guards, and two forest assistants. In addition, there are usually two forest inspectors on duty in the State, which makes a total force of 161 men. This force is somewhat reduced during the winter season. Of this number the forest assistants and forest inspectors are professionally trained foresters, while the supervisors and others in charge of reserves combine certain technical knowledge with thorough familiarity with local conditions. Trained men of various grades, representing the several technical offices of the Forest Service are also on duty in forest reserves, but are not directly concerned with administrative matters. They are usually engaged in special investigations or lines of work which include the preparation of working or planting plans, directing the marking and cutting of timber, examining lands for new forest reserves and carrying on forest planting operations. By an executive order

of December, 1904, the whole forest-reserve service was placed under the civil service law.

The plan of organization is practically the same on each of the reserves. Local control is vested in a supervisor or a ranger-in-charge, the administrative unit being one reserve, a group of reserves, or a division of a reserve, depending on the size, location, and condition as to fire danger, timber sales and grazing. The supervisor has full local control, receives applications for timber and grazing permits and special privileges, and approves a certain class of applications. He stands between his subordinates and the local users of reserve resources and the forester at Washington, to whom he refers all matters of importance. It is the aim, however, to give all possible authority to the local officer in order to secure prompt and just action in all matters connected with the use and care of the reserves.

Each supervisor, on a fully organized reserve, has a corps of assistants made up of forest rangers of three grades, forest guards, and a technical assistant where circumstances require it. The main duties of the rangers and guards are to protect the reserves against fire, and to assist the people in the use of the reserve resources. The technical assistants handle scientific matters relating to general forestry, lumbering, grazing, and dendrology, assist in the preparation of maps, and working and planting plans, carry on investigations of the silvical characteristics and commercial use of trees, and other studies requiring a trained forester.

The detailed work varies greatly with individual reserves. In southern California, where there is little timber for sale, fire protection of the cover on watersheds is the main duty. This is effected by patrol, fire lines and general measures for the prevention of fires, and the prompt extinguishment of those which start. In the northern part of the State, where the reserves are more or less covered with commercial trees, the same fire protection is given, but in addition, special attention is given to applications for timber, and sales are made where the timber can be spared. Cutting is permitted only under careful regulations which insure a future stand and prevent present injury to the forest. Grazing is permitted wherever it is not harmful in any way, and the reserve officers recommend the allotments to different owners and different classes of stock. Careful administration insures that the privileges granted are not abused, and that no more stock is permitted within the reserve than permits have been granted for. Beginning January 1, 1906, a reasonable fee will be charged for grazing all classes of livestock on forest reserves. This will materially increase the income from the reserves and work no hardship to the stock-owners, since it will insure them the use of a definite range under equitable regulations, which protect the local owners and provide for the improvement and best use of the grazing land.

Both green and dead and down timber on forest reserves, which can be cut safely and for which there is actual need, is for sale. The free-use privilege of not more than \$20 worth of timber annually may be granted to farmers, settlers and others who need it for domestic purposes, or to a value not to exceed \$100 in any one year to schools, churches, and to other public or non-commercial organizations. Applications for these free-use privileges may be granted or refused by the local supervisors or rangers.

In all of the States except California, sales of not over \$20 worth of dead timber can be made by any forest ranger, while the supervisor can approve the sale of dead or living timber to an amount not exceeding \$100. All sales above \$100 must be advertised, and referred to the forester at Washington for approval. California differs from other States in that every sale of any class must be advertised for 60 days.

Forest planting on the timberless drainage basins in the Southern reserves is work which will grow in extent and importance as better fire protection is secured and the value of water increases. It is obviously a difficult and expensive undertaking, but since future agricultural development of the adjacent valleys depends almost entirely on increased water supply, the improvement of the watersheds becomes an urgent public necessity. A forest cover will undoubtedly improve the conditions by regulating the flow of streams, preventing the rapid run-off of the flood waters, and diverting moisture into seepage channels where it will eventually find its way into the natural gravelly storage basins in the valleys, and increase the underground supply utilized through wells.

The Forest Service maintains a large forest nursery in the San Gabriel mountains, and another in San Marcos pass, back of Santa Barbara, and plants many thousand seedling trees in the mountains every winter. Although within forest reserves, this work is not under the direction of reserve officers, but is conducted by the office of forest extension in the Forest Service. There is active co-operation, however, between this office and the reserve officers, in such matters as fire-line construction and seed collecting. The work thus far has been largely experimental, but it has been quite conclusively shown that trees can be planted in the more favorable situations at reasonable cost and made to live.

Forestry is a comparatively new subject, not only in California, but in the whole United States; hence

it cannot be expected that matters of policy and method, as applied at present, will be perfect. Californians, however, should feel proud of what they have done for themselves, and of what the National Government is doing for them to secure the best use of the State forest resources. Any public policy, to be successful, must have the endorsement of the people concerned, and this holds for forestry as well as for other questions of public moment. The people of California have shown their appreciation of the forest work which is being done for them, by encouraging the creation of the reserves, by making proper use of the resources thus perpetuated, and by adopting a State forest policy. In the end, the forest reserves of the State should become self-supporting, and increase in value through protection and careful management, in keeping with the growing value of the timber and water which they conserve.

Agricultural Review.

Butte.

CHICKEN MEN TO ORGANIZE.—Gridley special to Sacramento *Bee*, March 31: A. Stains and Dr. L. L. Thompson, are the leading spirits in a movement to organize a Poultry Association for Butte and Sutter counties. A meeting has been called for April 5, when an attempt will be made to get the chicken men together. The industry has grown by leaps and bounds during the past year, and those engaged in the business hope to be able to better their prospects in many ways, including bettering of stock, advancement of prices, and obtaining of lower shipping rates.

Contra Costa.

TO RECLAIM TRACT.—Contra Costa *Gazette*, March 31: The Holland Land & Water Co., of Los Angeles, has purchased a tract of 12,000 acres of unclaimed land on the San Joaquin river. The property is known as the Webb tract and is in the eastern end of this county. The new owners will put to work at once five dredges to reclaim the land, and will have a most valuable piece of property when all improvements are made.

Glenn.

RIPE GRAPES IN MARCH.—Willows *Journal*, April 6: Dixon boasts a curiosity in the shape of ripe grapes in the month of March. The vine was planted about a year ago by Mrs. William Van Sant, and kept inside the house during the past winter. In the early part of the winter the vine blossomed and a bunch of grapes formed. The pot was placed in the window of the Ladies Improvement Club, among the other exhibits a short time ago. The grapes are well formed, and the vine is thrifty, although contained in a small pot.

WILL PLANT GRAPEVINES.—Willows *Journal*, April 3: Articles of incorporation have been filed for the Colusa Wine and Vineyard Company. It has as its purpose the raising of grapes and making wine. This company is incorporated with a capital stock of \$150,000, divided into 500 shares.

STOCK INSTEAD OF WHEAT.—Willows *Transcript*, April 3: D. H. Goodin, of Los Angeles, shipped two carloads of horses and mules out of here last Thursday for the southern market. Mules especially are bringing top prices, a fairly large mule selling for \$200. F. Quint sold eight horses to Mr. Goodin for \$1,600 and mules enough to bring the purchase price up to \$3,000. G. Reager of Orland, J. Ball and a number of other farmers have unloaded their surplus stock of horses. Unless we breed more stock, our farmers will be compelled to go north for their horses and mules, or quit farming on a big scale. The selling of the present amount of work stock brings another matter into the foreground. A number of farmers say that this will be their last year at grain raising, having learned by experience that the time has gone by when a fortune can be made in that line of industry. One farmer stated that he would not harvest another crop, but would turn his fields into pasture land and raise stock.

RAISE MORE HOGS.—Willows *Review*, March 31: H. B. Turman says he has paid out \$70,000 in Glenn county during the past year for marketable hogs for shipment abroad. He is now paying at the rate of six cents per pound for hogs, or on an average of \$12 per hog, or \$1,200 per carload. Porkers are being brought to the State at the rate of 1,000 per month from Kansas alone. California is a good country in which to rear hogs and it is

difficult to understand why more farmers do not engage in the business.

Kern.

SPRING CLIP OF WOOL SOLD.—Kern *Echo*, April 5: Nearly all the spring clip of wool has been sold, and the prices ranged from 13 to 16c. A great deal of the wool is still stored at the shearing camps, however, as the roads have been too soft to permit it to be hauled.

Napa.

ANOTHER CHICKEN RANCH.—Napa *Register*, April 6: G. O. McMullin of San Francisco Monday purchased the Murphy place of 65 acres from the Bank of Napa. Mr. McMullin has purchased several 500-egg incubators and will soon have a large number of brooder houses and equipments for handling chickens.

Los Angeles.

FRUIT GROWERS' RETURNS.—Pomona *Progress*, April 5: On Wednesday the Pomona Fruit Growers' Exchange paid a dividend of \$25,000 as the second dividend paid for February fruit. The first dividend amounted to \$18,000. In connection with this it should be remembered that the shipments made during February were lighter than had been anticipated, owing to rainy weather. The average per pound net to the grower amounted to over 2c., as against less than 1½c. for last year. The growers feel encouraged over the outlook for the orange returns. It is estimated that the southern California crop will not go under 8% less than last year. The poorer fruit has been sold at prices that have netted the growers 2c. per pound.

Orange.

ADVANTAGES OF CO-OPERATION OF FRUIT GROWERS.—Santa Ana *Blade*, April 6: The Anaheim Fruit Association has declared a dividend for shipments of oranges made in the February pool, as follows: Choice navels, all sizes, \$1.29 per box net; standard navels, all sizes, \$1.02 per box net. Some growers report having made more this season out of one shipment than out of their whole crops of other years. Growers who this season withdrew from the associations sold to jobbers at 75c. a box while those who remained with them are all receiving high prices.

REFORESTATION.—Santa Ana *Blade*, April 6: S. J. Flintham, of the United States Forest Service, arrived here from Los Angeles this morning. He comes at the request of certain residents of the county, who wish him to pass expert opinion on the planting of trees along the creek in Santiago canyon. If, in his opinion, it would be a profitable investment for parties interested to have the watershed planted, he will suggest the best specie and method of planting. He will report to the department the result of his observations, but if the work is done, it will not be at the expense of the department.

Sacramento.

SHIPS STRAWBERRIES.—Lodi *Sentinel*, April 3: The first shipment of strawberries for the season was made by E. Oppenheim on March 30. The berries were from the Florin district and were consigned to Salt Lake.

San Joaquin.

LOSS FROM FLOOD.—Lodi *Herald*, April 7: D. L. Smith and J. H. Pope were heavy losers from the high waters in the southern part of the county. They had in 1,500 acres of grain in the Bethany district, of which all but 140 acres were washed out. The entire tract was flooded, but there are hopes of saving a quarter section.

TREES PLANTED.—Lodi special to Sacramento *Bee*, March 24: About 300 acres were planted here this season to fruit trees, peaches and cherries finding favor among fruit men. A small acreage was also set out to walnuts. This amount would have been increased, but it was impossible to secure stock from the nurseries in time. Canning, rather than shipping, varieties of peaches are in the majority, being for the most part Orange Cling and Muir. Very few freestone peaches were set out. Had not the rains interfered, about 12,000 acres would have been set out to grape vines. As it is, only half the amount has been put in the ground. In northern San Joaquin alone about 7,000 acres would have been put out to Tokays. Those who were unable to set out grapes this year will put the cuttings in the ground and next year will be able to set out rooted vines one year old.

Santa Clara.

FRUIT GROWERS BRING SUIT.—San Jose special to Sacramento *Bee*, April 4: The suit of the Hayes Chynoweth Co. and 70 other fruit growers, owning land on the east side of this valley, below the Coyote river gorge, against the Bay Cities Water Co., to restrain the latter from appropriating and diverting the

waters of the river, was begun today in the Superior Court. Evidence submitted in the Miller case, in which a restraining order against the company was directed to issue by the Court, will be used in the present case.

Solano.

WON SUIT AGAINST SMELTER.—Fresno *Republican*, March 30: The damage suit of C. B. Deming, a Benicia farmer, against the Selby Smelting and Lead Co., which has been on trial in the Superior court, came to a close this afternoon. The jury brought in a verdict for the plaintiff for \$2,000. Deming claimed a loss of stock, hay and pasture, by reason of the poisonous fumes from the Selby smelter, to the amount of \$6,500. Numerous other Benicia farmers have damage suits filed against the smelting company aggregating hundreds of thousands of dollars. The Deming suit was made a test case and it undoubtedly will be taken to the Supreme court.

MANY TREES SET OUT.—Suisun special to Sacramento *Bee*, March 31: The Pierce tract in Suisun valley, recently purchased by W. H. Morrison and Charles Vogel, will be set out in orchard and vineyard. Morrison has commenced to set out 15,000 grape cuttings, and Vogel will plant fruit trees on his portion of the land. Quite a number of young fruit trees have been set out on the Willotta ranch. J. T. Cooper will convert the race field, on the Lambert place, into an orchard and vineyard. There will be 23,000 grape cuttings set out for the new vineyard. In Green valley, one of the earliest cherry sections in the State, F. S. Jones has planted several hundred young cherry trees which, with the exception of 50 acres used in replanting in the old orchard, will be used on new land. It is Jones' intention to enlarge his cherry orchard until it reaches 120 acres. Louis Mangels has leased the Morse place for 15 years, and will set out over 50 acres in vineyard this year. James Mayhood is setting out 10 acres in vineyard on his place near Cordelia. G. L. Mason is planting 500 fruit trees in his orchard.

OFFERS CATTLE PRIZE.—San Francisco *Chronicle*, April 2: H. F. Brown of Minneapolis, president of the Shorthorn Breeder Association, while visiting in Vallejo, made an offer which interests local stockmen. He stated that if any fair association in California will offer premiums aggregating \$500 for the best shorthorn cattle, the association of which he is president will duplicate the premiums.

Sonoma.

GRAFTING WALNUTS.—Petaluma *Argus*, March 30: Upon the advice of Luther Burbank, given at the State Fruit Growers' Convention last December, tens of thousands of walnut trees throughout the State have been grafted in accordance with his suggestions. In a recent article prepared for publication, Burbank says that men have the power to change the form, size, color and fragrance of flowers; the size and shapes of trees and shrubs; increase the quantity and improve the quality of the products, and make them appear at the season desired. The knowledge can only be acquired, after much study and a thorough understanding of the subject. He is to read a paper on the subject of plant training before the members of the Linnean Society of Santa Rosa.

ALFALFA MILL.—Sebastopol *Times*, March 24: J. H. Read is contemplating the erection and operation of an alfalfa and feed mill here. A mill such as Mr. Read has in mind would give employment to 10 or 15 persons. There is an active demand for alfalfa meal and there is no reason why a mill should not pay well.

HOPS SALE.—Santa Rosa *Republican*, March 29: C. Jessup sold 180 bales of hops to Phillip Wolfe & Co., Thursday. The price paid was 9½c. A number of growers have been offered 9½c. for their hops and there seems to be considerable interest taken in the industry at present.

Stanislaus.

A SHEEP CASE.—Merced *Sun*, March 23: A case in which sheepmen as well as county officials all over the State might be interested, was in court last Monday. The immediate decision is not of such moment, but on the reference of the issue to the State Attorney General will hinge the question of the constitutionality of a law, and the powers of the boards of supervisors in California.

The case was that of Stanislaus county sheep inspector, Enos, against a rancher, Machado. A State law gives the county supervisors the right to appoint an inspector, whose duty it is to look over the flocks of sheep. There is a fee of four dollars attached to each inspection, which the sheep owner must pay. Inspector Enos recently performed his duties in regard to Mr. Machado's sheep, but the

owner protested and refused to pay. Mr. Enos sued the rancher, and the case was argued yesterday.

The case will in all likelihood be referred to the Attorney General to ascertain the right of a public body to assess the costs of such an operation upon the property owner.

DISTRICTS IRRIGATED.—Modesto *Herald*, March 29: Water has been turned into the main canal of the Modesto irrigation district.

There will be 4,000 acres in addition to that irrigated last season, placed under irrigation this year in Modesto district, according to Superintendent Crowe. Last season there was 11,000 acres irrigated, and the total for this year will run to 15,000 acres. The total irrigated in both Turlock and Modesto districts for the season of 1906 will be something like 50,000.

LEASE ALFALFA LAND.—Modesto *Herald*, March 22: Mr. La Barraque, of Hollister, has leased the Caswell alfalfa ranch at Ceres, at \$10 per acre per annum. He will bring over a herd of dairy cows in the near future to stock the ranch. The land comprises 240 acres, and the lessee has a four-years' option on it at the same price.

Tehama.

SHEEP DROWNED.—Red Bluff *Sentinel*: J. F. Freitas, who had 2800 sheep drowned in Colusa county two years ago, suffered a loss of 160 Friday night. The sheep were camped on Elder creek and crowded in the willows for protection from the storm when the creek rose rapidly and 160 were drowned before they could be driven to higher ground.

VALUABLE PELTS.—Redding *Searchlight*, March 27: T. E. Jones killed two California lions on the Lassen trail, east of Vina, several weeks ago. He sold the pelts for \$10 each and brought them up to Red Bluff Wednesday from Tehama to get the bounty of \$12.50. A gentleman saw the skins and offered Mr. Jones \$20 each for them, but he was forced to decline the offer.

Yuba.

MONEY IN COYOTES.—Special to the Sacramento *Bee*, April 4: Forty dollars in coin was the prize which came to Ben Adkins of Waldo, yesterday, when he produced before the board of supervisors six young coyotes captured in their nest the day previous, and two scalps of adult coyotes shot on his place. He had to dispatch the cub coyotes before the board allowed the bounty on the scalps.

MULES IN DEMAND.—Willows *Journal*, March 27: A Los Angeles firm has been buying more mules in the vicinity of Wheatland and the prices go as high as \$400 per span. Fifty head were shipped some weeks ago and last Friday 22 more were shipped. There appears to be a scarcity of work stock in the southern part of the State.

WANTS GRAPES.—Marysville special to Sacramento *Bee*, March 29: A representative of a Sacramento winery is working to procure, on a wholesale scale, contracts with the growers of wine grapes for the next five years. It is his intention to secure a guarantee of 1,000 tons per year, for which he is offering a good figure. This condition has been brought about through the burning last September of the Marysville winery.



GOMBAULT'S CAUSTIC BALSAM

A safe, speedy and positive cure for

Curb, Splint, Sweeney, Capped Hock, Strained Tendons, Founder, Wind Puffs, and all lameness from Spavin, Ringbone and other bony tumors. Cures all skin diseases or Parasites, Thrush, Diphtheria. Removes all Bunches from Horses or Cattle.

As a HUMAN REMEDY for Rheumatism, Sprains, Sore Throat, etc., it is invaluable. Every bottle of Caustic Balsam sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars, testimonials, etc. Address THE LAWRENCE-WILLIAMS COMPANY, Cleveland, Ohio.

The Home Circle.

An Easter Song.

Arise, my heart, and sing thy Easter song!
To the great anthem of returning bird,
And sweetening bud, and green, ascending
blade,

Add thou thy word.
Long was the winter and the waiting
long;
Heart, there were hours, indeed, thou
wert afraid,
So long the Spring delayed.

Shut in the Winter's alabaster tomb,
So white and still the sleeping Summer
lay

That dead she seemed;
And none might know how in her magic
side
Slept the young Spring, and moved, and
smiled, and dreamed.

Behold, she wakes again, and, open-eyed,
Gazes, in wonder, round the leafy room,
At the young flowers. Upon this Easter
Day

Awaken, too, my heart, open thine eyes,
And from thy seeming death thou, too,
arise.

Arise, my heart; yea, go thou forth and
sing!
Join thou thy voice to all this music
sweet

Of crowding leaf and busy, building wing,
And falling showers;
The murmur soft of little lives new-born,
The armies of the grass, the million feet
Of marching flowers.

How sweetly blows the Resurrection horn
Across the meadows, over the far hills!
In the soul's garden a new sweetness
stirs,

And the heart fills,
And in and out the mind flow the soft
airs.

Arise, my heart, and sing, this Easter
morn;
In the year's resurrection do thy part—
Arise, my heart!

—Richard Le Gallienne.

The Dairy.

"Where are you going, my pretty maid?"
"I'm going a-milking, sir," she said.

"Dear maiden, I'd like to disclose the
fact
That I'm an inspector under the Act.

"So pray remain, for I want to know
A thing or two before you go.

"Nay, pretty maiden, you must not weep;
How far away are the pigs you keep?"

"And what percentage of butter fat
Does your moo-cow yield? Pray tell me
that.

"And how is the health of your pretty
pet?
Has it anthrax, cancer, black-leg, garget?"

"Has your sister measles or whooping
cough?
Is the water clean in the drinking trough?"

"I pray thee answer these questions of
fact,
For I'm an inspector under the Act.

"With the fierce bacilli I also cope
By means of my powerful microscope.

"Excuse me, I must examine your hand,
Purely official, you'll understand."

—Lion.

Golden Days.

Oh, days of old, oh, days of gold,
Oh, days we used to know,
When life was new and hearts were true,
When streams were wont to flow
With tinkling tunes and lulling croons,
And laughing songs and glad,
About our feet, and life was sweet
To just a lass and lad.

Oh, rounded stones and monotones
Of streams we used to wade;
Oh, rippling waves of other days,
Oh, yellow sun that laid
With tenderness on each gold tress
And kissed each tinted ear
In days of old, the days of gold,
The days of yesteryear.

You're twice as sweet as when your feet
Glowed rosy in the tide;
You grow more dear with every year
That finds you by my side,
But yet, but yet I feel the fret
Of years that I have told;
There was no truth in days of youth,
When life was solid gold.

—Houston Post.

An Easter Message.

Agnes Norwood sat alone in her room—
where, indeed, she sat always now—her
face buried in her hands. She was not
weeping. It had been long—oh, so long—
since she had shed tears. She only strove
to shut out from her mind the vision of a
happy world that mocked her grief.
What was Easter to her, Easter with its
joys, its glad songs and beautiful flowers?
If those who called themselves her friends
could understand how they probed the
unhealed wound of her aching heart,
would they be so thoughtless as to urge
her to sing? How could she sing, she
whose song had been so suddenly and
ruthlessly hushed months ago? Can the
woodland songster fluttering among the
dead leaves, its breast pierced by an
arrow, tune its little throat to melody?
No more could she sing with a heart that
throbbed only to pain.

A ray of spring sunshine crept in be-
tween the folds of the window curtain.
She arose and drew the shade.

Agnes Norwood had once been a part
of that world of brightness and beauty to
which she seemed to belong; but her
Gethsemane had come at the supreme
hour of her life—at a time when she was
radiantly happy—and its dark shadows
had wrapped themselves so closely about
her that she had not since been able to
penetrate their gloom. It was in May
that she had promised to be Arthur Cam-
eron's wife. Before the June roses were
gone, death had claimed him. There had
been a short illness, a sudden alarm, and
then the end. The brilliant young life
had gone out.

When Agnes strove to recall what had
taken place in the awful days of darkness
and hopelessness she had a confused sense
of the solemn hush, the sorrowful faces,
and a kind voice that tried to point her
to the "stars shining through the cypress
trees." The only reality was the great
wave of desolation that had settled down
into her heart when that which repre-
sented all that life had for her was carried
out of her sight.

Since then the days had come and gone
alike, as one long, painful dream. In
vain had anxious parents and sympathetic
friends tried every expedient to waken
within her the old passion for music. In
those other days Agnes' sweet voice had
thrilled large audiences. The congrega-
tion of the First church had not forgotten
the Easter solo of the last year. They
were eager to secure the same singer for
the coming Easter. But Agnes refused
to see anyone, and in answer to all
entreating letters on the subject wrote a
firm refusal—it was impossible for her to
sing.

When the church bells rang on Easter
morning there was no music in the chimes
to the heavy hearted girl. Their notes
jarred upon her sorrow. The perfume of
the Easter lilies in the sunny bay window
of the breakfast room oppressed her.
When a robin, one of the earliest of the
season, alighted in a tree by the open
casement and poured forth his little soul
in a burst of melody, Agnes involuntarily
put her hands to her ears. At last she
impulsively donned her wraps and fled
from the house.

The home of the Norwoods was well out
on the outskirts of the city. Only a mile
away was beautiful Woodvale cemetery.
Spring had come early. The snow was
nearly gone and in places the ground was
already quite dry. This Easter morning
a south wind blew softly and the warm
sun lingered longingly on the low mounds
in the sacred city of the dead. It shone
with particular brightness on one marked
by a slender granite shaft.

Agnes entered the cemetery and walked
rapidly down the avenue that lay nearest
this mound. Leaning her head wearily
against its monument, she remained mo-
tionless, with closed eyes and drawn
brows. What though the south wind
caressed so lightly the silent home of the
sleepers? It would pass on to riot among
scenes of gaiety. The sunshine, too,
would soon desert them for some less
lonely spot. Darkness would come, as the
darkness that had settled over her life.
How could there be light hearts and songs
and gladness in this sad, sad world? Life
was so pitifully brief, and death was over
all. Yes, life itself was death. They had
tried to tell her that she would meet her
dearest again, but did they know? No,
no, they could not. And she was young
yet. How could she endure the long life
that stretched before her, the years that
must pass before she could interpret the
mystery of death? Oh, if she might
only receive some message, some least
token that Arthur still lived!

She shifted her eyes for a moment to
the blue sky and then brought them
wearily back to earth. Close by the mon-
ument a little pale flower, one of the

spring's first hepaticas, had pushed its
frail petals above the ground and was
lifting its tiny head to the sunlight.
Agnes bent over it and tenderly drew
away the dead grass. How came it there?
By human hand? No, it had risen from
the dead. "Risen from the dead," she
repeated softly to herself. Yes, it had
died with the summer, but only to await
earth's resurrection day, when from the
germ of its old dead self sprang this won-
drous new life, this pure and beautiful
thing. She touched tenderly its petals
with a strange feeling of awe. It seemed
to breathe out a message of hope and
trust, a token of God's own love. It told
her of the new life that begins with the
decay of the old, of immortality beyond
death, of an eternity when time shall end.
It whispered of a faith that is stronger
than sight, and of a God of love.

Long Agnes knelt over the little blos-
som that spoke comfort to her soul, until
she had come to learn that life is not
death, but death is life; that love lives
beyond the grave, for it is eternal. Her
heart was softened at last. Then came
tears like rain—the first that had wet her
lashes since that horrible day. When,
after a long time, the passion of her sobs
had worn away, she arose and left the
cemetery, taking with her the little
flower that had brought her a message
from him who, through the doorway of
death, had passed into life.

The morning service in First Church
was not yet concluded when a little figure
clad in black entered softly and stole into
the first vacant pew. The beautiful
Easter lilies at the altar had a message
for at least one soul in the congregation
that morning. From the pulpit came the
closing words of the sermon: "Because I
live, ye shall live also." They are the
words of the Son of God himself, who
hath tasted death for every man. In the
face of this divine attestation to the im-
mortality of the soul, we cannot but cry:
"O Death, where is thy sting? O Grave,
where is thy victory?"

Upon the hush that followed the minis-
ter's words came the strains of the great
organ, which swelled and throbbed with
its glad message. The congregation arose
and sang: "Christ, the Lord, is risen To-
day."

With the last stanza, a voice of won-
derful power and pathos rose above the
others, and the people turned to see a
fair, sweet face, upon which shone the
light of a faith triumphant, as Agnes
Norwood sang the words, as she had
never sung before:

"Made like Him, like Him we rise,
Ours the cross, the grave, the skies."

—The Housekeeper.

Why Not?

This season, why not try to have some
lighter cooking utensils in the farmhouse
kitchen? Granite ware, for instance.

"It burns out," you say.

Of course it does, but what of it? "Is
not the life more than meat?" And is
not the health of the farmer's wife more
than a lot of old junk, in the way of
kettles? Those old iron pots, relics of
our forbears, are regular woman-killers—
always were. They were bought to last,
and they have lasted—outlasted the
original bride, and several generations of
her, even unto the enlightened twentieth
century.

I have been incensed to see a frail little
mother lugging and tugging at a ponder-
ous oval "soup-kettle," that needed a
traveling crane to handle it properly, a
soup kettle that has already lived 40 years
too long. But "it has always been in the
family," and her husband does not see
why she makes such a fuss about lifting
it.

My word, ancestor worship in the
kitchen, helps to keep the doctors and
the druggists—and the makers of monu-
ments.

Precedent may be all right, in diplo-
matic circles, but in the farmhouse
kitchen, what someone has called, "un-
common sense," is the safer guide.—Jean
Uruhhardt.

Coloring and Dyeing Eggs.

Eggs can be easily dyed for Easter. The
aniline dyes are useful for the purpose.
The simplest plan is to boil the eggs in
water to which the desired dye has been
added. To produce mottoes and mono-
grams, draw upon the shell with simple
oil and a camel's hair brush the name or
design desired, then place it in the color-
ing fluid. The places touched with the
oil will remain white, while the remainder
will be dyed. Wrapping in calico which
is brightly colored and then boiling in lye
water will also produce variegated colors
on the shells of the eggs. Eggs may be
colored brown by boiling in strong coffee;
yellow by boiling with onion peelings.

Cochineal will color them any shade from
pink to crimson, according to the quan-
tity used. Similarly, logwood chips may
be used to color any shade from port wine
to black. A little butter or oil rubbed on
the shell after being boiled gives a bright,
polished surface. Then, there are the
little papers of various designs and colors
which may be bought so cheaply. Direc-
tions accompany them and are very sim-
ple. It is safest not to eat any portion of
the egg to which the dye may have pene-
trated.

Lullaby.

Day has welcomed dusky even with a sigh;
Night has lit her gleaming candles in the
sky;

All the earth has sunk to rest
Like a snowbird in its nest,
Sleep, oh baby, on my breast,
Bye, oh Bye!

O'er the earth lie pearly drifts of whitest
snow,
Feathery blankets tossed from heaven
down below;

Underneath, so nice and warm,
Sleep, wee creatures, safe from
harm,
As thou, sleeping 'gainst my arm,
Baby Bye.

Watching o'er thee, how my heart is filled
with love;

Even so, the Father watcheth from above
O'er the least of creatures, here,
As o'er us, his children dear.
Sleep, my baby, never fear,
Bye, oh Bye!

—Grace A. Bostwick.

Bridal Superstition.

A January bride will be a prudent
housekeeper and very good-tempered.

A February bride will be a humane and
affectionate wife and tender mother.

A March bride will be a frivolous chat-
terbox, somewhat given to quarreling.

An April bride will be inconstant, not
very intelligent, but fairly good looking.

A May bride will be handsome, amiable,
and likely to be happy.

A June bride will be impetuous and
generous.

A July bride will be handsome and
smart, but a trifle quick-tempered.

An August bride will be amiable and
practical.

A September bride will be discreet,
affable and much liked.

An October bride will be pretty, coquet-
tish, loving, but jealous.

A November bride will be liberal, kind,
but of a wild disposition.

A December bride will be well propor-
tioned, fond of novelty, entertaining, but
extravagant.

Shell Necklaces.

What do you think the girls are wear-
ing now? Necklaces of shells.

They come from Honolulu and are as
beautiful as they are cheap, which is say-
ing a great deal in this era of exorbitant
prices, for they cost only \$1.50 each.
Nothing could be more beautiful in color
than these island chains, and they mea-
sure about two yards in length, making it
possible to wind them three times about
the neck.

Every pastel shade is represented and
the combination of wonderful blues and
greens, purples, pale yellows and luscious
rose tints are calculated to put a Queen
Trigger fish to shame. These necklaces
look particularly well on white gowns and
blouses, and are daintily exquisite.

The shells are so small and so wonder-
fully alive with color that the casual
observer wonders what on earth they are.
They are still uncommon enough to
attract much attention, for they are
obtainable only through a special agent.
They make especially pretty fan or
lorgnette chains and are most durable.

A Queen's Health Rules.

Her majesty, the Queen of Portugal,
plus her faith, it is said, to the following
mottoes:

Keep out of doors all you can. Breathe
outdoor air—live in it—revel in it. Don't
shut yourself up.

Build your houses so that the air supply
is good. Throw away your portieres and
bric-a-brac. Don't have useless trifles
round you.

Have a favorite form of exercise and
make the most of it. Ride on horseback
if you can, cycle if you cannot get a horse;
do anything to get out in the open air.

Drink little, and let that little be pure.
Don't try to dress too much, yet dress
as well as you are able. Wear everything
you can to make yourself lovely.

Domestic Hints.

EGG SAUCE FOR FISH.—Heat two cups of milk in a double boiler, and when nearly hot, stir in a rounding tablespoon of butter, a seasoning of salt and pepper and a beaten egg. When the egg has thickened stir in two hard boiled eggs chopped fine.

POTATO OMELET.—Mince a small onion, fry it brown in a tablespoonful of butter, turn in a cupful of hashed cold boiled potatoes and fry until they are brown. Make a plain omelet, and before folding sprinkle the potatoes over it.

MACARONI AND EGGS.—Cook macaroni until tender and place in a small baking dish. Beat together two eggs and half a cupful of milk, add salt and pepper and pour over the macaroni. Bake in the oven until the top is nicely browned.

PLAIN SPONGE CAKE.—Beat the yolks of four eggs light, add one cup of sugar and beat. Sift one cup of flour with one level teaspoon of baking powder and add to the egg and sugar, with one tablespoon of cold water and the lemon juice and grated rind of half a lemon.

LENTEN PIE.—One-half cupful of stoned and chopped raisins, one cupful of rolled cracker crumbs, two cupfuls of chopped apples, one-half cupful of brown sugar, a very little powdered cinnamon, cloves or mace, and one-half cupful of cider. Bake in a short crust. The pie may be served hot or cold.

HONEY CAKE.—Mix one cup of honey with a cup of sugar and one-half cup of melted butter, two slightly beaten eggs, a pint of flour in which has been sifted a teaspoonful of baking powder and a teaspoonful of caraway seeds. Mix these ingredients into a smooth batter about the consistency of sponge cake and bake in a moderate oven.

SWEET POTATO FRITTERS.—A pint of hot mashed sweet potatoes, two eggs, a cupful of flour, into which has been sifted a teaspoonful of baking powder, salt, and enough milk to make a batter. Drop the batter, a tablespoonful at a time, in deep fat, smoking hot, and cook to a light brown. Tomato sauce may be served with the fritters.

HAM IN VIRGINIA STYLE.—Soak a ham in cold water 24 hours, then cook in boiling water, allowing half an hour for each pound of ham. Let it cool in the water in which it was boiled, take out and strip off the skin. Cover with a paste of cracker crumbs and egg. Set in the oven, which should be quite hot, and bake 40 minutes. Serve cold.

FRIED APPLE AND BACON.—Cut good sour apples into half-inch slices without peeling, then cut out the cores from each slice. Allow a very thin slice of bacon for each slice of apple and fry until crisp. Keep the bacon on a hot dish and fry the apple until quite brown and arrange in overlapping rows across a small platter. Garnish with bacon. Dust the apple with powdered sugar.

LEMON JELLY.—Soak one-half box of gelatine in one cup of cold water for half an hour if the granulated kind is used, then pour on one cup of boiling water and stir until well dissolved; add one-half cup of sugar and the juice of two lemons after the dissolved gelatine has cooled a little. Strain into a mold and set away to harden. If liked, a tablespoon more sugar may be added.

CARROT SOUP.—Scrape and cut into small pieces six carrots, add an onion, sliced, two or three stalks of celery, and a leaf of parsley. Cover with boiling water and cook until the carrots can be rubbed through a sieve. Add a pint of hot milk and thicken with a tablespoonful each of flour and butter creamed together. Season with salt and red pepper and the least bit of nutmeg. Serve over cubes of fried bread, and dash paprika over all just before sending to the table.

APPLE CREAM PIE.—A variation from plain apple pie is prepared in this way. Line a deep pie-plate with pastry, building up a scalloped edge. Pare, core and cut good cooking apples into quarters or eighths, according to the size of the apples. Put a row around the edge of the plate and work toward the center until the plate is covered. Mix half a cupful of sugar (more, if the apples are very tart), a rounding tablespoonful of flour and an eighth of a teaspoonful of cinnamon and sprinkle over the apples; cover with rich sweet cream and bake in a moderate oven until the apples are done.

"Willie, I'll have to have my own glasses; I can't see through papa's; they make me dizzy." "I bet," said Willie, running to get his mother's glasses, "that the reason dad came home so dizzy last night was because he had been looking through different glasses."

Hints to Housekeepers.

Grained wood should be cleaned with cold tea.

Turpentine will remove ink from white woodwork.

Slow and long cooking will make tough meat tender.

Polish oilcloth with kerosene. Just a little should be used.

Pack oranges in fine, dry sand and they will keep for months.

Place a pan of cold water in the oven to cool it when it is too hot.

Always use a double boiler when cooking custards or cereals, both of which will burn easily.

Do not clean windows while the sun is shining on them if you do not want them to look smeary.

A dish of charcoal should stand in the larder all the year round. This will keep the meat sweet. Renew the charcoal occasionally.

To keep marmalade air-tight, beat well the white of an egg, with it brush over white paper and cover over the marmalade pot while preserve is still hot.

The colder eggs are the quicker they will froth. White of eggs may be beaten to a stiff froth by an open window when it would be impossible in a steamy kitchen.

Never use newspapers to wrap about food. A supply of paraffine paper is a real economy and convenience. Paper may be made transparent by saturating it with castor oil.

To make fly-papers, take equal parts of boiled linseed oil and resin, melt them and add some honey. Soak the paper in a strong solution of alum, then dry and apply the above.

Mats of asbestos that completely cover the dining tables are now manufactured. They are placed under the tablecloth to keep the heat of hot dishes from penetrating the polished wood beneath.

In paring fruit for preserving, use a silver-plated knife, and drop each piece as pared into a bowl of ice-cold water, which has been made acid by the addition of lemon-juice; it prevents the fruit from turning dark.

Flour raisins before adding them to cakes or puddings, in order to prevent their settling to the bottom. They are also much improved by cooking. Let them soak and slowly simmer until the skins are tender.

A Golden Rule for Clubs.

One of the things that the club is doing for women is the elimination of gossip. It gives her something besides personalities to think about, and helps her to be charitable to others. The following resolutions will be helpful in this direction:

"Whereas, we are all human and therefore love gossip, let us resolve:

"That we will cultivate a spirit of love and patience for every other woman in the club, as we wish it cultivated for us;

"That if we hear a word of criticism on another member, her words, actions or dress, we will not repeat it;

"That we will not answer such criticisms, except to say something good of her who is assailed;

"That we will make our club a place where helpfulness and kindness go hand in hand;

"That the Golden Rule is just as good a guide to club life as it is to home life; and that we will adopt and practice it."

Chaff.

He—Darling, I have loved you ever since first we met. She—Well, why didn't you say so long ago? Did you think I was a mind reader?

Mr. Simpson—Sam, is it true that you confiscate your neighbor's chickens? Sam—No, sah; I fricazees 'em.

Youth—What do I have to pay for a marriage license? Clerk—Well, you get it on the installment plan. Youth—How's that? Clerk—One dollar down and your entire salary each month for the rest of your life.

He may be all right to face the powder but when he kisses a lady the color leaves his face.

"This," remarked Mr. Sappyhead, "is my photograph with my two French poodles. You recognize me, eh?" "I think so," said Miss Sulfuric. "You are the one with the hat on, are you not?"

"Just think, children," said the Sunday school teacher, "all this happened more than 3,000 years ago." "Gee," exclaimed a small boy in an audible whisper, "but she's got a good memory."

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Agent of N. D. Rideout, Administrator of the Estate of H. J. Glenn, at Chico, Butte County, California

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The Markets.

San Francisco Produce Report.

SAN FRANCISCO, April 11, 1906.

CHICAGO WHEAT FUTURES.

Wheat futures in Chicago were as follows for the week named, price being for No. 2 Red per bushel:

	May.	July.
Wednesday.....	77 1/2 @ 77 3/4	78 1/2 @ 77 3/4
Thursday.....	77 1/2 @ 77 3/4	78 1/2 @ 77 3/4
Friday.....	77 1/2 @ 77 3/4	78 1/2 @ 77 3/4
Saturday.....	77 1/2 @ 77 3/4	78 1/2 @ 77 3/4
Monday.....	78 1/2 @ 77 3/4	78 1/2 @ 77 3/4
Tuesday.....	78 1/2 @ 77 3/4	78 1/2 @ 77 3/4

CHICAGO CORN FUTURES.

Prices of futures on No. 2 corn per bushel in Chicago were as follows for the week:

	May.	July.
Wednesday.....	45 @ 44 1/2	45 1/2 @ 44 1/2
Thursday.....	45 1/2 @ 44 1/2	45 1/2 @ 44 1/2
Friday.....	45 1/2 @ 44 1/2	45 1/2 @ 44 1/2
Saturday.....	46 1/2 @ 45 1/2	46 1/2 @ 45 1/2
Monday.....	46 1/2 @ 45 1/2	46 1/2 @ 45 1/2
Tuesday.....	46 1/2 @ 45 1/2	46 1/2 @ 45 1/2

SAN FRANCISCO WHEAT FUTURES.

The range of values in San Francisco for No. 1 White wheat per cental was as follows:

	May, 1906.	Dec., 1906.
Wednesday.....	\$1 27 @ 1 27 1/2	\$1 27 1/2 @ 1 27 1/2
Thursday.....	1 27 @ 1 27	1 27 1/2 @ 1 27 1/2
Friday.....	1 26 1/2 @ 1 27	1 27 @ 1 27
Saturday.....	1 27 @ 1 27	1 27 1/2 @ 1 27 1/2
Monday.....	1 27 @ 1 27	1 27 1/2 @ 1 27 1/2
Tuesday.....	1 28 @ 1 28	1 28 @ 1 28

Wheat.

The local demand for wheat shows very little change over the preceding one, and buyers are purchasing from hand to mouth, anticipating lower prices; the market runs along in a quiet way, but prices show no change. There is no doubt that buyers will shortly enter the market for wheat to keep mills in operation. There is very little export demand, and all flour ground is for home consumption. Reports from the northern part of the coast show the same characteristics in the market. Interior holders still anticipate higher prices and are consequently holding on to their wheat. Spring seeding in Washington, Idaho and Oregon is nearly finished and the acreage promises to be one of the largest on record. Fall wheat is in good condition. It is now developing that northern damage reports have been overdrawn and many acres supposed to have been ruined are reviving under the influence of warm growing weather. The export situation has not improved and no immediate prospect of improvement is apparent. The government crop report was issued Tuesday and although the trade was generally expecting a condition between 90 and 95, because of the popular belief in an unusually fine crop, the government represented the condition as 89.1 for growing winter wheat. These figures will probably have a bullish effect on the public mind, and may give a firmer tone to foreign markets as well. The bureau finds the average condition of winter wheat April 1 to have been 89.1 against 91.6 April 1, 1905; 76.5 at same date in 1904 and 84.1 the mean of the April averages of the last 10 years.

California Milling.....	\$1 37 1/2 @ 1 45
Cal. No. 1 shipping.....	1 27 1/2 @ 30
Northern Club.....	1 30 @ 32 1/2
Northern Bluestem.....	1 35 @ 37 1/2
Northern Red.....	1 25 @ 27 1/2

PRICES OF FUTURES.

Wednesday, at the forenoon session of Exchange cc., 1906, wheat ranged from \$1.28 @ 1.29 1/2.

Flour.

The flour trade, though better than it was a fortnight ago, is still comparatively quiet. Millers are hard put to it for orders, and none of them are able to find an outlet for all they have to sell. Some of the mills in the north are carrying such a load that they are cutting prices freely to reduce their stock. There is nothing special in the way of export demand. A few orders are being filled in Portland for Vladivostok account and it is reported that some more business can be consummated, but millers are very cautious in accepting any orders on account of 'exchange' that at present is not very safe in Siberia. Orders from Japan are small, but there evidently will be a resumption of shipments to that country before long. The country is not in affluent circumstances and has not been since the war and this is probably a good part of the cause of the low flour consuming power of Japan. China is still working against us on the boycott project and our trade has fallen off considerable with that country. Central and South America shipments average about 12,000 barrels per month, and no indications for heavier export can be noticed. Mills at Tacoma, Seattle and Portland are working part time; these comprise the large export mills of the Coast and they have felt the depression severely owing to China troubles.

Patents, California.....	\$4 55 @
Second Patents, California.....	4 40 @
Straights.....	4 00 @
Superfine No. 1.....	3 50 @
Superfine No. 2.....	3 00 @
Oregon Bakers'.....	4 10 @
Washington Bakers'.....	4 15 @
Eastern Patents.....	5 50 @

Barley.

Barley is at present very quiet. A limited amount of trade is experienced at the ruling figures, but there is no disposition to do business at any sacrifices whatever. Most of the trade at present is for local consumption and no speculative demand is noticeable. The conditions in the North are unchanged. Little remains in the interior, but some is stored at tide-water points in anticipation of shipments. Brewers are buying occasionally, but do not offer special inducements.

Brewing.....	\$1 25 @ 1 30
Feed, No. 1.....	1 18 1/2 @ 1 20
Feed, fair to good.....	1 15 @ 1 17 1/2
Chevalier, No. 1 to choice.....	1 30 @ 1 35
Chevalier, common to fair.....	1 20 @ 1 25
December.....	96 1/2 @

Oats.

The oat market has not changed materially from the situation in which it was last week. The market remains firm under a fair demand and limited supply, but not much speculative activity exists.

White oats.....	\$1 50 @ 1 60
Black oats.....	1 30 @ 1 35
Red oats.....	1 45 @ 1 50

Corn.

The corn market is toning up somewhat. Some varieties are advancing in values and a general strong upward tendency is noticeable. Large yellow has made an advance and the inside figures of Egyptian white and Kaffir are closing in.

Large White, good to choice.....	\$1 25 @ 1 35
Large Yellow.....	1 25 @ 1 30
Small Yellow.....	1 50 @ 1 55
Egyptian White.....	1 40 @ 1 42 1/2
Egyptian Brown.....	1 27 1/2 @ 1 35
Kaffir.....	1 40 @ 1 45

Rye.

Rye is becoming scarce on the market. The demand is, however, very limited and only for local needs. Any considerable trading would probably reveal much higher prices. Rye is now quoted at \$1.55 @ 1.60.

Good to choice.....	\$1 55 @ 1 60
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Buckwheat.

Buckwheat is very quiet, as scarcely any supplies remain and consumers are generally sufficiently supplied for their little needs. Some transactions have taken place at \$2.25.

Good to choice.....	1 50 @ 2 25
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Beans.

The bean situation has not changed materially during the last week. Trading goes on at a very limited rate, but selling pressure is not high and as a consequence values have remained practically as last quoted. Although the Eastern demand for beans has not been as great as was expected on account of warm weather during the winter months, dealers do not express great anxiety for the outlook of the bean situation. While the year's output of limas was unusually large, other varieties do not have to contend with this obstacle. The present dull state of the Eastern market is here ascribed to the cutting down of prices by the Michigan dealers and it is expected that the market will eventually recover from this influence.

Small White, good to choice.....	\$2 90 @ 3 25
Large White.....	2 25 @ 3 35
Pinks.....	1 50 @ 1 85
Pinks, damaged.....	1 00 @ 1 25
Bayos, good to choice.....	3 25 @ 3 40
Red Kidneys.....	3 50 @ 3 75
Reds.....	3 00 @ 3 25
Limas, Southern California.....	4 15 @ 4 25
Black-eye Beans.....	4 25 @ 4 50
Cranberry.....	3 20 @ 3 35
Garbanzas, small.....	3 10 @ 3 25
Garbanzas, large.....	3 85 @ 4 00
Horsebeans.....	1 25 @ 1 50

Dried Peas.

Dried peas are moving slowly. Limited supplies and little demand are responsible for the absence of speculative interest in this commodity. Prices are unchanged. Indications are for the usual output for the new season.

Green Peas, California.....	\$2 15 @ 2 50
Niles.....	1 90 @ 2 25

Hops.

Not much activity is noticeable in the hop market at present. The old crop has already supplied the bulk of the demand and the new crop is yet too far off to be the center of much interest. The change in weather has allowed pruning to commence and growers state indications to be that the roots have wintered well. As near as can be judged at this distance a good average crop is indicated.

Medium to fair.....	5 @ 6
Good brewing.....	6 @ 7
Prime.....	7 @ 8
Prime to choice.....	8 @ 9

Wool.

Spring shearing is now well under way again and continued mild weather has enabled shearers to work to the best of advantage. The new clip is considered to be of very satisfactory quality in most localities. Prices have remained during the week as last quoted. Some interior growers are holding out for higher prices.

FALL.

Humboldt and Mendocino.....	15 @ 16 1/2
Northern, free.....	14 1/2 @ 16
Northern, defective.....	11 @ 13
Middle County, free.....	10 @ 14
Middle County, defective.....	8 @ 10
San Joaquin and Southern, free.....	5 @ 10
San Joaquin and Southern, defective.....	7 @ 9

SPRING.

Nevada.....	15 @ 19
Southern.....	14 @ 16
Middle County.....	16 @ 18
Northern free.....	20 @ 22

Hay and Straw.

Shipments of hay to the San Francisco market continue to increase, the arrivals for the week ending Wednesday amounting to 4,250 tons, in comparison with 3,570 for last week and 3,050 for the week preceding that. In spite of all this increase the situation remains unchanged, and practically everything moves off at good figures. The present strength of the market has been reported in most sections, which fact has helped to draw supplies from many points outside the districts that generally supply the market. The demand is not for speculative purposes, but simply for meeting the daily consumption, which at present is good at all points. The dairy and stockmen are still using a little hay in spite of the fact that grass is plentiful. The demand for contracting work is good, and we find that many coastwise points in Oregon and California are relieving the market of quite a quantity every day. There is now no doubt but that the country will be cleaned out in readiness for the new crop, although a few months ago it was generally conceded we would have to face the largest carry-over stock that would have been noted for many years past.

Wheat, choice.....	\$14 00 @ 16 00
Wheat, other grades.....	9 00 @ 13 50
Wheat and Oat.....	9 00 @ 13 00
Tame Oat, fair to choice.....	8 50 @ 12 50
Wild Oat.....	7 50 @ 9 00
Barley.....	7 00 @ 9 50
Alfalfa.....	8 00 @ 11 00
Stock hay.....	7 40 @ 8 00
Straw, 1/2 bale.....	30 @ 50

Millstuffs.

There is not much activity in millstuffs recently, owing to poor demand on account of the use of green feed. However, a scarcity in bran is noticeable, which is ascribed rather to the inactivity of millers than to any particularly good demand. Shorts are also considered much stronger this week and an advance is to be expected in this commodity also.

Alfalfa Meal, 1/2 ton.....	\$21 00 @ 22 00
Bran, 1/2 ton.....	18 00 @ 19 00
Middlings.....	26 00 @ 29 00
Shorts, Oregon.....	20 00 @ 21 00
Barley, rolled, choice.....	25 50 @ 26 00
Cornmeal.....	27 50 @ 28 50
Cracked Corn.....	28 00 @ 29 00
Oilcake Meal.....	39 00 @ 40 00
Cocoanut cake or meal.....	24 50 @ 25 50

Seeds.

The seed market is unchanged. There is little or no demand for the seeds quoted, although some of the garden seeds have experienced a fair demand recently.

Alfalfa.....	\$12 50 @ 13 00
Flax.....	3 25 @ 3 50
Mustard, Yellow.....	3 75 @ 4 25
Mustard, Trieste.....	4 50 @ 4 75
Canary.....	5 @ 6 1/4
Rape.....	2 1/2 @ 3
Hemp.....	5 1/2 @ 6
Timothy.....	5 1/2 @ 6

Honey.

No activity in honey. The demand is very limited. Stocks are arriving very slowly, and it is thought that the amount on hand will be cleaned up by the time of the arrival of new honey on the market.

Extracted, Water White.....	4 1/2 @ 5
Extracted, White.....	4 @ 4 1/2
Extracted, Light Amber.....	3 1/2 @ 4
Extracted, Amber.....	3 @ 3 1/2
Extracted, Dark Amber.....	2 1/2 @ 3
Extracted, Hawaiian.....	2 1/2 @ 3
White Comb, 1-frames.....	10 @ 12 1/2
Amber Comb.....	9 @ 10

Beeswax.

Beeswax does not receive any attention at present. A small volume of business is reported in the light grades, but the darker varieties are not sought after.

Good to choice, light 1/2 lb.....	27 @ 28
Dark.....	25 @ 26

Live Stock and Meats.

The meat market has developed more prominent symptoms of weakness this week. Supplies have been arriving very freely and prices have started downward. Beef is quoted at a decline of 1/2c and mutton and lamb declined 1c. per pound. Veal is also weaker, although no quotable decline is apparent. The hog situation, however, remains unchanged. High prices and scarcity is still the case with hogs.

Allowing for the shrinkage of about 50%, which is exacted in buying cattle on the hoof, live cattle command as much or more per pound than dressed beef, the shrinkage exacted being the slaughterers' profit.

The following quotations for beef and mutton are based on prices realized by slaughterers from wholesale dealers:

Beef, 1st quality, dressed, net 1/2 lb.....	6 @ 6 1/2
Beef, 2nd quality.....	5 @ 5 1/2
Beef, 3rd quality.....	4 1/2 @ 5

Mutton—ewes, 90c; wethers.....	10 @ 10 1/2
Hogs, hard grain, 150 to 250 lbs.....	7 @ 7 1/2
Hogs, large, hard, over 250 pounds.....	6 @ 6 1/2
Hogs, small, fat, under 150 lbs.....	6 1/2 @ 7
Hogs, soft.....	5 @ 5 1/2
Veal, large, 1/2 lb.....	7 @ 8
Veal, small, 1/2 lb.....	8 @ 9
Lamb, spring, 1/2 lb.....	11 1/2 @ 12

Hides, Skins and Tallow.

The hide and skin market is considered stronger this week. Arrivals have been of a rather light character while the demand for hides has kept up well on account of the very good demand for leather. The Eastern market has been closely cleaned up and prices here have advanced in sympathy. Light steers hides and cow hides of all descriptions have advanced 1/2 cent.

Nothing but select hides, clean and trimmed, will bring full figures. Culls of all kinds either from grubs, cuts, hair slips, side brands or murrain, are not always readily placed at the lower figures.

	Sound.	Culls.
Heavy Steers, over 56 lbs.....	12 @	12 @
Medium Steers, 48 to 56 lbs.....	12 @	11 @
Light Steers, under 48 lbs.....	11 1/2 @	10 1/2 @
Heavy Cow Hides, over 50 lbs.....	10 1/2 @	10 1/2 @
Light Cow Hides, under 50 lbs.....	10 1/2 @	10 1/2 @
Stags.....	8 1/2 @	7 1/2 @
Wet Salted Kip.....	12 @	11 @
Wet Salted Veal.....	13 @	12 @
Wet Salted Calf.....	14 @	13 @
Dry Hides.....	22 @	20 @
Dry Kip and Veal, 11 to 16 lbs.....	22 @	18 @
Dry Calf, under 4 lbs.....	24 @	22 @
Pelts, long wool, 1/2 skin.....	1 50 @ 2 00	
Pelts, medium, 1/2 skin.....	90 @ 1 25	
Pelts, short wool, 1/2 skin.....	50 @ 75	
Pelts, shearling, 1/2 skin.....	20 @ 40	
Horse Hides, salted, large prime, each.....	3 25 @	
Horse Hides, salted, medium.....	2 75 @	
Horse Hides, salted, small.....	2 25 @	
Horse Hides, dry, large.....	1 75 @	
Horse Hides, dry, medium.....	1 50 @	
Horse Hides, dry, small.....	1 25 @	
Tallow, good quality.....	4 @ 4 1/2	
Tallow, poorer grades.....	3 1/2 @ 3 3/4	

Bags and Bagging.

The bag market continues strong with an upward tendency. A slight advance on Calcutta grain bags is quoted this week. Trading has been more brisk and future contracts are becoming more frequent. However a great number of bag users prefer to wait longer anticipating lower prices.

Bean Bags.....	5 1/2 @ 6
Fruit Sacks, cotton, No. 1, 80x14; No. 2.....	7 1/2 @ 8
Fruit Sacks, jute, as to quality.....	6 1/2 @ 7 1/2
Grain Bags, Calcutta, 22x36, spot.....	7 1/2 @ 7 3/4
Wool Sacks, 4 lb.....	35 @ 36
Wool Sacks, 3 1/2 lb.....	32 @ 33

Poultry.

The poultry market is strong. Receipts both from the East and local supply centers have been somewhat lighter this week. At the same time the Easter demand is making itself felt more strongly as Easter approaches. There is a very active demand for fancy stock of all descriptions. Game has been in heavier receipt and prices have declined somewhat on ducks and geese.

Turkeys, dressed, 1/2 lb.....	19 @ 22
Turkeys, choice Young, 1/2 lb.....	15 @ 18
Turkeys, live gobblers, 1/2 lb.....	15 @ 18
Turkeys, live hens 1/2 lb.....	18 @ 20
Hens, small, 1/2 dozen.....	5 00 @ 5 50
Hens, large.....	6 00 @ 7 00
Roosters, old.....	5 00 @ 5 50
Roosters, young (full-grown).....	7 00 @ 8 00
Fryers.....	6 00 @ 7 00
Broilers, large.....	5 00 @ 6 00
Broilers, small to medium.....	3 00 @ 4 00
Ducks, old, 1/2 dozen.....	5 00 @ 7 00
Ducks, young, 1/2 dozen.....	6 00 @ 9 00
Geese, 1/2 pair.....	2 00 @ 2 50
Goslings, 1/2 pair.....	2 50 @ 3 00
Pigeons, old, 1/2 dozen.....	1 00 @ 1 10
Pigeons, young.....	2 00 @ 2 50

Butter.

The butter market is firm. Receipts have been up to standard and the good demand has been sufficient to keep supplies from piling up. Considerable attention has been paid to the cheap-priced lines, and trading in these lines has been brisk.

Creamery, extras, 1/2 lb.....	23 @
Creamery, firsts.....	21 @
Creamery, seconds.....	20 @
Dairy, select.....	20 @
Dairy, firsts.....	19 @
Dairy, seconds.....	18 @
Mixed Store.....	17 1/2 @

Cheese.

Trading in cheese is active since the recent declines quoted. A good demand is experienced and a firmer tone to the market has developed. Prices remain as last quoted and with an upward tendency.

California, fancy flat, new.....	12 @
California, good to choice.....	11 @
California, fair to good.....	10 @
California, "Young Americas".....	12 1/2 @ 13
Eastern, new.....	15 @ 16

Eggs.

Eggs are very firm and trading has been brisk during the last week. Storing has been going on at a good rate and has succeeded in taking away most of the stock offered at the inside figures. The Easter demand is making itself felt strongly and some shipping northward is reported, but owing to the high prices prevailing there seems to be no tendency to run above the present outside figures. A decline after Easter is probable, as storage buyers are looking for lower prices before the season advances much further.

California, select, large, white and fresh.....	19 @ 20
California, select, irregular color & size.....	17 1/2 @ 18 1/2
California, good to choice store.....	16 @ 17 1/2
Eastern firsts.....	15 @
Eastern seconds.....	14 @

Potatoes.

The potato market seems to have recovered to some extent from the bad condition into which it was plunged a few months ago. Stocks on hand have reduced to something like normal proportions and the demand has improved considerably. The large stocks of potatoes that were stored in Stockton warehouses instead of being left along the river have been thus saved from possible damage by the floods. It is reported that this large quantity of potatoes has diminished by one-half, and this has given holders a more secure feeling. Quotations have consequently developed a firmer tone and advances in some varieties are noted.

River Burbanks, 3 cental	70	@	90
Oregon Burbanks	1 00	@	1 25
Tomatoes	90	@	1 00
Sweet Potatoes	—	@	2 00
Early Rose, Oregon	1 00	@	1 25
Early Rose, California	1 00	@	1 25

Vegetables.

The vegetable market has remained weak since the last declines in quotations. Favorable weather has been the cause of increased arrivals of nearly all varieties. However, there has been no declines reaching below the inside figures. Asparagus was only saved from rapid decline by active buying on the part of canners. Rhubarb and peas showed considerable weakness. Onions, however, seem to be climbing into a much better position. Demand for onions has much improved and holders who have already held for so long do not seem to be anxious to sell their holdings. Conditions point to a better market for onions.

Celery, 3 dozen	40	@	50
Radishes	10	@	—
Lettuce	10	@	15
Asparagus, 10 lb.	5	@	7
Rhubarb	50	@	1 00
Green Peppers, southern	20	@	—
Cucumbers, hothouse, 3 dozen	75	@	1 50
Summer Squash, southern	2 00	@	—
Turnips, yellow, 3 sack	1 50	@	2 00
Turnips, white, 3 sack	1 25	@	2 00
Cauliflower, 3 dozen	40	@	1 00
Beans, String, 10 lb.	15	@	20
Cabbage, choice garden, 100 lbs.	85	@	1 25
Egg Plant, 10 lb.	10	@	15
Garlic, 10 lb.	4 1/2	@	5
Onions, Oregon, 3 ctl.	1 00	@	1 50
Onions, Australian, 3 ctl.	3 25	@	—
Peas, Green, 10 lb.	4	@	5
Tomatoes, 3 box or crate	1 00	@	1 50
Artichokes, No. 1	30	@	40
Artichokes, No. 2	20	@	30
Carrots, 3 sack	20	@	1 00
Hubbard Squash, 3 ton	25 00	@	—
Horse-radish, 3 ctl.	7 00	@	8 00

NOTE.—Large boxes are what are known to the trade as "pay boxes," which have to be returned or paid for. They are open top with hand holes in the ends, and weigh when filled from 50 to 60 lbs. gross. Small boxes are free boxes, about the same as the regular fruit box, weighing when full from 30 to 35 lbs. gross.

Fresh Fruits.

The fresh fruit market is still confined to apples and a few Winter Nells pears. Apples are running very low and prices are advancing accordingly. Favorable weather for apple selling has increased the demand, and this, taken with the limited supplies, is pushing quotations ahead. Strawberries have commenced to arrive and are selling at \$2.50 per drawer.

Apples, choice to select, 50-lb bx	1 50	@	2 50
Apples, good to choice, 50-lb. box	75	@	1 50
Pears, Winter Nells	2 75	@	—

Dried Fruits.

The dried fruit market continues very strong. All lines are getting scarce as the end of the season approaches. Limited supplies do not seem to prevent speculative interest; on the contrary, dealers buy very greedily at the advanced prices. Apricots, peaches, prunes and white figs have all advanced materially during the last week. Pitted black plums have disappeared from the market altogether and are no longer quoted. Reports concerning the growing crop of apricots confirm the belief that the apricot crop will be only about 25 or 30% of a full crop. A feature of the New York market this week was the speculative interest in apricots occasioned by the reports of crop shortages, as well as the low supplies on hand.

EVAPORATED OR BLEACHED.

Apples, 50-lb boxes, rings, pressed, good to choice	10	@	10 1/2
Apples, extra choice to fancy, 50-lb boxes	10 1/2	@	10 1/2
Apples, Royal, good to choice, 10 lb.	10 1/2	@	11
Apples, Royal, fancy	12	@	13
Figs, 10-lb box, 1-lb cartons	55	@	62 1/2
Nectarines, White and Stanwick, 10 lb.	8	@	8 1/2
Nectarines, red, 10 lb.	8	@	8 1/2
Peaches, unpeeled, good to choice	9 1/2	@	9 1/2
Peaches, unpeeled, fancy to extra fancy	9 1/2	@	9 1/2
Pears, standard, 10 lb.	10	@	12
Pears, choice to fancy	7	@	8
Plums, Red, pitted	6	@	8
Plums, Yellow, pitted	5 1/2	@	8 1/2
Prunes, Silver, good to fancy	5 1/2	@	8 1/2
Prunes, in bags, 4 sizes, —@—c; 40-50s, 5 1/2@5 3/4c; 50-60s, 4 3/4@5c; 60-70s, 4 1/4@4 3/4c; 70-80s, 4@4 1/4c; 80-90s, 3 3/4@3 1/2c; 90-100s, 3@3 1/4c; small, 2 1/2@3c.	—	@	—

COMMON SUN-DRIED.

Apples, sliced	5 1/2	@	6
Figs, White, in bulk	4	@	4 1/2
Figs, Black	3	@	3 1/2

Raisins.

Raisins have not changed in quotations, but it is known that supplies will probably be cleared up this year before the new crop makes its appearance. At present, interest runs high over future raisins. No dealer knows where he is, and rumors

are rife concerning high and low prices paid for a term of year's contract. It is reported that one firm is paying 34c., but the size of these contracts is not known. What will eventually develop and emerge from the turmoil it is hard to predict, but present conditions seem to greatly favor the grower.

(Fresno delivery except otherwise specified.)

London Layers, 2-crown, 20-lb box	1 50	@	—
London Layers, 3-crown, 20-lb box	1 60	@	—
Fancy Clusters, 4-crown, 20-lb box	1 75	@	—
Dehesas, 20-lb box	2 00	@	—
Imperial, 20-lb box	2 50	@	—
2-Crown Standard loose Muscatel	5 1/2	@	—
3-Crown Standard	5 1/4	@	—
4-Crown Standard	5 1/2	@	—
Seedless Thompsons, 50-lb boxes	4 1/2	@	—
Seedless Sultanias	4 1/2	@	—
Seedless Muscatels	—	@	—
Fancy, 16-oz. Seeded	6 1/2	@	—
Choice, 16-oz. Seeded	6 1/4	@	—
Fancy, 12-oz. Seeded	5 1/4	@	—
Choice, 12-oz. Seeded	5	@	—
Fancy Seeded, bulk	6 1/4	@	—
Choice Seeded, bulk	6	@	—

Citrus Fruits.

Supplies of oranges have not been as heavy as formerly and favorable weather has created a very strong demand. Sound varieties are in excellent demand and prices all along the line manifest a strong upward tendency. Lemons are stronger, owing to a better demand. Grape fruit remains firm under limited supplies and a fair demand.

Oranges, fancy	3 25	@	3 75
Oranges, choice	1 75	@	2 50
Oranges, standard	1 25	@	1 50
Oranges, Seedlings	1 50	@	2 00
Lemons, California, fancy, 3 box	2 50	@	3 00
Lemons, California, good to choice	1 25	@	1 75
Lemons, California, standards	1 00	@	1 50
Grape Fruit, 3 box, new	1 00	@	1 50
Grape Fruit, seedless	2 00	@	3 00
Limes, 3 box	4 00	@	5 00

Nuts.

Nuts are advancing steadily. There is a very good demand for all descriptions and supplies have commenced to run low. In addition to this, the California crop has been much damaged, and the year's supply will be low. The European crop is also known to have been damaged. These three factors have operated quite strongly to advance the price of almonds.

Peanuts, fair to prime	4 1/4	@	5 1/4
Cal. Walnuts, No. 1 soft shell	—	@	13
Cal. Walnuts, No. 2 soft shell	—	@	9
Cal. Walnuts, No. 1 hard shell	—	@	12 1/2
Cal. Walnuts, No. 2 hard shell	—	@	8 1/2
Almonds, IXL, 10 lb.	—	@	13
Almonds, Ne Plus Ultra, 10 lb.	—	@	12 1/2
Almonds, Nonpareil, 10 lb.	—	@	13
Almonds, Langue-doe, 10 lb.	—	@	8 1/2
Almonds, Golden State, 10 lb.	—	@	9
Hard Shell, 10 lb.	—	@	6

WOOL GROWERS SALE.—Marysville Democrat, April 9: At the session of the Wool Growers' Association, May 11 was decided upon as a date for the sale of the spring clip of wool. The spring sale at Davisville will be held on May 25. Cline Bull spoke in favor of organizing a central association, to be composed of the separate organizations now in existence. H. Cornforth called the attention of the meeting to the fact that the wool on storage is insured for only 16c. a pound, whereas it is worth now from 20 to 25c. The rules under which sales will be made in future may be somewhat different, as it was decided the executive committee should hereafter make the rules and announce them before the sales. It seems that the buyers have objected to the prohibition of private sales, and for this reason it may be that where agreed upon members of the association may offer their holdings at private sale, but not during the progress of the regular sale.

PLANTING SUGAR BEETS.—Tulare Register, March 30: P. J. S. Montgomery is superintending the planting of a large acreage to sugar beets for the Tagus Sugar Beet Co. A big traction engine is the principal factor in the work, cutting up 30 acres a day. This traction engine is built for three more similar plows, giving a capacity of 60 acres a day. There will be several hundred acres planted.

"Oh, George," murmured the sweet thing, reproachfully, "what would papa say if he knew that you ever touched liquor?" "He has discovered it already, dearest," admitted her flame, sadly. "Mercy! And what did he say?" "He said: 'Well, George, I don't care if I do.'"

The Minister—And does your papa say grace at the table, too? The Angel Child—Yes, sir, but he doesn't say it like you do. The Minister—What does he say? The Angel Child—He sits down an' looks around an' says, "Good Lord, what a dinner?"

She—Some say you married me for my money, and some say you married me for my looks; now, tell me truthfully, what did you marry me for? He—I'll be blest if I know.

The two grizzly bears had just boarded the ark. "Whose chauffeurs are they?" asked Noah.

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Vegetable Soils of California.	Cabbage Family.	Rhubarb.
Garden Irrigation.	Carrot, Parsnip, and Salsify.	Spinach.
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Cultivation.	Chicory.	Tomato.
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The Planting Season.	Egg Plant.	Vegetables for Canning and Drying.
Propagation.	Lettuce.	Seed Sowing in California.
Asparagus.	Melons.	Garden Protection.
	Onion Family.	Weeds in California.
	Peas.	

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DAMAGE TO ALFALFA FIELDS.—Sutter County Farmer, April 6: The break in the Bear river levee above Nicolaus, which went out the first high water this season, has had the effect of filling up the tule basin in southeast Sutter and backing up the water in the section between Nicolaus and Vernon. It has been very high during the week and while all stock, etc., was taken care of, much damage has been done to the alfalfa fields where the first crop would soon be ready to cut. The water will not only destroy this crop, but may kill out the alfalfa for the time being and make feed short there this spring.

ORCHARD SALE.—San Bernardino Sun, April 8: The orange orchard of S. Little, in West Highlands, comprising 20 acres of citrus trees, has been sold to a Mr. Elberts. The price paid for the land is given at \$20,000.

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Notice to Stockholders of Century Mercantile Company.

Notice is hereby given, that in pursuance of a resolution and order by the Board of Directors of the Century Mercantile Company, a corporation organized and existing under the laws of the State of California, unanimously adopted at a meeting of said Board, duly and regularly called and held on the 1st day of March, 1906, at the office of said corporation, No. 14 Sansome St., in said City and County of San Francisco, State of California, all the members of said Board being present and acting, a special meeting of the stockholders of said Century Mercantile Company is hereby called and will be held at the office of said corporation, No. 14 Sansome St., in said City and County of San Francisco, State of California, said place of meeting being at the principal place of business of said corporation, and at the building where the Board of Directors usually meet, on Wednesday, the 16th day of May, 1906, at 10 o'clock A. M. of said day, for the purpose of considering and acting upon the proposition to increase the capital stock of said corporation from \$20,000.00, divided into 2,000 shares of the par value of \$10.00 each, to \$100,000.00, divided into 10,000 shares of the par value of \$10.00 each.

By order of the Board of Directors of Century Mercantile Co.
Dated March 1st, 1906.
J. H. CONGDON,
Secretary of Century Mercantile Co.
ALBERT C. AIKEN, Attorney-at-Law, No. 802 Mills Bldg., Attorney for said Corporation.


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Albany, N. Y. 77 Park Ave., March 8, 1906.
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FRUIT MARKETING.

What the Fruit Distributors Are For.

Lieutenant-Governor Alden Anderson, of Sacramento, has given the *Lodi Sentinel* a lucid account of the operations of the Fruit Distributory, and as many of our readers have probably a hazy idea of the aims and functions of the organization we print the description in the interest of clearer conceptions:

OBJECTS OF ORGANIZATION.—The California Fruit Distributors is composed of growers, shippers and co-operative associations engaged in the deciduous fruit business. They were organized in May, 1902, and immediately assumed all the functions and duties of the California Growers and Shippers' Association, together with the greatly enlarged powers, duties and responsibilities, their business being, not only to give information in regard to shipments, diversions, etc., but in addition thereto to endeavor to secure an even distribution of California fruits to all markets, to the end that it would not be made to compete against itself.

The organization is in reality a clearing house for eastern shipments. They do not purchase or own a pound of fruit themselves, but act as an agency for the different growers and shippers and associations working through them who make their own carload shipments. When a car is loaded the shipping documents are endorsed over to the California Fruit Distributors, which, together with the manifest and all their pertinent information regarding the contents thereof, goes to the company's head office in Sacramento. The car is then disposed of for the account of party loading same, the management, of course, endeavoring to place the fruit in the best market, taking into consideration the variety, its degree of ripeness and general quality; and to do this they must use their acquired knowledge of the needs and requirements, prejudices and local or domestic supplies of the different markets, together with previous shipments going thereto as the basis of action.

EQUALIZING SHIPMENTS.—Before the organization of the present company those engaged in the shipping of fresh fruits from this State labored under many disadvantages that are now eliminated. Competition for sales was keen, with no regulation whatsoever of shipments. Each one who shipped endeavored as much as possible to keep his business from his competitor, with the result, for instance, that a city like Minneapolis, where three cars of fruit a day might sell at good figures, was liable to have three times that much sent in by different firms at one time, which would necessitate the selling price being out to a minimum, while a city like Pittsburg might at the

same time be without any fruit, whereas, an equalization of shipments to the two markets would have meant remunerative and satisfactory prices to all concerned. Then, again, when a market was in good shape, and the sale of a car would bring satisfactory prices, the parties representing different interests in that city would immediately wire out to their shippers in California, "Market in fine condition," advise diversion and immediate shipment of a large quantity, and the result was that all shippers were liable to take the same action; in a few days instead of having a good market with fair returns there would be a demoralized market and serious loss. This condition of affairs would shift from point to point. When any perishable fruit market gets demoralized, unless there is a great subsequent scarcity, it is extremely difficult to again raise the level of price. Those who have been long in the business can well remember the inevitable 'red ink returns' of a few years ago.

The expense of doing business is largely minimized. The saving in mail and telegraphic expenses alone practically pays the expenses of the organization.

Membership in the association is not qualified by volume of shipment. The shipper of one car is given as much consideration as the shipper of 100 cars. There are eleven directors, each of whom has an equal vote and voice in the fixing of policies and the outlining of general business directions.

System and organization are essential for the best results and continued success in any undertaking, and the Distributors when formed filled to a high degree the long-felt want in the fresh fruit shipping line.

UNITY OF ACTION NECESSARY.—The increase in the planting of fruit in other and competing horticultural districts makes it more necessary now than ever before that those engaged in the business in this State should work closer together for the benefit of the industry at large. It is only by co-operation in shipping that the very best results can be had—first, by an even and proper distribution of the product shipped, comparatively and by varieties to the several markets; and, second, by the working up, exploiting and opening up of new consuming markets. That system and organization are necessary for best results is incontrovertible, and the California Fruit Distributors' only desire is to work along the lines that experience has shown to them to be the best. It is the principle involved, and not any particular policy, that guides those affiliating with the company in their work; their declaration practically is, "We want unity of action; if one system is not the best a better one should be devised; if one management is not good, another one should be substituted, but all for their own best interests should work together."

The success of the company thus far has redounded, not only to the benefit of those affiliating with it, but to all engaged in the industry. This fact has been very marked up to a present time because of the small percentage not affiliating, based upon the total volume of shipments. Should the outside percentage, as a whole, increase materially, it would lessen the possibility of comparative equal distribution to the same degree that such shipments increased.

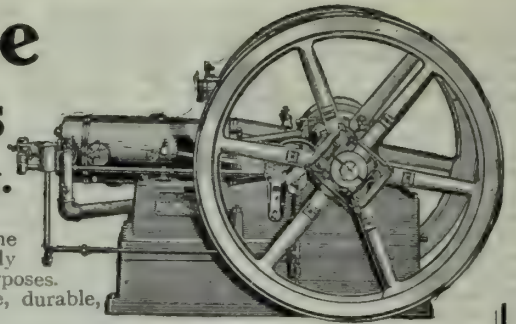
The organization believes in publicity. Although a private enterprise, it has always given to the public press all available fruit news without reservation. It gives the total number of cars by varieties shipped daily from the State as collected and compiled by the company, and also gives the daily auction sale results of all its cars at all auction markets, as well as all other pertinent and valuable information coming to them during the season.

The company is not militant. It seeks not to pull down but rather to build up. It needs sympathy and support, and the logic of facts and reason and self-interest clearly and only indicate that they should be freely given. Its support in the past has been very satisfactory as a whole, and it is stronger today, in harmony of action, than at any time since its organization.

OPENING NEW MARKETS.—It has accomplished much for the expedition of shipments and the improvements of transportation service. It has opened new markets, and now places fresh California fruit in carload lots in 128 different cities. They hope to do very much more along the same lines, and have no hesitancy in asking for moral support in their endeavors.

The company has no ulterior motives or designs. It cares not in whose cars or on what railroad line the fruit is loaded. It only demands a perfection service. The company has never kept but one set of books since its organization, and these books are open for inspection to any interested party at any and all times.

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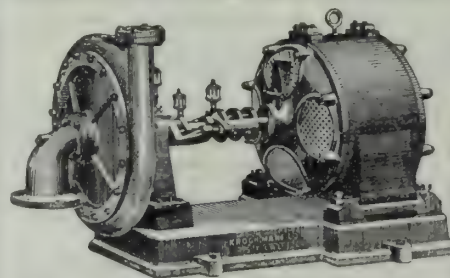
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THE POULTRY YARD.

California's Opportunity in Poultry.

The editor of the Jubilee Poultry Journal indulges in these poultry figures:

A well-organized and rightly bred hen should lay 15 dozen eggs per year—a total of 180 eggs. The cost of keeping an adult fowl for one year is placed at \$1, some authorities claiming a little more, some a little less. If \$1 is right for cost, and 15 dozen is right for output, the cost per dozen eggs is about 7c.; however, to be very conservative, estimate the average number of eggs per year at 144, or 12 dozen, and the cost per year per fowl at \$1.20—a flat cost of 10c. per dozen eggs. Cost at 10c., average return at 25c.—a gross return of \$1,000,000 and a net profit of \$600,000 on eggs alone. The profit on the fowls marketed considerable, we will, however, for argument's sake, allow that the net return from fowls marketed equals the cost of producing the fowls and bringing them to maturity, or to a laying age—that is to say—the carcass of a hen is worth all that it cost to produce the chick and bring it to a laying age, and at the laying age we begin to compute the cost of keep at \$1.20 per year.

In the Santa Clara valley there are tens of thousands of acres of orchards, strictly and exclusive orchard properties, put to absolutely no other use than producing the fruit. Tributary to Sunnyvale, and within a marketing distance, there are thousands and thousands of acres of such orchard properties owned and operated by thoroughgoing and successful orchardists, paying properties that are a credit to the valley; but, if all of these properties can be made doubly productive, what is the result? If every acre should produce double the crop of fruit without interfering with the price—if every acre made double the profit what would be the result? If we take, for instance, a territory three miles in each direction, a territory of some 20,000 acres is included, allowing that only one-fourth of this territory would be available even under the most favorable circumstances, there still remains an available territory of 5,000 acres, easily tributary to one center, one market, one city. If it were possible to realize a net profit of \$200 extra from each of these 5,000 acres there is an extra profit to the community of \$1,000,000. Let us see how we get that extra profit of \$200 per acre. We get it from the poultry. To explain:

The number of chickens it is advisable to keep on one acre of ground is a much discussed question. The number varies greatly with the breed, the climate, the soil, and the care. As many as 500 are sometimes kept on one acre, and 200 per acre, or 1,000 fowls on a five-acre tract allows ample room for the runways, and ample room for the home place, lawn, garden and all buildings. On a poultry farm of 10 acres, at least 2,500 fowls can be kept to splendid advantage. If we accept 200 as a very conservative number, it will be necessary to realize a net profit of \$1 per year per fowl to realize the extra \$200 per acre. To go back again to our figures on egg production, assuming that the average yield will be 12 doz. eggs per year at an average price of 25c. the gross yield per year per fowl will be \$3. The cost was hereinbefore computed at \$1.20 per year per fowl. The gross profit would therefore be \$1.80 per year per fowl, and from this should be deducted all other expenses, such as interest on investment, depreciation, taxes, hired help, and all small items. All of these should not exceed 30 cents per fowl, and with the most careless and shiftless management the net profit per fowl per year should not be reduced to so low an amount as \$1. One dollar per fowl, 200 fowls per acre, \$200 per acre.

Very fortunate for the future greatness of the valley, the busy season with poultry, the hatching season, and the high-priced-eggs season occurs at the time when the orchardists are not rushed with the care of fruit. The care of fruit occurs at a time when poultry needs less attention, an ideal combination, a combination which will mean millions to Santa Clara Valley ranchers and orchardists when they once awaken to the opportunities.

California pays about \$5,000,000 to easterners every year for poultry. Why not have that \$5,000,000 sent broadcast over the State? Why not have every likely poultry center benefited by that much? If, for instance, Sunnyvale could see its opportunity and profit by it, think what a tremendous thing it would be for the town and its people. Think of the buying ability of the producers! Think of the cash that would be received every day, approximately \$3,000 every day of the world added to the currency of the town; spot cash customers, prosperous customers, for every merchant, every enterprise.

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Osceola, Ia., Jan. 15, 1906.

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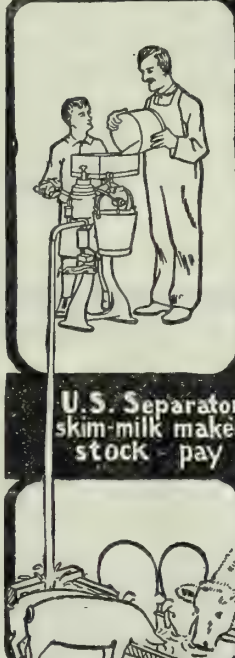
The cream is clear profit. I make over \$40.00 a cow clear a year. I don't feed any grain, so I consider I am doing well. If I didn't have over 12 cows I believe I could get good interest on my investment if I had paid \$500.00 for a U. S. Separator. I keep books, so there is no guess-work about it.

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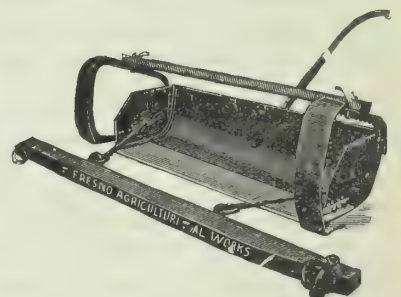
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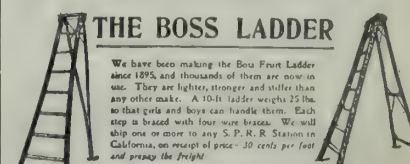
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THE POULTRY YARD.

Poultry Suggestions.

TO THE EDITOR: The practical poultryman—the one who looks after the details of his business and who, personally, performs the multitude of duties that hourly call for his attention—is a very busy man these spring days. One engaging in this business must make up his mind to persevere, and, if complete success does not crown his efforts, to "try, try again."

In the work of caring for fowls there is much to compensate for the weariness that is sure to come, day by day, and often vexatious disappointment. Here one finds a good training school, in which desirable elements of character are developed and strengthened, if the man is not one of the faint-hearted kind.

As to incubation, carefulness is required and a good memory.

Much responsibility attaches to this department of the work. A careless, forgetful person may easily lose a hatch of excellent eggs through simple neglect. Exactness is required.

The same may be said of all departments of raising chickens. Then there are the qualities of gentleness, neatness, promptness, kindness, thoroughness, economy in selecting food and the wise disposal of eggs and fowls.

The above enumerated and many other helps to the formation of character and a better mental equipment will result from a continuation in this interesting business. We cannot reckon the full value of life's engagements by dollars and cents.

Withal, of course, honesty of purpose must characterize the poultryman if he wishes to attain fullest success. One needs to be honest with himself in any occupation in life. A man may deceive others—it is too often done—but he cannot deceive himself nor his Maker.

The borders of poultrydom in this State are fast enlarging. In many localities new plants are starting, some of them of no mean proportions. Petaluma has for a long time led the procession, and doubtless will continue to do so for years to come, but Napa is rapidly coming to the front. Two \$10,000 or \$20,000 plants have been started in the vicinity of the city of Napa this season, not to mention smaller yards that are destined to attain prominence. Cheap lands, admirably suited for the raising of poultry, and many other conditions which serve to make this an ideal region for raising all varieties of fowls, are the prominent factors in the matter.

A neighbor recently lost in one night 60 or 70 young chicks, taken at one haul by rats. It is no pleasure to go to all the requisite trouble to raise chicks even to the age of a week or two and then have their young lives cut short by rats, weasels, minks or other predatory animals. But losses from this cause fall to the lot of many a poultryman. In many localities hawks are a vexatious pest.

One has to exercise considerable ingenuity to baffle the wily rat. Not always will he take the most temptingly prepared poison, nor will he boldly put his foot in the deftly hidden trap. With a good terrier—a dog every poultryman should own—the rat may be captured by digging out the runs. A friend feeds prowling rats on the sweetest of cornmeal for several nights, then withholds the appetizing morsel for a night, the following night replenishing the ration, in which has been mixed a liberal supply of strychnine. It is good bye Mr. Rat, for a time, at least.

It is an excellent plan to nail one-inch mesh wire-netting to the sill of the brooder and other houses, allowing it to extend at least one foot below the surface of the ground. Some persons who prefer earth floors place wire-netting several inches beneath the surface of the floor.

It is an excellent plan to sell the young cockerels soon after the combs develop, unless one needs to keep the choice ones for breeding. But where the youngsters are early sent to market, one will often realize as good prices as when they are kept several weeks later; then one saves considerable in the matter of feed, for growing chicks are great eaters.

Hopper-feeding, quite popular with many poultrymen in the East, is highly esteemed by the writer. Results attained are worthy of note. Any detail in the rearing of fowls that will lessen the drudgery, the toil, the innumerable steps one performs must take, may well be adopted. There is no noteworthy shortcut in the road to success in poultrydom, and yet one may round off a corner here and there; the most of us desire to omit unnecessary toil.

Napa. A. WARREN ROBINSON.

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SECURITY GALL CURE.

Cures sore shoulders, necks or backs while harnessed or idle. SECURITY REMEDY CO. Minneapolis, Minn.

Patrons of Husbandry.

Oakland Grange.

TO THE EDITOR: A revival in Grange interest has begun in Oakland Grange. The interstate commerce bill was discussed at length at the last meeting. The subject of local option was discussed successfully at a previous meeting, and they contemplate discussing the parcel's post in the near future.

They also intend holding open meetings off and on, and invite prominent speakers to deliver addresses on the important topics of the day.

The meetings are held on the first Saturday evening and third Saturday afternoon of each month in I. O. O. F. Hall, Eleventh and Franklin streets, and all visiting patrons to San Francisco are cordially invited to give them a call. The reading circle meets as usual every other Tuesday, and takes up the first meeting in each month, the study of some country. The next meeting will be with Mrs. Grant Miller, when the history of Mexico will be the subject. NITA.

Oakland.

Vacation Work for University Students.

Every year the number of applications from managers of lumber companies, hotels, orchards, ranches and business firms for students to work during the busy summer months has been rapidly increasing. As a result of this demand, Mrs. May L. Cheney, the Appointment Secretary of the University, is now registering the names of all the students of the University who desire vacation work, and is filling the applications which she is receiving for men and women as rapidly as received. This assures the employer of help just at the time when he needs it, and also assures the student of work without delay at the close of the college term. Many of the students in the College of Commerce have taken agencies for various manufacturers' articles, and will work in assigned territory. Others will serve as bank clerks, bookkeepers, hotel clerks, secretaries, stenographers, typewriters and insurance agents. Many students of the College of Agriculture are to work on ranches, dairy farms and in orchards. The railroads have provided places for many students of the Civil Engineering department on their surveying gangs and in their shops. Almost all of the students of the Mining College will work in the various mines throughout the State, while the students of other colleges who intend working during the summer will do almost every sort of thing from literary work to selling school supplies. Applications should be addressed to Mrs. May L. Cheney, Appointment Secretary, University of California, Berkeley.

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AGRICULTURAL ENGINEER.

Protecting the Stream Banks.

TO THE EDITOR: Since my settling in this county, something over a year ago, my attention has been called especially to the destruction by floods along the banks of the Eel river and the larger creeks tributary, and to the efforts (unfinished) made by the State, county and private aid to control the floods and protect the banks. At the best, the protection afforded will only be local and at present is of very questionable permanent success, while the expense is very great, proportionate to benefits afforded. Each succeeding flood washes away much valuable land—in some cases, farms almost entire. A careful inspection of any of these streams will show very little washing of the banks until the settlers have destroyed nature's safeguards, namely, the timber growth, and fallen, lodged timber along the banks of both the large and smaller streams. To the writer this suggests the most rational method of checking the annual destruction, namely, the planting of such varieties of trees along the banks as will grow closely and quickly before the removal of the present growth by the settlers or lumber companies, who are mostly responsible for the present existing conditions. In Illinois, Nebraska and some other States special trains, accompanied by a selected corps of instructors from the State universities, make yearly trips over the State, giving special instruction in regard to corn, breeds of, and methods of cultivation. Would it not be of general benefit to have the State make a specialty of the problem of safeguarding our streams, and also reclaiming the already washed river beds by introducing forms of growth to prevent washing, and to catch the silt that is carried in every flood, and, when methods have been adopted, make practical demonstrations in localities where needed, that all ranchers may understand the methods and see the necessity of early and united action?

The writer's view is that only live protection will prove permanent, and if some varieties of trees or other growths can be obtained that are suitable, and also have a commercial value, it will be a double incentive for ranchers to adopt the methods promptly. In addition, in order to compel united action, it may be necessary to have legislative enactments, or the formation of districts, so that non-residents and the lumber companies will be compelled to share in the burdens imposed, as well as in the benefits afforded. Blocksburg, Cal. E. A. BOEHNE.

CORRESPONDENCE.

Lassen County Notes.

TO THE EDITOR: Some time ago I read of a correspondent's experience with "lump jaw," wherein he had treated several cases in various ways, but with no success. If he will procure a bottle of "Fleming's Lump Jaw Cure" and follow directions he will have success in curing all cases where the bone is not too nearly destroyed by the disease. I have lately cured two cases with the above remedy. Lassen county has a good prospect for a big hay crop, but the outlook for grain is poor. There was very little grain sown last fall, and we have had so much storm, and the ground in consequence is so wet that a large area will not be put in, and some already sown has rotted. The weather is rough yet—cold and stormy—but the wild flowers are in bloom and grass is growing fast. The warm weather the first half of March brought the fruit buds forward, so we fear they will be killed by this cold snap. The morning of April 1 there was a good half inch of ice, and it seems to me that is enough to kill the fruit in the bud; but we never have an entire failure, especially along the west side of Honey lake. Honey Lake valley is one of the finest valleys in the State. We never have a failure of crops—at least, not since I have resided here since the fall of 1861.

Can you tell me how long I have been a subscriber to your valuable paper? It seems to me I couldn't ranch without it. G. R. WALES.

Milford, Lassen county.

We cannot tell; probably from its starting in 1870. We hope you can never get along without it.

SHORTHAND taught by mail; demand more than supply. Miss M. G. Barrett, 302 Mont'g St., S.F.



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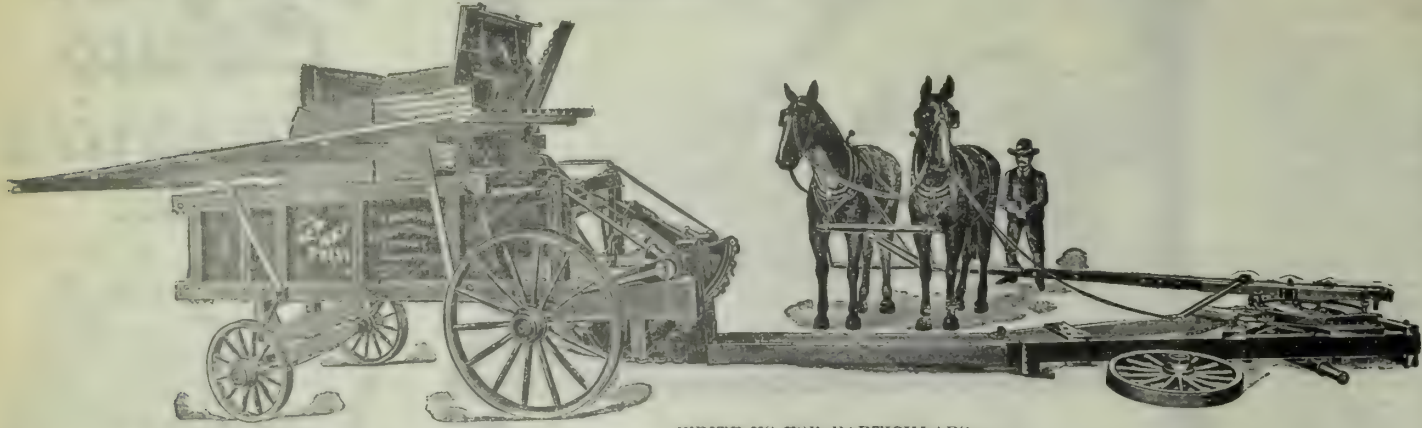
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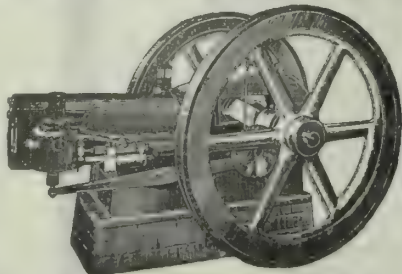
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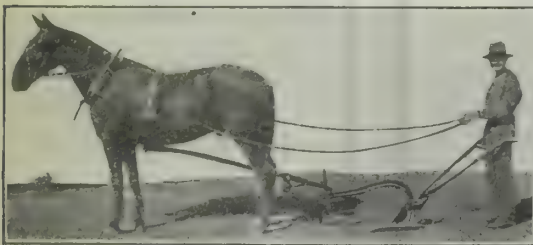
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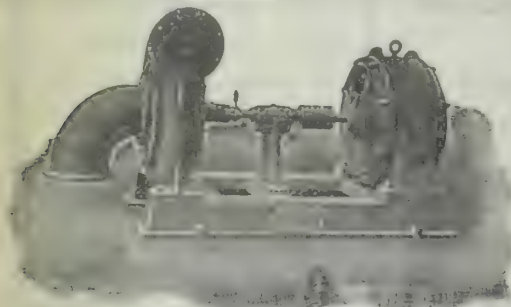


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THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 16.

Berkeley, Saturday, April 21, 1906.

THIRTY-FIFTH YEAR.
OFFICE: BERKELEY, CALIFORNIA.

To the Readers of the Pacific Rural Press:

The proprietors of this journal suggest that I write a personal word to you to assure you of their courage, confidence and strength of purpose even while still in the shadow of the greatest calamity which ever visited California. Their establishment was among the first to be swept away by the fire which succeeded the earthquake and caused an utter destruction of the publishing plant. While the conflagration was still raging the journal opened new offices in the First National Bank Building, the best commercial structure in Berkeley, which now becomes the third city of the state because of the destruction of the metropolis. Here for an indefinite period the journal will find its habitation in the midst of surroundings exceedingly favorable for its work, while the beloved and honored San Francisco prepares for its newer life and destiny.

It is very gratifying to the writer to be invited to speak a personal word to you who have manifested such cordial appreciation and generous support for our undertaking; some of you during the whole thirty-six years of its existence. For more than thirty years of this period it has been my delight to hold weekly converse with you: to express heartfelt sympathy with you in your losses by fire, frost and flood, and to rejoice with you in your attainments of advancement and prosperity. It is, therefore, like claiming the privilege of a lifetime to tell you of our trials and losses

and to bespeak your interest and sympathy in the stalwart effort which the proprietors of the journal will make that it shall bear upon its face no sign of its suffering, but shall manifest in its next issue all the characteristics of cordiality, courage and earnest desire to be useful which have held your patronage and esteem during the years which have passed.

In the midst of the gloom of the disaster one can see few things clearly, nor adequately measure the weight of the stroke. Perhaps, however, the quality of mercy can be discerned. San Francisco is lost, but California remains. A quarter of a century ago this fact would not have been so clear, but with the extending development of the State as a whole there have arisen many other independent centers of activity, including several self-poised cities which have attained municipal self-consciousness and ability to do leading service for the State. Another manifestation of mercy is that only one district of California has suffered severely: that the stroke fell when people were not congregated either for recreation or work, nor thronging through the streets. It is merciful also that, great as will be the hardship and suffering, there will abide in the hearts of the people courage and energy which will impel them to strive confidently for the rebuilding of their fortunes and the advancement of the State. We hope in our own future work to demonstrate the possession of a share in this spirit, and thus to assist the proprietors of the journal in their courageous resolution to press forward into the

light of the future which will shine from your continued appreciation and patronage.

Very sincerely yours,

Berkeley, California, E. J. WICKSON,
April 19, 1909. Editor.

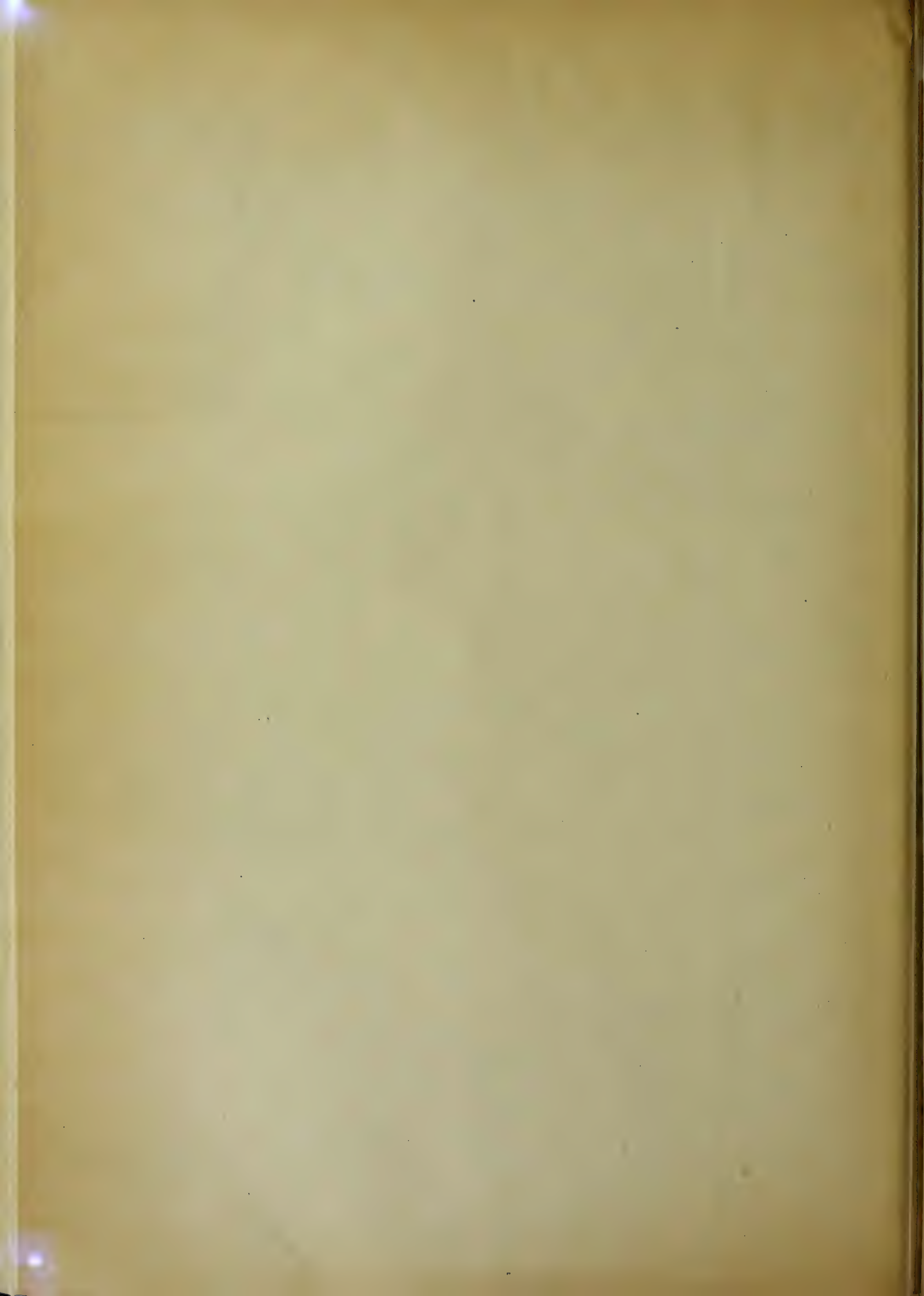
TO OUR ADVERTISERS:

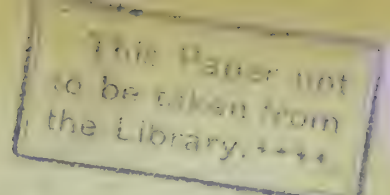
Our old Offices, at 330 Market Street, being in the very center of the most damaged section of San Francisco, have been totally demolished. We have lost our entire mechanical plant, including cuts, half-tones, type, and the issue of April 21, which had already gone to press, but fortunately, our complete and most recent mailing list has been saved.

We have secured offices in the First National Bank Building, at Berkeley, and through the courtesy of the Standard Publishing Company we are in possession of proper facilities for printing. The Miehle presses, which will do our work, are new and of the most improved type. We will only be handicapped (for a few issues) by scarcity of paper; the rush of work at the local photo-engraving houses will prevent the use of half-tones with our reading matter, but we have arrangements pending to have this work done at Sacramento, which city was not affected by the earthquake.

We would urge all of our advertisers whose places of business have suffered to communicate with us at the earliest moment, as our issue of the 28th will afford the best medium for advising their clients throughout the entire west of any change of address. .

EDGAR RICKARD,
Business Manager.





THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 117

SAN FRANCISCO, SATURDAY, APRIL 28, 1906

THIRTY-FIFTH YEAR
OFFICE: 330 MARKET ST

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E. J. WICKSON. Editor

The Week.

We hope that by our next issue the pressure on the printing plant will be relieved sufficiently to allow of our issuing the complete paper. Our copy is all ready, but the presses cannot take our work.

The destruction of San Francisco is a world event. It is unique in its dramatic quality, in the character of the devastation and in the influence of the catastrophe upon the thought and action of the world. No recent event has evoked such vivid demonstration of the kinship of mankind. Its origin, features and effects will occupy thought and speech for a quarter of a century and its literature will constitute a library. To attempt to characterize it at the moment is, therefore, necessarily futile. There are, however, a few obvious facts about the event, and a few plain deductions, which may be set forth merely in a suggestive form as indications of ways in which each reader may indulge his own thinking.

The destruction of San Francisco in 1906 may be fairly looked upon as merely a step in the growth and development of the metropolis. Such experiences have thus proved to be in the lives of other great cities ever since metropolitan history began. It is only when civilization wanes in a nation that its great cities die and are buried. Wherever civilization is advancing great cities rise again in new strength and beauty, which show that previous attainments were but rude beginnings. Great then as is the present disaster, costing several hundred lives and several hundred millions of property, and crushing as may be the individual agony and hardship, clouding many lives, which we would brighten if human aid or sympathy would aught avail—even such appalling losses and sufferings pass at length behind the haze of forgetfulness. The newer life of a city is not obscured or weakened by the tragedies of its past; this is a beneficent fact in the constitution of man and the institutions of mankind. The twenty or more square miles of San Francisco, therefore, which now lie in grim destruction, will speedily disappear before the genius of restoration which is rising to effective force even while ruins still writhe and seethe in impotent protest.

It is a significant fact that, before the disaster, citizens of San Francisco were moving strongly for a rebuilding of the city along lines more expressive of her wealth and position and more in harmony with her character and destiny. The opportunity for beginning such a commendable work, so that the present generation can realize a share in its attainment, is therefore welcomed by the strong and capable

civic spirit which has already demonstrated itself by the adoption of plans for the improvement of the city. San Francisco is unparalleled in the picturesqueness of its topography and environment and its building, along lines of chance or self-interest, was never in harmony therewith. It became an ugly aggregation of buildings and streets because no attention was ever paid to the combination of use and beauty. The people had become accustomed to the thought that the city must sooner or later be remodeled and it is fortunate that the necessity of beginning anew has been preceded by the preparation for the act which has already been seriously undertaken and in which much progress has been made.

The present point of view, that San Francisco would have been blessed if the earthquake had not been followed by the conflagration, is certainly warranted by the argument that the minor disaster would have been at the moment more merciful and perhaps we should not say a word of contrary import. But we cannot forget that the earthquake left hundreds, perhaps thousands, of buildings in a condition of unsafety which it might have been impossible to discern, and the repair and occupation of such structures would have left the city really insecure and inviting perhaps even a greater disaster in the future from less destructive agency. It may indeed be on the whole more merciful that a practical rebuilding becomes an immediate necessity. From the point of view of the future, there can be no question that the opportunity for laying out anew, so far as is necessary to realize a good plan, which shall sacrifice naught of use and gain all that is possible of beauty, is eminently desirable. It is also true that the future can be approached with greater confidence and wisdom because of the demonstration which is afforded of what classes of construction are trustworthy and fit to be enforced by the municipal authorities. The San Francisco of the future will be not only more beautiful, but more safe and secure as a location for residence and for commercial and industrial activity.

The temporary disablement of San Francisco will, in a way, promote the more symmetrical development of its district and prepare for the greater San Francisco of the future. It will demonstrate the suitability of the east shore of the bay for commerce and manufacture, as well as for residence, and the east waters of the bay for deep-sea traffic. Such development will draw the east line of the bay westward, so that only a deep channel shall separate it from Yerba Buena Island, as is now the case between that island and San Francisco. The island will also lengthen its shore line by grading down to more accessible eminences and this will again narrow the water distances. This will probably occur even if the island remains in use for national purposes and its beautification will constitute it the pivotal park around which the activities of the coming great city of the bay will take their courses and above which the colors of the nation will bid hail and farewell to the shipping of the Pacific as it passes to and fro and from the great Western gateway of the republic. The disaster to San Francisco will tend to broaden the conception of the destiny of its whole environment though none of this generation can live to see its full realization. Manifestly the higher lands on both sides of the bay will be well occupied with residences

of the better class and with institutions for all lines of art and education, while the plain below, broadened by immense reclamations from lands now under shallow water, will afford ample space for the upbuilding of the greatest manufacturing and commercial city of the country. Closer connection of territory in various ways and unification of spirit by recognition of mutual municipal interests and ambitions, will, we believe, result from the current disaster and the destruction of San Francisco that was will prove the birth throes of San Francisco that is to be.

This dream of the future is based upon an anticipation of the development and population of the interior districts along lines now being vigorously taken up. It is likely that the disaster may for a time deter the timid from the choice of California for a home, but such fear will soon pass away. Within a century this State has not suffered more from earthquakes than many other States, nor would the present disturbance be so notable had it not centered in the metropolis. The greater area of the State did not feel more than a tremor of it and many districts not even that. Manifestly, then, timidity which has so little ground will not long endure. The rural life of California is untouched and the municipal life is undimmed. The greatest activity in restoration is already manifested and the opportunity for profitable investment widely recognized. The great producing and commercial advantages remain upon which the greater metropolis and the greater State will rest securely.

We acknowledge with profound thanks many messages of sympathy and good cheer and tenders of assistance which have come to our journal from its friends and supporters. By telegraph the well-equipped Kruckeberg Press of Los Angeles offered us full use of its facilities, but we are glad we need not go so far except to return thanks to so good a friend. We labor under difficulties, but are strong and confident. We only need good will and continued confidence and patronage from the thousands in all parts of the State who favor and support our enterprise.

The first of many letters of encouragement addressed to the editor is the following from Dr. W. E. Keith of San Jose:

"I wish to thank you personally for issuing such a good, healthy, hearty letter as your issue of April 21st. I am sure it will do much good, for so many usually sensible and strong people have lost their grit and grip temporarily that they need bracing up by just such strong words as yours."

Good: let us be strong together!

Relief contributions from the United States Government and from all parts of the country seem adequate to the needs of the people. Homeless refugees have been carried free by the railways to distant points and are being generously provided for in many California towns and cities. A unique occurrence is the sale in Philadelphia of the first box of California cherries for the benefit of the relief fund. The cherries were sold singly, the first one bringing \$105 and the sale of the ten pounds aggregating \$2440. Thus California fruits manifest their ability to rise with the occasion.

To the Editor: I have had some experience in working over old orchards. About 10 years ago I purchased an old orchard and tried all sorts of grafting. I have come back to my work after an absence of 3 or 4 years, and find my best work was in placing my grafts in the

stump of the tree far below the ground surface as possible, sealing the cut with a special kind of wax and inserting grafts between the trunk and bark without splitting the wood. Upon examination I find some of the trunks undecayed, with the wax firm, with four to six nice young trees growing from a single root. Would it not be a good plan to alternate grafts from two kinds on the same root—two kinds that blossom at the same time and have an affinity?—S. A. Matens, Placer County.

HORTICULTURE

Mr. Payne Writes About His Big Walnut Trees.

To the Editor: Conditions seem to have reached a stage which necessitates my writing a word or two about the much-talked-of big walnut tree.

Now about my soliciting the aid of an attorney "to define an obscure point in regard to the variety," I knew nothing of Judge Leib's intentions, as he never spoke to me about the matter.

I was in Santa Rosa when the issue of the Rural Press appeared and was first aware of Mr. Leib's article when spoken to about it by Mr. Burbank. But had it been necessary for me to procure the assistance of an attorney to contribute an article, as Mr. Gillet states, I am sure the horticultural interested public would have complimented me in selecting a man like Judge Leib.

True, in the year 1900 I wrote Mr. Gillet a letter on business and as a sort of supplement mentioned our grafted tree, thinking he would be interested. I then stated that it was a Santa Barbara, as we had so been informed when getting grafts. This we did know, however—that this particular grove (now Miss Ockney's) bore fine walnuts, much different from other trees in the vicinity.

Naturally, we always spoke of the tree as a Santa Barbara, until convinced beyond a doubt by Messrs. Leib and Burbank that it was a Santa Rosa.

There have never been any scions for sale from this tree, nor are there any for sale now, nor will there be in the future, so that no one has been injured nor will be.

Mr. Gillet's Correspondent.—Now a word about that "correspondent," whoever he may be. But before I proceed I wish to state that if Mr. Gillet had communicated with me, he being in possession of my address, I would have gladly furnished him any information, also a sample of nuts. This "correspondent" claims that he had several times asked Mr. Payne what variety was grafted on the big tree and that he (Mr. Payne) "always said he did not know." Here is a discrepancy that I do not understand, as no person has ever been told that we did not know what variety was grafted.

I'm sorry Mr. Gillet was furnished such information and I'm afraid that sample of nuts furnished might be of same quality as the information. Then again, if I'm not mistaken, Mr. Gillet states that when directly addressing himself to the owner of the tree he was unable to get any better satisfaction than his "correspondent" had obtained. Here again is a puzzler, as I have never received but one letter from Mr. Gillet and that one was in answer to mine of February 13, 1900, and in it nothing was asked as to variety.

I have, however, received a postal from Mr. Gillet, simply announcing shipment of grafted trees, etc., but nothing further. If Mr. Gillet has written one at some time about the tree, the letter was perhaps miscarried, as it certainly never reached its destination.

Grafting the Tree.—The grafting of this tree (grafted but once) was purely an experiment, for at that time we had never seen or heard of an English walnut being grafted on a black walnut, especially of the size of this one, although there had undoubtedly been some experimenting on that line previous. (There was of course plenty of it much earlier than 1900, but Mr. Payne had evidently not heard of it.—Ed.)

I might add that there is yet much to learn about walnut grafting and if the result of this experiment has been of any interest or value

to those horticulturally inclined, I'm glad of it. We never intended our tree to pose as an advertisement. When the tree began to produce nuts in excess of what we desired for our own use, neighbors and friends who were familiar with the quality of the nuts quickly sent in orders for what we could spare and in turn their friends, and very soon there was a larger crop of orders than nuts. Some of our older customers asked as a favor to be put on the list for twenty or thirty pounds every year. I have the addresses of nearly all of these people and believe they will substantiate my statement. Good walnuts are not so scarce at the present time that people have to suffer along with inferior ones.

Mr. Gillet, when referring to the record of nuts, says there must be something wrong with the tree, "for it did well till 1900, increasing its crops every year and bearing on that year 600 pounds of nuts, but ever since the crops have decreased."

We will turn to the record and see if that is a fact:

1898	-----	302 pounds
1899	-----	229 pounds
1900	-----	600 pounds
1901	-----	237 pounds
1902	-----	478 pounds
1903	-----	380 pounds
1904	-----	481 pounds
1905	-----	269 pounds

All persons familiar with fruit know that when a tree bears a heavy crop one year they do not look for a repetition the following year (this is a horticultural law) and with some fruits it requires two or three years as a resting period.

Note by the record that there is first a heavy production, then a lighter throughout. The year 1900 was a phenomenal crop. It was necessary to tie up and prop limbs. But the year following was quite light. In 1902 a very severe wind, when the tree was in full foliage, broke off two immense limbs and the tree has been considerably handicapped ever since.

Last year the unparalleled heat, the first ten days of July, that California suffered, and which injured more or less nearly every variety of fruit, sunburned at least 150 pounds of walnuts on our tree. These were, of course, thrown out and no record kept of them. There is not a dead limb on the tree, nor never has there been.

At this date the big tree is heavily studded with rudimentary nuts, tipped with their plume-like blossoms, and from all appearances, as far as man is able to see, bids fair to produce its hundreds of pounds of nuts for sometime to come.

GEO. C. PAYNE.

Campbell, Cal., April 16, 1906.

Mr. Payne makes a very satisfactory statement. Now it is Mr. Gillet's correspondent's turn to explain. We are learning a great deal about the tree. Let the discussion proceed.

Winter Blight of the Peach.

(By Mr. Newton B. Pierce, Pathologist in charge, Pacific Coast Laboratory and Plant Improvement Gardens, Santa Ana, Cal.)

The winter blighting of peach twigs, which is due to the action of a parasitic fungus (*Coryneum Beyerinckii*), has attracted considerable attention for several years in portions of California, but more especially in the Sacramento and San Joaquin Valleys during the past two seasons. The term "Winter Blight" was first applied to the disease in Bulletin No. 20, Division of Vegetable Physiology and Pathology, U. S. Department of Agriculture, 1900, page 170.

The losses resulting from this disease have been heavy, a large part of the bearing wood of the affected trees being injured or destroyed in many of the older orchards. The injury is usually greatest in orchards located in moist situations or during wet seasons. In Humboldt county it has been a serious disease for many years. In 1894-95 the writer observed the action of this blight in the Feather river bottom, where it destroyed many of the bearing twigs in the older orchards.

The cause of this disease is a parasitic fungus which has long been known throughout Europe

and is described by many writers. The conidial stage of the fungus, which is the spore-producing form most commonly met with, is known as *Coryneum Beyerinckii*, while second and third but later appearing spore forms, supposed to be long to the same fungus, have been given other scientific names. Owing to the uncertainty as to the identity of the fungus producing the later developing spore forms with that bearing the well-known conidial spores the name here given is retained.

The action of this fungus is to destroy the peach buds in February, March and April which were formed on the new growth of the previous year. Both leaf and blossom buds are frequently killed. The twig itself, which becomes badly infected, is also seriously injured or killed, and the formation of gum-pockets and the exudation of gum is a common accompaniment of the disease. This gum formation and exudation is often strikingly noticeable in damp spring mornings, when the under surface of affected twigs frequently presents a continuous series of glistening drops of gummy sap. This appearance is commonly the first sign of disease to attract the attention of the orchardist. The parasitic action of the fungus upon the twig or at the base of the bud is to kill the outer tissues of the twig in circular or oval spots, which are often of red color, and it is through the surface of the bark of these dying spots that we notice the breaking forth of the conidial spore clusters. The minute spots where these spore clusters appear are at first black, but as the spores develop the color becomes brown or yellowish brown and the spores project in little tufts. These spores are ovate or elongated oval in form and most of the spores are divided by cross septa into 2-6 cells, each cell being capable of ready germination when the moisture conditions are suitable. From the fact that the growth of one year is the bearing wood of the next, the destruction of the buds of these shoots means the loss of more or less of the crop. It is also true that this disease, like most fungous and bacterial tree diseases, works most seriously on the lower and more shaded limbs, and these are the branches most desirable to preserve for fruit production.

The treatment of winter blight of the peach should be **preventive**, not curative. The infected parts should be sprayed to prevent the germination of the spores produced upon them. Non-infected parts should be sprayed to prevent their infection by spores which fall upon them. Badly infected trees had better be sprayed twice each year for two or three years, or until they are well freed from the blight, after which it will probably not be necessary to spray but once each year.

The first application of the spray should be given to the dormant trees, some four to six weeks before growth starts in the spring. This spraying will cover the infected twigs of last year's growth and largely prevent the germination of the spores which are formed upon them about the time growth starts or a little later. This spraying will also prevent leaf curl. In case of the present spring, however, as growth has already started, it may be advisable to apply the first treatment now, to badly diseased orchards the object being to prevent as much of the infection of new growth as possible by killing the spores which are forming on last year's wood. A few of the tender leaves may be injured by applying the spray after growth starts, but in badly diseased orchards this injury will not equal the benefits to be derived from the spray.

The second spraying should be given as soon after the crop is harvested as possible, the effect being to treat very thoroughly all parts of the season's growth. This spraying is to prevent as much as possible the infections likely to occur on new wood. In case of those willing to take the chances of slight injury to foliage which might arise from earlier summer treatment the spray may be applied when the fruit is one-fourth to one-half grown, thus covering the new wood earlier and preventing a larger proportion of the infections.

The spray formula recommended for each of these two treatments is as follows:

Formula for Bordeaux Mixture.

5 pounds copper sulphate.

(Continued on page 4)

CEREAL CROPS

Improvement of American Brewing Barleys.

Some months ago we had a discussion of brewing barleys and California's product thereof. In the American Brewers' Review of April 1, there is a sketch of the improvement of American brewing barley through cultivation of pure races or "pedigree barley" bred from native stock, prepared by the Wahl-Henius Institute of Chicago. We quote the following:

The United States Department of Agriculture has been engaged for some time in the study of American barleys obtained from different growing localities, with a view of their improvement for brewing purposes; and some of the State Agricultural Experiment Stations, notably that of Wisconsin, have taken up the subject with much zeal and we hope with fair prospects of ultimate success.

With Government and State institutions systematically engaged in this all-important work of raising the quality of American barley to a higher standard, mainly thus far through the introduction and distribution of European varieties, it should not be lost sight of that some of the barley that is now grown in the United States in certain localities must be adjudged of good quality, barley that meets most of the requirements and needs of the malster and brewer, barley that is peculiarly suited to the malting and brewing operations as carried out in American plants. There is also found barley that is peculiarly fit for the production of high-class bottle beer, that, besides having the cherished qualities, for which draught lager beer is known, meets the additional requirement of being "chill and summer proof"—that is, of keeping bright and without sediment whether subjected to low or high temperatures, whether stored on ice for weeks or at high summer heats for months.

We must not forget in introducing European varieties of barley to this country, especially of the two-rowed type, that the brewing of bottle beers, stable to the extent that the American trade demands is an art to which the European brewer has not yet attained, and that the success of the American brewer in this respect lies largely in the proper selection of his barley, which should be of the six-rowed type, with rather a high albumen content, while the European varieties of the two-rowed type thus far cultivated in this country, as well as the six-row low albumen types, like the California Bay brewing barley and its progeny have not proven successful in the production of such high-grade bottle beers. (What particular barley this "California Bay" is is hard to say. In California it would only mean barley grown in the San Francisco Bay district.—Ed.)

Manifestly, it would not be good policy to displace or exterminate a type of barley which yields satisfactory results, a type which it has taken much time to become acclimated and much work to cultivate up to its present standard of efficiency, by new types unless the superiority of these be absolutely demonstrated. And such demonstration on the result of which judgment is to be passed, should not be undertaken by the scientist in his laboratory, but by the malster and the brewer, with expert guidance and under expert control.

Six-Rowed Barley Important.—Since, therefore, some of the barley grown in this country is evidently of the desirable type and quality, while the superior results obtained in Europe with highest grades of two-rowed barley warrant a grave suspicion as to the outcome of aims directed towards the introduction and distribution of these two-rowed types, it becomes important to consider whether in our endeavor to improve our American barleys we should not start out with these tried acclimated six-rowed types in preference to bringing into this country European varieties which at best would not satisfy the American brewer of high-class products. And we can certainly not expect to produce in American soil and under American climatic conditions a barley from the European seed that will be better suited for such high grade, especially bottle beers, than is the

two-rowed barley as produced to-day in Germany and other brewing countries of the old world.

Therefore and for other reasons given heretofore, the two-rowed types of barley not offering any inducement or promise in the way of improvement over some classes of our indigenous six-rowed barleys, we should turn our attention either to the introduction, with befitting precaution, of new six-rowed varieties or to those indigenous barleys which fairly meet all our expectations, and improve our American barley by distribution of seed of known good quality and desirable type, and displacement as quickly as possible, of the varieties less suited.

Importance of Selection.—And here a new factor enters which only of recent years has received the attention it merits and gives the whole question of barley and plant cultivation generally a new aspect, throwing on it a lime-light from a new point of view.

It is well known that the barley growing in our fields, and brought into our elevators after threshing, is not all of the same percentage, but represents a mixture of unknown properties and of offspring of different varieties. These varieties may differ in points essential to malting and brewing interests. Barley representing a mixture of Scotch or Manshury and Bay Brewing will certainly not be as desirable as pure Manshury barley. Now we do not know in what proportion barley sprung from a less desirable type is mixed with our better grades of brewing barley, but it stands to reason that if we could resolve this mixed barley in some way into its different component types, we would doubtlessly obtain superior results by using the most desirable variety alone. And this important result can be accomplished, positively, as the example of Sweden shows us, by breeding pure races of barley out of our own stock or, possibly, by introducing pure races that have given good satisfaction elsewhere.

Pure Races.—Dr. David Fairchild, Explorer in the United States Department of Agriculture, Bureau of Plant Industry, has drawn attention to the importance of the question of starting out with pure races of barley in all attempts at improvement of barley by seed distribution, and it is the purpose of this article to show what has been accomplished in another country by this means, what we may expect to accomplish in America, and especially to emphasize that we should not overlook the good quality of some of our own varieties in this important movement for improvement. The question and the importance of the subject in hand will, we hope, become lucid by the perusal of the following article.

It stands to reason that such a work can be successfully carried out only by theory and practice working hand in hand. On one side it must be placed on a scientific basis, upon a thorough study of purely botanical marks, which furnish the most reliable means for the detection of essential and inherited properties in the mother plants, and also give to the new varieties thus produced the value of typical, new botanical forms, independent of soil and climate. The Wahl-Henius Institute is now investigating the material at hand in this country with a view of extracting from it new and better forms suited to different localities or various employments.

On the other side such a culture must be propagated on a large scale by the grain producer, and it becomes his share of the work to keep the adopted pure races of barley in as pure a state as possible.

Between the two, the producer of the barley on the one hand and the scientific investigator on the other, stand the vast industrial malting and brewing interests of this country, and there is no apparent reason why these should not reap together with the tiller of the soil the same great benefits from the pursuit of scientifically controlled pedigree barley breeding, as have accrued to these interests in Sweden.

In this undertaking the farmers' interests will undoubtedly find the unqualified support of the United States Agricultural Department and State Experiment Stations, who will furnish them with the selected pure seed, educate

them as to the types best suited to different localities and soils and give information as to proper precautionary measures to avoid mixture of varieties, and bring their great influence to bear on the distribution of races found especially fit for various employments and locations.

How to Get Better Barleys.—How should such an assortment of pure barley races be produced in the safest way and shortest time?

Either by introducing foreign barley races or—and this would be more promising—by a selection of the excellent and already acclimatized material found in the United States and exterminating the least fit varieties of which there also seems to be an abundance.

The way in which this can be accomplished has already clearly pointed out by the work done during the last twenty years at the Seed-Breeding Institute of Svalof, Sweden, under the direction of Dr. N. H. Nilsson.

The aim of that institute is to improve not only barley, but also the other cereals and seeds used in Sweden. In this they have been very successful.

The seeds experimented upon are not planted in specially prepared beds, highly fertilized, but in the open fields, and as nearly as possible under ordinary agricultural conditions.

The first method of improvement was the one commonly adopted. A certain variety, say a Chevalier barley, was selected. From the crop of each year all defective plants were removed, and only the best selected for seeding purposes next year. In this way it was expected that finally a better and more constant race would be created. But after six years of most careful removal of all such plants of the Chevalier barley which showed a weak stalk and a tendency to form "lying down" grain, it was found that the percentage of such weak plants was about the same. The removal of bad results did not remove the cause of such defects.

It thus finally became evident that the varieties then existing were not uniform races, but mixtures, and that in order to produce a pure race it would be necessary to start with the seeds of one single plant. This idea was carried out the next year, 1893, and the result amply proved the correctness of the "Pedigree Culture"—that is, the use of the individual plant as the starting point for the production of a pure race of a plant.

Improved Chevalier.—An example will perhaps best illustrate the mode of producing pure improved races at the Swedish Seeding Institute.

It had been found that the Chevalier barley was not suitable to several large areas in Sweden on account of its tendency to form "lying down" grain. To such heavy or wet soils the Imperial barley with its stiffer stalk was better adapted. But all varieties of Imperial barley had a big, coarse kernel, with the botanical sign, long basal bristle, that as a rule characterizes kernels of such a nature. How could this be remedied? To try gradually to improve the kernel of the Imperial barley by methodical cultivation would have been as hopeless a task as the previous attempt to give a stiffer stalk to the Chevalier barley. But, if among the different styles of Imperial barley, seeds could be found which showed a short basal bristle, the characteristic of a finer kernel, there would be some hope of obtaining an Imperial barley with a finer type of kernel. Well, among tens of thousands of ears of Imperial barley a couple of dozen were found with the looked-for sign; and eight years later, 1901, there appeared in the market the first known Imperial barley, "Svalof's Primus barley," which on its strong and stiff stalk carries kernels which both from a botanical and a practical standpoint come very near to a Chevalier barley of first quality.

How Can Such a Pure Race of Barley Be Kept Constant?—By repeated pedigree culture in directly descending generations, carefully avoiding all deviations in one direction or another. On the other hand such a repeated culture also gives the means of still more perfecting the original race, even so far as to creating a new type. Such improvements must then be founded upon nature's laws of inheri-

tance and variation, which point to the individual plant as the only unit with which we can work.

Some of the Swedish Pedigree barleys were distributed by the University Experiment Station in 1904. If any of our readers have observations of their behavior in California, we should be glad to hear from them.

THE FIELD

Danger From Grasshoppers

(By C. W. Woodworth, Entomologist of the University of California.)

It is not as widely recognized as it should be that migratory grasshoppers occur in California on account of the nature of the country. Wherever in the world arid highlands occur adjacent to cultivated lowlands grasshoppers must be reckoned with by the farmer. In the same way that the geological structure of this coast is accountable for the recurrence of earthquakes, the surface and climatic peculiarities of this State favor periodic invasions of grasshoppers into the farming lands of our foothills and valleys.

The experience of this last great earthquake with its terrible consequences has plainly shown that with a proper construction of houses we may come through the most violent earthquake with no losses or with losses of the most trifling nature, and in the minds of the majority this experience has been a reassurance of the safety to life and property when wise precautions as regards buildings have been observed.

Exactly a similar reassurance has followed in every outbreak of grasshoppers where the efficiency of control measures has been tested. While we can recognize and have abundant means of verifying the fact at every such invasion that no insects known are capable of doing such enormous damage to crops, still the majority of our growers have come to regard them with a great deal of complacency. These insects do not damage us every year and as in the case of earthquakes a certain amount of the complacency is due to the blindness of the people to the reality of the danger. We may expect, therefore, at each recurrence of earthquakes the loss of fortunes due to improperly constructed buildings—that is, those who have not taken this factor of risk into consideration and at each grasshopper year the destruction of orchards, vineyards and gardens from a similar blindness.

In one particular there is a striking difference between grasshoppers and earthquakes. The latter come without warning. No one is able to discover any means of determining their nearness or severity, but grasshoppers can be discovered by anyone weeks before they begin to damage and a fair idea obtained of their numbers and consequently of the severity of their probable damage, and, moreover, we have the means of actually preventing all damage to our crops after we see the danger is coming. This latter fact is not generally appreciated by our growers and the purpose of this article is primarily to bring it to their attention.

There is much to be learned about the winter and spring history of the various species of migratory grasshoppers occurring and doing damage in California before predictions can be made with a desirable degree of certainty and accuracy. All of our species agree in laying their eggs in the ground in the fall of the year, of hatching out in the spring and feeding on the native vegetation of the upland districts while they are small, only exhibiting their migratory habits as they approach maturity. The large part of those that migrate fail to reproduce their kind, so that the insects do not become permanent residents of the valley regions.

We do not know why the migratory species fail to maintain themselves in the valleys, but such is very evidently the case. Even in their permanent breeding grounds there is no uniformity in the numbers present. Some years there will not be enough to make any appreciable effect on the scant native vegetation of those regions, and on other years they may come to be so numerous as to carry destruction to the orchards far distant from their breeding grounds.

A very plausible theory has been advanced by Prof. Hilgard to account for this variation in numbers in the breeding grounds which seems to be the only one with considerable observed data in its support. It is to the effect that the most critical point in the life history of these insects is the escape of the delicate newly hatched grasshopper from the ground where the egg has passed the winter. Whether a large proportion will be successful in escaping to the surface will depend on the condition of the soil at hatching time. Late spring rains which will leave the soil soft through this critical period would therefore favor an unusually large hatch. It is unfortunate that opportunity has not yet been afforded the Experiment Station to test the soundness of this theory with all migratory forms, so that one could speak with certainty in this matter.

The present spring has been favorable in most regions thus far for an unusual batch of grasshoppers if this theory is sound. If there is not a sufficient hot dry spell before the eggs hatch that would form a crust, it would seem that the escape of the young insects would not be hindered at all. Everyone, therefore, should make it his business to acquaint himself with the hatching of grasshoppers if he has fields anywhere near to hill pasture lands.

The writer would be glad to receive word from every district in the State as to the time and abundance of the appearance of young grasshoppers, and will be pleased to advise as regards the measures that should be adopted for their control. To some extent the methods will have to be varied according to the character of the locality, but in general it may be said that the "hopper dozer" is the most efficient means of destroying them in their permanent breeding ground.

The "hopper dozer" is simply a large metal pan containing an oil, usually a crude oil such as is often used in road making. This is dragged over the ground and the grasshoppers hop in and are killed by the oil. The size, shape and number of hopper dozers necessary to protect one from an invasion of grasshoppers will depend on the local conditions, and the manner of using it to some extent on the age and kind of grasshoppers to be destroyed. Some of this information is contained in Bulletins 142 and 170 of the Experiment Station. Further advice as to the application of this method of grasshopper control to special conditions the writer will be pleased to furnish to those who may find it necessary to take up control measures this year.

By all means let us this year do whatever may be necessary to do in the breeding grounds before the insects drift or migrate into cultivated lands. After they have entered a field a certain amount of loss is inevitable, though the insect is even then controllable and a total loss need seldom or ever be experienced.

The relatively small size of the permanent breeding grounds in California and their nearness to cultivated lands makes the problem of complete control a comparatively simple one.

It is only necessary to reduce the numbers of grasshoppers to such a point that the native vegetation is ample for their needs and they will not develop their migrating instinct, but will remain on their breeding grounds through the whole season, as they do in years when they are less prevalent.

A little work of the right kind at the right time, and in the right place will prevent all losses to cultivated fields from these insects and probably improve the pasturage on the uncultivated breeding grounds to an amount that would of itself amply justify the expenses of the operation.

While the theory here presented may not be true and this may not be a bad grasshopper year, still growers should give the subject attention and keep track of all nearby uncultivated land during the coming month. In some regions grasshoppers may be already hatched. Except in some portions of the immediate coast region all grasshoppers liable to do injury will be hatched by the first of June. The month of May, therefore, covers the time when the grasshopper prospects of the year can be determined and during May also the work necessary to ac-

complish their destruction in their breeding grounds should be done. Rarely, if ever, is there serious injury earlier than the first of June and this only by drifting swarms of wingless grasshoppers. By the middle of June they may begin to fly and may travel long distances. No part of California is absolutely safe from flying swarms, though the regions nearest the hills, those liable to be attacked by the drifting swarms are the ones most likely to suffer when the true migrations of the flying insect begins. From this time on to the end of the summer the grasshoppers continue their devastation, though fortunately in continually diminishing numbers, as they are eaten by birds and animals or die from diseases or innumerable other causes. During all this time grasshoppers are continually moving about, but the greatest damage is done in June and July, and if one is able to avoid injury during these two months it will rarely be necessary to give them any consideration.

The most effective work and the work which can be done with the least expense is to reduce the numbers on their breeding grounds by the use of the hopper dozer. The breeding grounds are the uncultivated hill pasture lands. These pasture lands should be gone over and examined several times every year during May, to determine the presence of grasshoppers. This year particularly this should be done, because there is reason to expect an unusual prevalence of these insects. If grasshoppers are found, communicate at once with the Experiment Station at Berkeley and prepare to prevent the prospective losses by destroying the excess of these insects. California farmers need not suffer from grasshoppers, but have lost a great deal in the past and will continue to lose much except where the proper precautions are taken.

Concluded from page 2

5 pounds good quick lime, ..
50 gallons of water.

(a) Slake the lime in an oak barrel in a small amount of water. When perfectly slaked, add enough water to make 25 gallons of milk of lime.

(b) Thoroughly dissolve the copper sulphate in an oak barrel containing 25 gallons of cold water.

(c) Continue to pour one pailful each of the milk of lime and of the copper sulphate solution simultaneously into a third oak barrel, holding 50 or 60 gallons, until all of the two solutions are thus united. Stir the milk of lime as it is dipped out and pour it through a fine wire strainer into the mixing barrel. Do not strain the copper solution.

(d) When the mixture in the third barrel is well stirred it will be ready to apply as a spray to the trees. Spray the trees while the mixture is fresh and stir the latter occasionally.

(e) The spraying should be done if possible when there is little or no wind and in cloudy weather.

(f) Use a spray pump which will maintain 120 pounds or more of pressure and such nozzles as necessary to reach the highest limbs and do the best work over all portions of the tree with the least waste of spray.

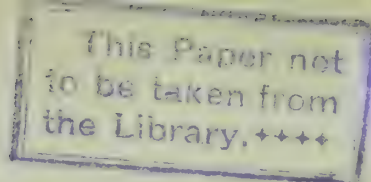
In spraying, an effort should be made to treat most thoroughly all new wood or wood of the latest growth, though old wood should not be neglected, as it harbors the spores of the parasite.

When pruning the diseased trees an effort should be made to remove the worst affected twigs where a choice is practicable.

BURBANK'S NEW VARIETIES.

To the Editor: Where can I get the new things which Mr. Burbank is originating and of which I read in the papers and magazines?—Amateur, Nova Scotia.

There is no collective agency for the sale of Burbank's new varieties. He does not propagate them himself; he sells them with the sole right to propagate, to whoever desires to undertake the business. He does not sell a part of the variety, but the whole of it. You can get from any large Eastern nurseryman as many varieties as you care to try, but there is no single place where you can get all of them.



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The Week.

Each day brings new token of recovery in San Francisco. Good order prevails. No outbreak of disease has occurred among the homeless thousands. No one suffers for food. The whole State offers unstinted hospitality to the refugees who are widely distributed. In the city there are clear signs of the re-establishment of well-ordered and effective municipal life. Business is resolutely providing for itself. Restoration will be accomplished as speedily as the nature of things will permit. It will not be our purpose to dwell upon these things. They will be noted by the general newspapers throughout the State, and every community and every individual will be eager to hear and to help whenever occasion arises. Our duty lies rather with the promotion of our rural industries, and it will be in the main from their point of view that our future references to the calamity will be undertaken.

But a better way to re-establish the State in public confidence is to proceed resolutely with industrial development. It is with the idle that fallacies propagate themselves and alarms multiply. The plain duty of the California people is to get busy. This duty rests upon those who handle large capital and are capable of promoting large enterprises but it does not end with them. It presses upon every citizen of the State who can produce a box of fruit, a sack of grain, a basket of eggs, a roll of butter, or a batch of bread. Such units as these comprise the total temporal needs of the world, and it is the possession of such things in amplitude that the world becomes stout-hearted. Of course it is not in the material product alone that this courage inheres: it grows in the hearts of those who make them. Therefore get busy not only because idleness is demoralizing, not only because a wealth of produce is a foundation for confidence, but because effective work strengthens the worker, brings him into full harmony with his environment, and promotes the same spirit among all who see him or hear of his behavior and his accomplishments. For this reason we conceive that the best thing our agricultural population can do is to ply its vocation most diligently and devotedly, and our own duty lies in doubled effort to aid in this undertaking. We shall therefore dismiss the disaster from our work except as it may incidentally intrude or as some phases of it may convey some information which will be particularly interesting or helpful to our select class of readers.

Manifestly it is more important than ever that our rural development should be strong and the rural spirit confident. Though the disaster was narrow in its area, its effects will be

widely felt. The whole State will be called upon, in a way, to re-establish itself in public confidence. This can be accomplished in part by the speech and disposition of our own people. History and science will soon demonstrate that the shaking of the earth is a natural incident in mundane development: that every part of the globe in turn manifests the shrinking process: that, in our latitude at least, a severe local trembling is followed by generations of quiet. California has then paid her debt to mundane progress and enters upon the long period of geogonic soundness and solvency. It may be helpful to some people to be assured that the best reason to believe that earthquakes are at an end for a long period is found in the fact that the most severe shaking in the history of the State has just been experienced.

In the nature of things individual activity can be first assumed. Every effort should be made to turn to fullest account every favorable growing condition. The fruit outlook is spotted and some fruits will be in limited supply others promise fuller yield. There will be good demand for everything that can be turned to account either for present use or preservation. Not a pound should be lost by neglect or wasted. It is especially important that the season's aggregate fruit products should be as large as possible, not alone for ample income in our fruit districts, but to show that this resource of California shows no unsteadiness. The same is true of hay and grain products and of the dairy. The ample pasturage of this wet year should be turned into meat products as far as possible, for these are very promising in prospective prices. Diligence and economy resulting in widespread individual financial soundness throughout California will have an effect the wide extent of which cannot be overestimated.

Every sound enterprise for the development of our agricultural regions and rendering them more fit for a larger population should be confidently prompted. The strong movement which has prevailed during the last few years should not be allowed to decrease. The land will win for California if it is given a fair chance to exert its force. The fact that not a reed was shaken in the agricultural districts of the State except in a very narrow line of short length, and that even in that line injury to agricultural buildings was actually trivial, will free these districts from the shadow of the calamity very quickly and effectually. For this reason public undertakings for promoting agriculture should be confidently pursued. The towns will largely take care of themselves if the rural districts are full of thrift and profit. To this end every individual can minister and contribute.

The question of whether one could pump water in one place and sell it for use in another seems not to be settled although the Supreme Court in the case of Katz vs. Walkenshaw did hold that percolating waters could not be taken from the land on which they were discovered to be used on other lands. Judge Bennett of San Bernardino has just non-suited an action brought to prevent four defendant corporations from taking water from San Bernardino Basin and conveying it to Riverside and vicinity. The contention of the plaintiff was that the water could not be taken from one basin for use in an-

other to the injury of plaintiffs, who alleged that heretofore fertile and productive lands would be made barren by the lowering of the water plane by defendants. Judge Bennett denied every contention of the San Bernardino plaintiffs. The case is of far-reaching importance, as a verdict for the plaintiffs would have jeopardized a very large percentage of the water rights of California. Meantime it looks as though the matter would be carried up, and the Supreme Court will have a chance to say what it thinks of its own decision.

One of the most interesting agricultural observations made by our business manager during a recent trip across the continent was the increasing prominence of farm telephones. The wires were seen running everywhere: catching on to wire fences, rising to cross high gateways, crossing streams on tree supports, and, in fact, conveying means of communication in all directions for the elevation of rural life. The advantages of a farm telephone are so numerous and valuable one cannot measure or appreciate them at their real worth. With the advent of the telephone into the home comes a new companionship—new life—new possibilities, new relationships and attachments for the old farm by both the young and the old. Lonesomeness is banished by the privileges of city life being added through the telephone, and the influx of country folk to the city has been changed to an exodus from city to farming communities, even to a much greater degree than people who have not investigated realize. The advantages of farm telephones cannot be overestimated, because their practical utility is unlimited, and where installed they are never taken out.

It is reported from Washington that the third annual general inquiry of the House of Representatives committee on irrigation regarding the operation of the reclamation act is in progress this week. Secretary of the Interior Hitchcock stated that, including the irrigation projects under construction those which are contemplated, and those approved but not begun, there will have been spent on June 30, 1908, \$37,000,000 and that the estimated receipts from the operation of the law up to that time will be \$500,000 more than that amount. Besides, it is estimated there will be a return from settlers on irrigated lands amounting to \$1,000,000. This shows that Uncle Sam has not yet run aground on his water distribution enterprises.

It is almost sure that the Sacramento Valley irrigationists may be allowed to divert water high up on the Sacramento River. The bill has passed Congress and awaits the President's signature granting to the Central Canal and Irrigation Company the right to divert 900 cubic feet per second of water from the Sacramento River "while and so long as such diversion shall not injuriously interfere with the navigation of such river." If, in the judgment of the Secretary of War, the amount of water actually diverted shall seriously injure navigation, a suspension of operations may be made by the Secretary of War, "until the Circuit Court of the United States shall determine the rights, as provided by this Act." The bill requires that construction shall begin within one year and be completed within three years.

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A. VAN DER NAILLEN, 5000 Telegraph Avenue, Oakland.

QUERIES AND REPLIES

Grafting in the Bark

To the Editor: I have had some experience in working over old orchards. About 10 years ago I purchased an old orchard and tried all sorts of grafting. I have come back to my work after an absence of 3 or 4 years, and find my best work was in placing my grafts in the stump of the tree far below the ground surface as possible, sealing the cut with a special kind of wax and inserting grafts between the trunk and bark without splitting the wood. Upon examination I find some of the trunks undecayed, with the wax firm, with four to six nice young trees growing from a single root. Would it not be a good plan to alternate grafts from two kinds on the same root—two kinds that blossom at the same time and have an affinity?—S. A. Matens, Placer County.

The method of grafting in the bark without splitting the stock is a very important method and is now being quite widely used, especially with the English walnut, in which splitting of the stock is quite injurious. It would not make desirable orchard trees, however, to have several stems, as your proposition to graft a number of scions in the same root would accomplish. It would be better to top graft in the branches if you wish several varieties on the same tree.

Generations and Generations

To the Editor: Not long since I saw the following in a paper: "In planting English walnuts, it is understood that the second generation must be secured, as the third, fourth and fifth generation will not produce. This is an important point which experimenters must not overlook." Will you be kind enough to inform me what is meant by "second generation, third generation, etc?" I am free to confess that I never knew. I presume you can inform me in a very few lines.

First, second and third generation, etc., signifies the number of times the plant has been reproduced from seed; first generation being a seedling of an original stock, second generation a seedling of that generation, etc. We never heard it claimed that late generations would not produce, but there is certainly considerable difference in the character of the product which comes from the several generations and a tendency to exhibit greater or less departures from the original stock. If there is sterility in the later generations we should like to know of it.

Bloom and Fruit of the Orange

To the Editor: Being in the southern hemisphere, our orange and lemon crops ripen, some six months behind yours in California. Prices for first-class oranges properly handled realize with us as follows: April to June, 5s per hundred; August to October, 10s to 15s. I do not

experience difficulty in getting oranges, which are fit to eat in April, to hang on until October. The trees blossom in August. Now looking at these prices, one would think it was better to keep fruit on the trees, and sell at the enhanced price, but our growers prefer to gather and sell their crops as soon as marketable, and clean their trees before August so as to have nothing on them when in blossom. In fact one man said to me a few days ago, "I would rather sell my oranges in May at 5s than in September at 10s," his reason being that if allowed to hang, the next crop is seriously interfered with. Will you kindly inform me with your views on this theory that allowing the crop to hang is considered injurious to the trees in California.

My remarks apply solely to the local orange "Transvaal seedling," and not to the Navels or Valencias, which people have not, generally, begun yet to plant, although personally I have planted nothing yet.—Subscriber, Wolhuterskop, Praetoria, South Africa.

There has been some belief among California orange growers that the ripening crop should be gathered before the blossoming, but the fact that the greater part of it is generally marketed before that time is probably due to other causes than to any conflict between the ripening fruit and the blossoming. As a matter of fact a considerable part of the crop does remain on the tree until after blooming, and in the case of the late varieties, like the Valencia Late, which is largely grown in this State, most of the crop is gathered after blooming, and the exceptional profit of this variety rests on the fact that it can remain on the tree in good condition and be marketed in midsummer and early autumn. Our impression is that the apprehension of your fruit growers is not well taken.

Walnut Growing

To the Editor: I have been deeply interested in the articles published in your valuable paper of late regarding propagating and grafting the English walnut. I planted, a year ago, ten acres to walnuts, using Mr. Burbank's Royal hybrid black walnut, for stock to graft to the Franquette variety. Will you please state the merits, and demerits, of the Royal hybrid walnut for stock; is it as good or better than the American or California black walnut? What soil do you consider best for walnuts, top soil, its depth and sub-soil?—Constant Reader, Sebastopol.

All the presumptive evidence is that this hybrid walnut of Mr. Burbank's will prove a notable foundation for the English walnut. Its vigor and rapid growth indicate this, but the final demonstration of its relative value as compared with other roots can only be reached by actual experience covering a number of years in different soils and situations. The walnut succeeds on quite a wide range of loam soils. The tree needs a constant and ample moisture supply, which is hard to maintain in sandy or gravelly soils, and the root also rebels against standing water, which is likely in the adobes. Hence a deep, medium loam is best. Some of the best walnut soil in the State has a light loam surface with a heavier loam below.

Summer Growth of Cover Crops

To the Editor: I believe a part of our ten-acre grove is suitable, at least for an experiment, with cow peas, as we have a very good stand of field peas, and I should like to try the others. I propose drilling in five rows in each space down the orchard, spacing them to water in three furrows, and so I can use the cultivator; and I had further thought of getting cheap wild oat hay for a mulch after cultivating before they bloom, and then watering beneath, as this works splendidly with sweet potatoes in July and August. Then as the hay decomposes, as it will beneath the vines, I will get the added

humus and avoid the need of so much cultivation, and our adobe soil doesn't require much if surface is covered, but if bare it is a tough proposition. Neighbors not growing cover crops have had to cultivate after each rain, and their soils are as compact as if uncultivated all winter, and much soil lost by washing. I would like seed cow peas for twenty-five acres, as a couple of neighbors wish to try them, too, with inoculating material. Kindly let me know the cost at steamer wharf in San Francisco, and if they can be had by the first of May—Citrus Grower, San Diego County.

The experiment with summer growth of cow peas and a mulch which you propose is an exceedingly interesting one, and theoretically it is thoroughly rational. Difficulties may arise which only a trial can disclose, and we would advise you not to try anything like twenty-five acres at first, because it involves quite a large expenditure for material and work, and will also make quite a requirement of water. All important points can be determined, and good contrasts drawn between the old and new way, just as well by the use of smaller acreage. There is no supply of cow peas available in San Francisco, nor can there be this season. As the crop is not grown in this State to any extent, we doubt if there was enough seed for the acreage you speak of even before the fire destroyed the supply utterly. You will have to get what you can in Los Angeles. We hope you will try the experiment and will give us the advantage of knowing what your conclusions are.

Asparagus Growing

To the Editor: On what soil is your large asparagus crop grown for canning? How are such large white shoots grown? What is the price at the canneries, and what is the relation between growers and canners? What varieties are grown for this purpose?—Enquirer, Snohomish County, Wash.


The connection between the canneries and the growers is exceedingly close; in fact, part of the acreage is carried by people who are interested in the canneries. There is no fixed price at the canneries. They pay the market price and are in competition with each other, and for the demand of the fresh vegetable market, except where contracts are made. Our chief acreage of commercial asparagus is grown in a very deep, light soil composed of river sediment, and what is called peat; that is, partially decayed rushes, tules, etc. It is so light that roots are sometimes set even as deep as eight or ten inches and additional ridging is done before the growth starts. It is not difficult for the shoots to push their way up through this depth of loose material toward the light, and they are cut by plunging knives into the bank as soon as the top appears, and in this way one can get, say, eight inches of clear blanched shoot.

We have, of course, a certain acreage of asparagus grown on light, sandy loam not so largely supplied with organic matter, but manifestly the product which is made in California for canning is large conditioned upon the use of soil particularly suited for the free growth and complete blanching of the shoots. Several varieties are used, but large varieties make larger shoots because they are grown under such exceptionally favorable conditions.

Scale and Mealie Bugs

To the Editor: What would you recommend for black scale and mealie bugs on tender plants in a conservatory? The mealie bug is very bad.—Amateur, Lodi.

Young scale and mealie bugs on conservatory plants are easily killed by an application



THE WAY TO GET READY FOR HARVEST

If you grow grain or grass of any kind, you are invited to call on any dealer who sells one of the *International Line of Harvesting and Haying Machines* and get one of the new 1906 catalogs. You will find it well worth your while, for it's full of good grain sense—harvesting talk that means *bigger profits* for you.

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Remember:

There's a good old proverb about the impossibility of making a silk purse from a sow's ear.

It is equally impossible to make a good machine from *poor* materials—or unsuitable materials.

And likewise impossible to make a good machine even from *good* materials, without proper skill and proper facilities.

Every farmer knows how much harder it is today to get good lumber than it was 20 years ago.

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It was to overcome these difficulties that the several manufacturers of the various machines comprising the International Line, co-operated with each other in producing their own raw materials.

They cut and saw their own lumber, in their own

forests; they dry it in their own kilns, and they have it ready when they need it.

They mine their own iron and coal; they make their own coke and steel, and they produce much of the other materials used in their factories.

The result is that they do not have to try “to make a silk purse from a sow's ear.” They have the *proper materials* at hand, when they need them.

Nor is that all. The International Line of machines for harvesting and haying embraces *only* machines which have stood the test of time and bear the stamp of approval of the American farmer.

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It is these things that make the International machines so satisfactory to the user.

QUERIES AND REPLIES—Continued

of kerosene emulsion carefully made, or by the use of whale-oil soap, one pound to four gallons of water, or by an infusion of tobacco stems; in fact, almost any common insecticide made weak enough so as not to injure greenhouse plants will be effective with these pests if thoroughly applied. Probably application from time to time will be necessary to keep them out.

Walnut Grafting

To the Editor: I have been experimenting with the English walnut for some time. I want to try all the different methods of budding and grafting. Will you mail me any printed matter you have pertaining to the subject?—Grower, Stone Mountain, Georgia.

We have no comprehensive statement printed concerning the methods employed in grafting the English walnut. The destruction

of all our files and back numbers makes it impossible for us to supply them. We may say, however, briefly, that the way which seems to be most successfully used is to insert a scion cut with a wedge shape on one side under the bark at the side of the stock, and in this way avoid splitting the stock. When a bark graft of this sort is put in and the cut surfaces carefully covered with a band of quick hardening wax a very high percentage of success is at-

QUERIES AND REPLIES—Continued

tained. Top grafting is used in stubs from an inch to several inches in diameter.

Walnut Blight

To the Editor: I am offered a walnut orchard in Ventura County, near Saticoy. I have understood that territory to be generally a deep rich soil and especially adapted to walnuts. Do you know about it? I am told that during the last two or three years a blight has appeared on walnuts being quite destructive. I understand it injures the new growth and young fruit, a black spot appearing in the blossom end of nut which enlarges and penetrates to the center causing the nut to drop. Can you tell me about it, and how serious it is? Need one hesitate to enter the walnut growing on account of it?—Enquirer, Minneapolis, Sota.

The Saticoy district has, as a rule, just such soil as has been described to you, and it is a thoroughly good walnut region. The walnut blight is a very serious trouble and a perfectly satisfactory remedy has not yet been reached. The University Experiment Station is conducting special experiments at present with it, with a special appropriation by the last Legislature. Experience with thorough spraying with the Bordeaux mixture thus far seems to indicate that one-half the crop can be secured, and this, according to the prices which have recently ruled, yields profit enough to make investment satisfactory, and the prices of good walnut acreage are holding up well. Our own view at the moment is that we would not hesitate to buy a good orchard on account of the blight, because the profit on a 50 per cent yield is satisfactory and because we believe the disease will be brought under control so that a fuller crop can be secured. This seems to be the judgment of purchasers generally, because there is at the present time a very general disposition to plant new orchards and to invest in old ones, in spite of the blight. It is a notable fact that the walnut blight, while killing twigs, does not invade the tree as the pear blight does.

Curl Leaf-damping Off

To the Editor: I have some nice 3-year-old peach trees and the curl leaf has struck them so badly that they promise to die. Will you please tell me the cause of it and the remedy for their cure, if there is any?

I sowed some tomato seed and the plants started up nicely, but when they got about two inches high some sort of a disease struck them and all died. The stem would shrink away in spots, the interior going out and leaving nothing but the outside skin. I presume this is familiar to you. Will you please tell me the cause and remedy?—Grower, Sebastopol.

The curl leaf of the peach is a fungus disease for which you can do nothing at this time. The proper treatment should be applied in the winter in the form of spraying with the Bordeaux mixture. It is probable that your trees will not be seriously injured by this attack because these diseased leaves will fall and new ones will appear, but you should remember and have them thoroughly protected against the occurrence of the disease next spring.

The tomato seedlings are affected by a disease known as "damping-off," which is discussed on page 229 of the Pacific Rural Press of April 14.

Why the Trees Failed

To the Editor: Can you inform me the trouble with these gum trees? They were grown near Petaluma, and were sent to me by express in the first week of March. They were well wrapped in damp moss and burlap. The weather was so wet when I received them I threw earth over them for four days before

planting. Then I carefully removed and planted them in soil as well prepared as was possible to be, but, to my surprise, in less than two weeks every tree was completely dried up, regardless of the continual rain.—Planter, Sacramento County.

One cannot explain why your eucalyptus trees dried without knowing more about the conditions. If you simply put the whole bundle in the ground the probability is that there was too much excess of air through the moss, burlap, etc., or the mixture may have set up fermentation and exhausted the moisture in that way. Whenever plants are to be temporarily held to wait proper conditions for planting out, the wrapping, moss, etc., should be removed and the roots allowed to come into direct contact with the soil; otherwise the chances of life with them are exceedingly small. This is of course only a guess so far as your trees are concerned. They may have been killed by frost after planting, or several other things may have happened.

THE FIELD

The Men Whom California Wants

To the Editor: I have been referred to you in regard to opportunities in agriculture and horticulture in California. I wish to escape the severe New England winters, though I am decidedly not an invalid. I am 27 years old, large, and in perfect physical condition. I have always worked on a farm, and am now employed as working foreman on a 200-acre farm, with wages at \$25 and board, etc. I desire to obtain a similar situation in California, though I suppose it would take a year or two to learn the ropes thoroughly. I know nothing about California conditions except in a general way. What are the wages, etc.? I should prefer to buy or rent a small place, but realize my very limited capital (\$1500) would not permit. I am soon to be married. I purpose coming to California in August or September, and would like your opinion and advice in this matter.—Immigrant, Connecticut.

To the Editor: I had intended to come to California June 1st, work at fruit picking, study horticulture in the University, and settle permanently in fruit and poultry-raising. Has the disemployment of San Francisco labor a tendency to lessen wages and demand for labor at fruit picking?—Inquirer, Missouri.

To secure authoritative answers for these two correspondents we submitted their letters to Mr. H. P. Stabler of Yuba City, member of the California State Board of Agriculture, and Chairman of the Committee on Labor of the California Fruit Growers' Convention. Mr. Stabler's answers will be widely interesting and suggestive. They are as follows:

To the Editor: I would reply to your Connecticut correspondent that there is no reason why he would not do well in California either in agricultural or horticultural pursuits. We are frequently in receipt of letters from people in the East who are desirous of locating in agricultural sections of California, with a view of engaging in fruit growing and farming, whose occupations do not fit them for these callings here. You will grasp my meaning when I say that clerks, bookkeepers, stenographers, chemists, lithographers, and people of similar vocations often enquire about fruit growing on the Pacific Coast. While California needs people and it is the policy of the State to encourage immigration, we do not hold out inducement to those people to engage in fruit growing here.

From your correspondent's letter I note that he has had experience on a farm, and that he is now superintendent of a 200-acre property. He would therefore come to a fruit orchard or vineyard familiar with much of the detail of the business. He would know about handling men and teams, and would soon learn picking,

drying and shipping fruit. The fruit industry is in need of capable young men who will thoroughly learn the business and fit themselves to take charge of and manage orchards, vineyards, packing houses and canning factories. Salaries for these positions are from \$75 to \$200, probably averaging \$125, and the demand exceeds the supply of fully qualified men.

Wages for orchard and vineyard labor are one dollar a day and board. In the summer and fall it goes to a dollar and a quarter, and for extra good men a dollar and a half and board. An able-bodied man capable of performing the average work of a farm can get a dollar and a half a day during August, September and October. This would be for work in vineyard and packing house. After the season closes he could work in oranges and olives at Palermo. This would bring him up to the first of the year, when he could go to Southern California for work in oranges, or could get work here in pruning, spraying, plowing, cultivating, etc.

It is much better for a man to work at least a year before purchasing even a small place, as he would learn the conditions and would be in a better position to manage his own property after going through an entire season on an established ranch.

He suggests in his letter that in all probability he will not come to California alone. In this event his wife could find pleasant and profitable employment in a dried fruit packing house, where prune figs and raisins are packed in small boxes for market. This work is done by women and girls. The demand for this work is very great and pays from one dollar to three dollars a day, according to the skill and dexterity of the worker. This lasts during September, October, November and December. In orange packing a large number of girls and women find employment.

To the Missouri correspondent I would say that without doubt the distressing fire in San Francisco will compel many residents of that stricken city to seek employment in the orchards and vineyards of the State, but the fact remains that there is always work for young men who have had experience on Eastern farms.

HORTICULTURE.

Important Work in Strawberry Raising.

To the Editor: With the rounding out of another year here at our little experiment station there are a few things that have come to pass in our work that probably will be of interest to you.

In conversation with you last year I was telling you of some of my new hybrid strawberries. They were the Rose Ettersberg by Beach and Rose Ettersberg by Californica. I also tested this year the following varieties, viz.: Australian Crimson, New York, Parson's Beauty, Sample, Monitor, Crescent, William Belt, Senator Dunlap, Glen Mary, Kansas, Marshall, Bedwood and Haverville.

Of the above varieties the best table berries were Australian Crimson and William Belt, and the best canners was Senator Dunlap. So far as the quality of these three berries is concerned they leave little to be desired, but they cannot adapt themselves to climatic conditions here as well as could be desired. They do not pretend to do any growing until the spring weather gets here, and then just as soon as our first hot wave comes—the temperature goes over 100 degrees in the shade—and they again begin to cry for rain. Last year they simply quit with about half of the berries yet on the vines. The Rose Ettersberg plants beside them matured all their fruit and again this season showed beyond doubt that they can stand more drought and heat than the red varieties, even the Kansas. As for quality, they are better or worse, just as you fancy their flavor, as they are quite different in flavor from any of the red berries, and some people like one and some the other, and I like both.

WHAT IS AIMED AT.—During the hot spells we had during the summer of 1905 whenever the temperature rose above 105 degrees in

the shade even the Rose Ettersberg would wither so as to lie on the ground and it then was gratifying to me to see where I was drifting, for however hot it became, these new hybrid plants grown from Rose Ettersberg seed, fertilized with Beach pollen, stood the heat like a salamander. These native Beach plants were secured as they were growing on the cliff at Devil's Gate, an exposed point three miles south of Cape Mendocino, and if conditions of the character existing at Devil's Gate can toughen a plant through successive generations I do not wonder that these new hybrids are able to enjoy any little variation of climate we have here at Ettersberg and never notice it, for the Devil's Gate climate is about as changeable as they make it, and it generally changes for the worse at that. These hybrids have great vigor and dark green glossy leaves. The leaves are large and leathery and the plants were as green in the last of December as they were last June, and I am delighted with this feature of them, for with the advent of the Rose Ettersberg I looked forward to producing a type of strawberry that was enough of a Californian to be able to take advantage of all of our wet season for growth and not lie dormant for five of the best months in the year, as most of the Eastern varieties wish to do. They have not fruited much yet and really I do not expect much on this point in this generation, but I expect some remarkable berries with about two more crosses. Then, if I get what I am after, we will have a berry of great constitution and vigor, evergreen and ever-bearing, resistant to both heat and frost, and able to rest comfortably and wait when it becomes too dry to grow.

OTHER CROSSES OF ROSE ETTERSBERG.—I got surprising results in crossing the Rose Ettersberg with Californica (our little wild red berry). The plants are of great vigor and very fruitful. Where one of the second generation Rose Ettersberg plants bore fruit this year twenty-five of the Rose Ettersberg-Californica crosses bore fruit, and they all lead about the same way from the very start. The fruit is large, generally bright red, and of very fine quality. A remarkable feature of these plants is that several of those that bore fruit had two crops of berries, they having gone back to their great-great-grandmother, the Sharpless-Parry, for that character. Of all the seedlings I ever fruited for the second generation Rose Ettersberg, I don't think I ever had a single plant that produced more than one crop of berries. When characters such as this can be awakened by crossing with another species of so little importance as our own little Californica it would seem that however much we may pretend to know about plant breeding we are liable to know more after we have worked out the experiment.

THE HIMALAYAN BLACKBERRY.—Last year, too, the Himalayan blackberry made its first crop of fruit, and won the heart of all visitors without exception. Growing side by side with the Logan berry it produced ten times as many berries, and more than ten times as much new wood. As for quality, it is the finest berry I ever tasted of either blackberry, raspberry or hybrid. It blooms medium late here and ought to become a great favorite where its merits become known to the public.

ALBERT F. ETTER.
Ettersberg, Humboldt County.

Mr. Etter is doing most excellent work in plant breeding and testing on his own grounds, and his results should command wide attention. The Rose Ettersberg strawberry of which he speaks in the above report was produced by him several years ago by crossing a large white small-leaved variety (name not known to us) with pollen taken from a third generation seedling of a Sharpless by Parry cross. It is an exceedingly vigorous, thrifty and drought resistant. He has made crosses with it and many American and European varieties and has grown thousands of seedlings. He has been

at work with strawberry crossing to a greater or less extent for the last fifteen years.

Everbearing Strawberries.

A Kansas grower who had opportunity for observation on the Pacific Coast last summer, writes a very interesting letter to the Fruit Grower of St. Joseph, Mo., concerning everbearing strawberries which contrasts our conditions with those east of the Rocky Mountains. He says:

There is no ever-bearing strawberries that are worthy of the attention of the northern commercial berry grower. Twenty-five or thirty years ago there was a variety found by a berry man in Old Mexico, which he claimed would yield a crop every month; but when they were transferred from the genial climate of Old Mexico to Illinois, they failed to do any more than to produce a few small berries not as large as our wild sorts, and ripened at the regular time that our berry crops mature; then in September a few more scattering berries matured, but not enough to make any display of berries worth picking.

Under the climatic conditions in Southern Oregon, for forty or fifty miles from the coast, and all through California, from the northern part of the state of San Diego, most varieties that we grow in Kansas and Missouri continue blooming and maturing and maturing berries for market from the first of May in Southern Oregon and Northern California, till the last of September. And in Southern California from the middle of April till November. Then in some exceptionally mild winter seasons they continue blooming and ripening scattering berries till January.

The May and June pickings are larger in quantity and size than any other month in the year, but strawberries are a profitable crop for eight or nine months.

The Brandywine variety is the most prolific sort; in fact, in Southern California it might be called an ever-bearing strawberry plant. The Brandywine was originated not far from Harrisburg, Pa., and it is a problem for a botanist to figure out why it succeeds so much better in Southern California than in the place of its origin.

When I visited the Portland Fair and the Pacific Coast fruit country last fall I took great pains to look up varieties of strawberries and note the difference in taste between same varieties grown here in Kansas and Missouri. I could not discover any material difference in Southern Oregon berries and those we grow. The Brandywine variety does not succeed in Southern Oregon as a profitable bearer, when compared with a sort grown at Ashland called 16 to 1. In the Tropico berry field, near Los Angeles, the Brandywine is not near so tart as it is in Kansas. It is sweeter, which I attribute to its long fruiting season and to the abundance of water used in irrigation.

So we find that climatic conditions of our Pacific Coast country in California give strawberries of Northern origin, having a three or four weeks' berry ripening season in the North, continuous fruiting season of from six to nine months.

CORRESPONDENCE

The Spirit of the Hour

To the Editor: Your courageous little sheet of April 21st received with admiration. Hurrah for San Francisco and her undaunted courage, and hurrah for the Pacific Rural Press! What would your readers do without it? I had given up hopes of seeing it for several months at least, but here's to give you my support in any way I can.

Our little village is doing what it can for San Francisco. We have sent about three carloads of provisions and clothing (perhaps more by this time), and have raised about \$1400 in money, and will send a carload of cattle in a day or so to Stockton to be butchered and sent to San Francisco. About the \$1400, that is counting twice because some of it was spent by the committee to buy more supplies to fill the carload.

All Fresno County is deeply concerned for the suffering and needy ones of San Fran-

cisco. The county has also offered to shelter some 3000 homeless ones, of which Fowler has offered to take 100, but so far none, but a few who came to stay with relatives, have come to Fowler.

Everyone is admiring the courage and spirit of San Francisco's business men, and looking for a finer San Francisco. The disaster has done at least one good thing—it has produced a brotherly feeling throughout the State that will bind California closer together, and one that, I believe, will do us much good by having aroused our sympathies. We cannot but be better men and women after manifesting our sympathies in the gift of our substance. It makes us grateful for what we have, and to see another's need and in compassion give, and give generously and from love, springs a brotherly impulse that does our souls good and makes us realize that we are here in this world to do good, and not only to make money.

No one has refused to give. Men who were thought too selfish to give have offered to give generously. As I have already said, all California sympathizes with San Francisco in her calamity and admires the spirit that her business men manifest in their determination to rebuild. It is that spirit alone that will rebuild the town. Accept our best wishes for your success.

CARL F. RUFER,
Fowler, Fresno County.

The Grangers Taken

To the Editor: Your friends will all rejoice to know that you are resuming—beg pardon, "continuing"—the farmers' and fruit men's paper. And none will be gladder than your many subscribers and wishers among the Grangers. We can but admire your grit and enterprise. A long, new lease of life to the Rural Press. Berkeley is a good place for it.

J. W. WEBB,
Modesto, Cal. Lecturer State Grange.

A Friends' Welcome

To the Editor: The Rural Press of the 21st is received and our sympathy goes out to you for your great loss. We rejoice, however, that neither quake nor fire can down that California spirit to overcome all obstacles, and are glad to know that our old-time Press will continue to bring wisdom and encouragement to us tillers of the soil.

J. HOBART.
Nordhoff.

Glad of Continuance

To the Editor: We are glad to hear that you are pleasantly settled and prepared to give us The Press. The loss of the Rural Press, even for a short time, would be quite a serious inconvenience to the farmers and orchardists of the State. We all have to look to you for information and assistance in time of trouble.

Willows. A. H. WILLARD.

An Enthusiastic Friend

To the Editor: Plato never enthused his audience more than your proclamation to the readers of the Pacific Rural Press and California Fruit Bulletin. God bless you.

Sonoma. ROBERT HALL.

Another Fervent Blessing

To the Editor: Thanks for your brave circular. God bless you. Be of good cheer. We prize your courage no less than your culture.

EDWIN SIDNEY WILLIAMS.
Saratoga.

An Eloquent Tribute

To the Editor: As an expression of sympathy in your great disaster and loss; of obligation for your services to me and others in the past; of affection for the paper which has been a welcome weekly visitor for so many years, and of confidence in your restoration and future usefulness to the State, I enclose my check for payment of subscription five years in advance.

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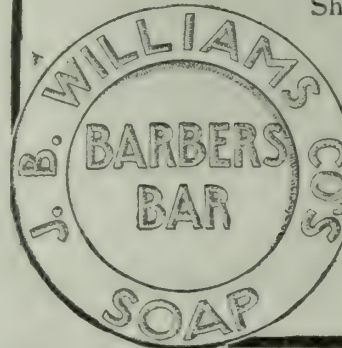
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E. J. WICKSON Editor

The Week.

Many people have had a new experience in appreciation of the beauty, capability and comfort of the American dollar. How well it fits the pocket and how delightfully it fills the palm of the hand. How hard and smooth it is, and how assuring is the contact of its milled edges with the cuticle when one squeezes it hard. How could anyone have ever thought that a fiat dollar would be better than the real one? In the succession of holidays, which have been characterized by what one could not do rather than by freedom to do anything, there has come to many not only the discouragement of poverty, but the comfort of coin, and how great the delight even of a little of it! How many who, in past time, have not been at ease without an eagle, or multiples or fractions thereof, to jingle in their pockets, have recently felt more confident and manly with the grasp of silver halves and quarters than they ever did with the hand on gold! This new appreciation of the comfort of a dollar has come to many who never enjoyed it before because of their power with check books and store credits, but during the few days when these could avail nothing the grasp of a coin, even though only a little one, made them feel again something of the world-mastery which comes to the boy when he pockets the first dollar he ever earned. The sensation compensates for many inconveniences, and the lesson of it is salutary. Too many have been too free with coin, it has come and gone too easily to be appreciated. It is quite possible that at the end of a term of years the value of the thrift and foresight which recent experiences has impressed may far exceed the individual losses which have been bravely undergone.

But while thrift and foresight are good, stinginess and timidity are bad, and we hope no one will learn the miser's pinch from indulgence in the joy of the squeeze which we have praised. It would indeed be too bad if the characteristic largeness of the California view should be lost and the freedom and confidence of expenditure for what seems enterprising, generous and good must be retained if Californians are to be true to California. In some respects we need larger views than ever and greater expectations than ever in the industrial development of the State. It is currently stated that San Francisco and vicinity have advanced farther in the three weeks since the affliction than older communities advanced toward recovery in twice the time. That is just as it should be and it does not seem to us that buoyancy, confidence and action are at all inconsistent with thrift and carefulness. How to gain the latter and still possess the former

qualities is what we have to learn and to that end recent experiences seem to be really helpful.

One of the most needful things to do is of course to restore confidence, first in ourselves, and, second, in the outside world. As we said last week we can cure ourselves rapidly by getting to work, and fortunately the truth of that is being more clearly demonstrated each day by the behavior of the people in all localities where trouble was experienced. The popular attitude in California leaves nothing to be desired. To restore confidence and allay apprehension in the outside world will be a slower process. We answer a query this week which indicates that the distant writer is very badly frightened, for he apprehends injury to orchards, nurseries and the like, as though the earth was too shaky to hold up trees or to submit to cultivation. Some of us can remember perhaps that such was our own childhood's conception of an earthquake. How different the fact is; how secure the ground for all but shaky buildings; how free from all token of disturbance is the landscape, even in the narrow region where the shock was most severe, and how little the event interfered with ordinary occupations, except at a few points—all these are matters upon which it the duty of everyone to inform his friends in other parts of the world. In no other way perhaps can a better knowledge of the event and a truer conception of its phases and influences be made widely known. Everyone should do whatever he can to be sure that the State does not long suffer from the sensational exaggerations which are now current. Very soon, however, our exported productions will be eloquent along the same line. Hundreds of carloads of California cherries will be the first demonstration that our horticultural life and industry are still secure, and they are now beginning to go forward in considerable quantity. Apricots and plums will follow, and though we may be scant in midsummer fruits, because of unfavorable conditions which are purely horticultural, the later fruits promise to be so abundant that shippers, canners and driers will all find supplies for a large export traffic. All through the summer of course California citrus fruits will be constantly carrying to distant markets the token of our safety, and demonstrate that California is hard at work at things which are well worth doing.

The crop which is now on is the hay crop. Although the cutting will be large because growing conditions have been so good, the demand promises to be quick and satisfactory. Old accumulations in San Francisco have been swept away and the amount of teaming which will have to be done in the work of restoration will keep all the animals busy and hungry. We expect therefore an eager market and good prices at least at first—after that it will be a question of how much there is and what arrangements are made for warehousing. There is, however, reason to expect that hay traders will be as energetic and venturesome as others, and the gait which is set at teaming by the end of May will be regular enough to serve as a basis for calculations.

The money to come from this year's grain crops will be a good thing all around. There ought to be something like forty millions value

in the surplus for export. We hope the European brewers will want as much barley as usual for we shall have a fine crop of plump grain. The report is that arrivals of foreign wheat in England have been 30 per cent less this year than in the corresponding time last year, but prices are much lower, owing to the large supplies on hand. The outlook is regarded better for an advance in prices than for a decline. We shall be ready for a share in that.

California cows will do their share in restoring confidence. The last issue of the official records of Holstein-Friesian cows contains the report of the cow Alcartra Polkadot 50798, age 6 years 11 months 13 days, days from calving 22: milk 597.1 lbs., per cent fat 3.90, fat 23.268 lbs. Thirty-day record, days from calving 12: Milk 2,605 lbs., per cent butter fat 3.69, fat 96.130 lbs. The owner is Charles D. Pierce, San Francisco. This cow produced 12.654 lbs. butter fat at two years, 17.28 lbs. at three, 20.222 lbs. at four, 21.723 lbs. at five, and 23.268 lbs. at six years. She was bred in Wisconsin, was thence taken to New York, and from there to California, and well shows the adaptability of her breed to any and all places; her last three records being made in these three different States. The California Agricultural College took so much interest in this record that, in addition to the regular re-test carried on by two supervisors taking turns in watching the cow day and night, Prof. E. W. Major, the officer in charge of tests of dairy cows in California, went himself to the home of the cow a week later, and there personally confirmed the work of his supervisors. 1,300 quarts of milk, containing sufficient fat to make 112 lbs. of best creamery butter, in thirty days, is a yield believed to be unattainable by any breed but the Holstein-Friesian. The favor of California conditions is shown in the increase of yield over the experience of the cow in other States for this greater than one would expect from greater age alone. Good for Lady Polkadot: she has the right spots on her.

They are, however, doing something in trapping rabbits. Consul-General Bray reports from Melbourne that a new rabbit trap is being used with great success, whereby rabbits may be caught alive in very large numbers. It is used in connection with small trap yards. The trap itself is 18 inches long, 12 inches high, and 6 inches in width. It has a balanced moving floor and a door at each end, which opens and closes automatically. The weight of a rabbit on the inverse end of a floor closes the door behind him by which he has entered and opens the door in front leading to the trap yard, so that the rabbit has no option but to go on, and when he leaves the trap it goes back to its former position, thus resetting itself. The small trap yards are constructed of double-wire netting fences, in the spaces between which green fodder or hay is cultivated or provided, and, although these foods cannot be reached by the rabbits, it entices them to enter through the traps to try and get out the fodder from the other side. Two, three, or more traps may be used in connection with each trap yard. The invention has been tried with great success by several leading ranchmen, one of whom states that with two of the traps set at a small water hole he caught 630 rabbits in one night.

QUERIES AND REPLIES

Horticultural Aspect of the Trouble.

To the Editor: What will be the influence of the earthquake on the fruit and nursery interests of the Pacific Coast; to what extent were orchards and nurseries injured? Our ideas are very vague on these subjects.—Nurseryman, New York.

We hasten to say that distant people seem to be more upset by our fire and earthquake than those who are nearer the center of disturbance. We cannot see how there can come any injury to our nursery establishments, except in two ways: first, losses to those who had offices and salesyards in San Francisco (and they were very few); second, losses to commercial florists both by destruction of their outfits for growth or trade and by losses of their sales in the city of stock now ready, and in this line the losses in San Francisco will be very great. There can be no injury whatever to nursery stock in the ground because there was no disturbance of agricultural land, and the geologists have to look pretty closely for any displacement which is capable of measurement. Besides most of the large California nursery establishments were distant from the district where the most severe shaking occurred. Mr. Burbank perhaps came nearest to a center of destruction because his residence is within half a mile of the Court House at Santa Rosa, which was thrown down, but Mr. Burbank lives in a small frame house, and experienced, we understand, no losses of plants whatever. The part of Santa Rosa which was destroyed consisted of flimsily built brick stores, hotels, etc., and even the Court House itself was not a safe structure. The resident part of the same town was not seriously injured. Generally speaking the only losses which can arise to our California horticultural interest will be found in whatever disturbance to the regular trade may ensue, and not to any injury to person or property.

Morning Glory in Pasture.

To the Editor: As morning glory is making its appearance in some of our pastures, and not knowing the best method to eradicate same, if there is any, I write you for whatever information on the subject you may send.—Farmer, Mendocino County.

We do not know of any way in which morning glory can be subdued in the pasture. It is a hard undertaking to keep it down in cultivated land like orchard or vineyard. In such places frequent cutting under ground with a flat-tooth cultivator, never allowing the shoots to come to the surface, and put out green leaves, will smother out the plant if such under-ground cutting is maintained for a sufficiently long period, but we have never heard of any method approved by experience for reducing the pest in unplowed land.

Hardwood Trees for Hot Valleys.

To the Editor: Tell me how to destroy red ants in alfalfa. Which will be the best varieties of hardwood trees to plant in the Imperial Valley, San Diego County? Have you any literature on preparing seed beds and transplanting trees?—Reader, Redlands.

I do not know of any practical way to destroy red ants in alfalfa, except as they may be interfered with by irrigation. The best variety of hardwood trees for the Imperial Valley is not yet known, nor can it be until a certain amount of experimenting is done. The climatic conditions, as you know, are peculiar and nothing short of an actual test of trees will give the information which you desire. It

would be a public service on your part to grow and plant out a number of species to determine what their local value may be. Perhaps the best information on the growing of forest tree seedlings and planting out young trees can be had by application to Gifford Pinchot, United States Forester, Washington, D. C. He will be glad to send you publications if you describe the line of work which you propose.

A Native Foe of the Codlin Moth.

To the Editor: I send you a lot of insects which hatched out of Codlin moth crysalids which I gathered from under the bands on apple trees. Are they Codlin moths? They look more like flies to me.—Grower, San Diego County.

Mr. W. T. Clarke, Assistant Entomologist of the Experiment Station, recognizes the insects as parasites, of the family ichneumonidae and therefore destroyers of the Codlin moth, which have emerged from the pupae which they have destroyed. What particular species they are is not yet determined. We wish to know about what proportion of the Codlin worms that you gathered from under the bands, and from which these insects appeared, were so parasitized? In other words, were there many of these parasites found by you in proportion to the number of worms taken? It is a very interesting condition of affairs, and we should like to know more about it.

Arsenate of Lead and Paris Green.

To the Editor: How much is arsenate of lead per pound, and where can it be obtained? I cannot get it here or in Fresno. We have twelve apple trees. How many pounds would it take to spray them? Some of the apples are as large as hazel nuts, and some are quite small. Will it do any good to spray now? We could not get the arsenate of lead, and could not spray when in the bloom.—Reader, Madera.

In the upsetting of things generally we cannot tell you where you can buy arsenate of lead. No doubt advertisers will soon announce it. But for twelve apple trees you do not need to insist upon this material. You can get plenty of Paris green probably, and on a small scale it can be quite as successfully used. Slake one pound of lime in five gallons of water, stir in one-quarter of a pound of Paris green and add this mixture to about thirty-five gallons of water; keep stirred well and spray your trees. This amount of wash ought to be enough for twelve trees of pretty good size, and if the lime is used there will be no danger of injury to the foliage. You will need to spray several times at about three weeks apart. Arsenate of lead is cheaper than Paris green, but the difference in cost with a dozen trees would be insignificant.

Pear Scab.

To the Editor: By this mail I send you some Bartlett pears. There is a splendid crop on the trees, but nearly all are covered with the black spots. The same spots appeared last season and the crop was ruined. They were refused for cannery purposes at the local cannery. Will you inform me what the trouble is, and if there is any remedy that may be applied to save the crop; also how to apply it? The trees this season were sprayed with sulphur lime and salt, and later with Paris green.—Grower, Placer County.

The trouble is the common "pear scab," concerning which we have previously published full details, and the University Experiment Station has issued a special bulletin which can be had by application. This disease is best controlled by use of the winter strength of the Bordeaux mixture, and the lime, salt and sul-

phur wash properly made and applied also cleans the tree of the resting spores which begin their first attack when the fruit is still very small, as your specimens show. Nothing can be done to free the fruit from blemish when the scab is once clearly defined, for although weather conditions may check the disease, the black spot changes to a light brown blemish and the fruit is so misshapen that it becomes almost valueless. Pear scab must be attacked earlier in the season to save the fruit from injury.

Touch Rare Things Lightly.

To the Editor: You advise me as to the advisability of the purchase of a large (say thousand-acre) farm in your section to be devoted to the culture of fruit, nuts and tropical vegetables. The plants I am thinking of are the Saphodilla, Jamaica apple, Soursop, pond apple, custard apple, bread fruit, sugar apple, Jack fruit, Carambola, Carob, strawberry, pear, coeva plum, sea grape, goudi, mangostien, Marimee, egg fruit, criman, banana, lubang, litchi, oso berry, May apple, water lemon, sweet cup, capullin, pomegranate, medlar, voavanga, jujube, plantain cashew nut, cocoanut, black walnut, Queensland nut, and others.—Enquirer, Virginia.

The semi-tropical fruits which you mention are grown chiefly as curiosities in our thermal belts, and a very few are commercially grown and then only in a small way. Those which are strictly tropical, like the bread fruit, cocoanut, etc., are not grown in California. We would not for a moment think of planting any of these things on a large scale, and one thousand acres of them would keep a man poor during the balance of his natural life. The opportunity of investment in California is in the growth of the staple fruits of the temperate and semi-tropical zones, and varieties of them which are known to the trade and in recognized demand. One must indulge one's inclination for the production of rare things to the smallest possible extent. The market does not know of these fruits and as a rule does not care to know them.

The Disagreeable Diabrotica.

To the Editor: What can I do to stop the injury that the insect known as Lady Bug does to vegetables and fruit every year? Last year they did not make their appearance until about the last of May. Just before the last rain I noticed their appearance on some turnip and radish tops. They were very destructive last year on all kinds of vegetables and fruits in this section. I have never tried to destroy or prevent their destruction of things save by the sprinkling of ashes or sulphur, which does little, if any, good.—Reader, Willows.

The insect which you speak of as the "lady-bird" is undoubtedly the *Diabrotica* soror. There are no green insects belonging to the lady-bird class, although they do have a general resemblance in form. This *Diabrotica* is an unmitigated nuisance on fruits, vegetables and flowers, and the more aggravating because it is so difficult to kill. One cannot use poisons like Paris green on ripening fruits or maturing vegetables, nor flowers which are to be freely handled. Other applications seem to have very little effect on this insect. About the best that can be done to it is to drive it out by smoke. The insects fly readily and can, therefore, be driven from place to place. When the air is heavy you can largely drive them out of the vegetable garden by building a fire of damp rubbish on the windward side. Air-slaked lime into which enough coal oil is stirred to thoroughly permeate the lime, and yet not enough to make it mushy, can be scattered around the plants, and is to a certain extent a repellent.

But there is, it must be acknowledged, no very satisfactory treatment yet generally known. We would like to hear what others have done with them.

Spraying for San Jose Scale.

To the Editor: We have a fine orchard attacked by San Jose scale. The weather such that I could not prune early and I sprayed with lime salt and sulphur last week. It burned many leaves. Will this harm? If so, I thought on the balance of the trees I would paint the main limbs only. Please give your advice.—Orchardist, Humboldt County.

It will not be desirable for you to continue the use of the lime, sulphur and salt any later this season. It will be best to wait until you see the young scale with a magnifying glass, and then spray with the kerosene emulsion or the resin wash, waiting until next winter for a thorough treatment with the lime, sulphur and salt which is most effective against this insect.

Buckwheat Growing.

To the Editor: I should be pleased to have information regarding the raising of buckwheat; time to sow; length of time in ripening; number of pounds to sow per acre, and preparation of the land; also the kind of soil the best results might be expected from. The land I want to put in is of a light "peat" formation, with a deposit of three to five inches of river sediment, which was overflowed this season, but water will be off in next two weeks. This land, when not overflowed, will produce from twenty to twenty-five sacks of wheat. Has buckwheat been found to be a profitable crop in this State, and if so, in what section.—Farmer, Colusa.

For the growing of buckwheat the land which you describe would seem to be perfectly adapted. It should be planted after all danger of frost is over, for buckwheat is very subject to frost. The seed should be sown broadcast, just as ordinary grain is, but rather thinly because the plant makes broad leaves and needs more room than the stalk of grain. It is rather a quick-growing crop and should mature with you before the early frosts. There is exceedingly small demand for buckwheat in California, and we would advise you to put in only a small planting at first, so that you may get wise on the subject of growth and the amount which the market will take at profitable rates.

Potato Planting.

To the Editor: We have a light sandy sediment soil which has been in alfalfa pasture for four years. I want to plant to Salinas Burbank potatoes about June 1st. Have plowed with disk plow before and after irrigating—12 inches deep each time. Just before planting shall I plow deep, shallow or use cultivator? The ground will be packed considerable in next thirty days by harrowing. How deep should the ground be loosened in either case? How deep should potatoes be planted?—Grower, Lompoc.

On such soil after such treatment and so near the coast we would not think of working deep for planting; say not over eight inches, and would plant in the furrow after the plow and cover with a slant-tooth, smoothing harrow. There are, however, many other ways in which it can be done. About six inches depth will do for covering. The preparatory culture which you describe ought to hold the moisture well near the surface and give you a quick start from the seed.

HORTICULTURE.

Treatment for Peach Blight.

To the Editor: In view of the interest and no little alarm felt in certain portions of the State concerning the so-called blight which has quite seriously affected peach trees during the past two or three seasons, the writer takes pleasure in testifying to the almost perfect success which certain growers of Suisun Valley have attained in the control of this disease.

The Disease.—The trouble in question has received considerable attention in the columns of the Pacific Rural Press, and need not be described again at length. Its effects have been seen in most of our greatest peach regions, and consist in a dying of the buds on the bearing wood, gumming from the dead buds and spots on the twigs, and a dropping of the leaves and young fruit. Badly affected trees become defoliated except at the very top, lose their crop, and are seriously injured or killed by several years continued of "blight." The disease is a decidedly serious one. The cause, as has been frequently stated, is a "shot-hole" fungus (*Coryneum*), and, so far as we know, is the same species which affects the apricot and almond. The peach trouble is due entirely to this parasite, and is not the effect of "sour sap," or the conditions which produce that trouble.

Develops During Dormant Season.—This disease has well been called by Pierce "winter blight," inasmuch as the affected spots on the bearing twigs develop between seasons, after the growth of the year stops in the fall, and some time before the new growth starts in the spring. All through the summer and fall the new growth of the season is clean and healthy, but when growth starts next spring the same twigs are spotted with dead, gumming "shot-hole" spots, many of the buds are dead, and most of the new leaves and fruit fall off.

Fall Spraying Suggested.—The observation of this fact lead many intelligent growers, as well as those of scientific pretensions, to the conclusion that an early winter or late fall spraying promised best for the control of this trouble. The writer made this suggestion in the Rural Press of July 8, 1905, though he would by no means claim exclusive rights to the idea. Experience seemed to show that the ordinary peach spraying just before growth starts in the spring, so effective in curl leaf control, had no effect on shot-hole fungus. In all cases trees thoroughly sprayed with Bordeaux or lime, salt and sulphur showed the disease as badly as the unsprayed, with masses of gum breaking out directly through the spray on the surface of the twigs. The conclusion is unavoidable that spraying in February or March is too late for the control of the shot-hole disease, and that the infection of the twigs and buds has already taken place at that time. This infection, that is the first development of the twig spots, seems to have occurred early in January during the past two or three years.

Spraying at Suisun.—Acting on this idea, several growers of the Suisun Valley district carried out an early spraying treatment, the results of which it is the object of this article to record. The work seen by the writer was done by Messrs. Brown, Pierce, and Joseph Chadbourne, in their respective orchards. The trees were mostly Muirs, which are particularly affected by shot-hole fungus in that locality, although other varieties showed similar results. From this special work taken in conjunction with other spraying done in the valley, it is possible to get practically continuous observations on the effect of treatment from early in December up to the time of blooming.

Mr. Brown began work on December 6th, and sprayed his trees with a heavy Bordeaux mixture (10 lbs. bluestone, 12 lbs. lime, 50 gals. water). Other spraying in the vicinity was done on December 15th, and from then on through the winter. In all the cases recorded but one application was made to the trees.

December Spraying Most Effective.—The results were very striking, showing in general that one thorough spraying early in December with the heavy Bordeaux mixture absolutely prevented the shot-hole fungus disease. After December results were not so good, and grad-

ually deteriorated up to February, from which time on sprayed trees were no better than unsprayed in respect to this disease. One orchard sprayed mostly in December, but finished out late in January, showed a decided difference in the two portions. Spraying in December was perfectly successful; in January partially so, and in February and March without effect on this disease. The blight is so bad in unsprayed or late-sprayed orchards, with the crop and foliage almost entirely gone, and all the growth on those sprayed in December perfect, particularly the lower, inner, blight-susceptible fruiting twigs, that one seldom sees so striking a contrast in the treatment of any plant diseases. Abundant comparison is available between trees of the same variety, age, and condition.

Effect on Curl Leaf Equally Good.—The writer took some pains to note in this connection the effect of this early spraying on curl leaf, inasmuch as any peach treatment must take this disease into consideration. So far as could be judged, the effects were equally good, and the disease controlled as well as by the usual later spraying. The fine condition of a block of December sprayed Susquehannas was especially noticed, while unsprayed trees on this and even less curl-susceptible varieties were badly affected by curl leaf wherever the shot-hole fungus had left any leaves on the tree.

To summarize: Unsprayed trees were very badly affected by shot-hole and curl leaf.

Trees sprayed in December were free from any disease.

Trees sprayed late in January were somewhat affected by shot-hole, but free from curl leaf.

Trees sprayed in February and early March were free from curl, but no better than the unsprayed in regard to shot-hole.

Control of curl leaf as well as blight by December spraying would be decidedly desirable, as aside from the economy of one treatment for two diseases, weather and labor conditions in December are usually very favorable for spraying, more so than in February or March.

These observations, while limited in extent, seem to the writer most important and encouraging to the peach-growing regions which are seriously threatened by the virulent occurrence of this blight. The Agricultural Experiment Station of the University of California is giving special attention to this shot-hole problem, as affecting the other stone fruits as well as the peach, and next fall and winter will carry out a thorough and systematic investigation of the disease and its control. The matter is already receiving considerable preliminary attention. In this connection we shall be glad to hear from any peach growers desiring to co-operate in such work, or receive further suggestions.

Treatment Recommended.—In general we recommend for peach treatment one thorough spraying with double strength Bordeaux mixture (or about 8-10-50), to be applied late in November or first of December in the upper San Joaquin, and early in December in the lower Sacramento. According to present results this should prove entirely effective both for shot-hole and curl leaf.

We are indebted to Messrs. Brown and Chadbourne for many of the details contained herein.

RALPH E. SMITH.

Berkeley, May 4, 1906.

An Inquiry Into California Fruit Varieties.

We have undertaken to make special inquiry into the standing of different fruit varieties in California and to secure the views of growers and commercial handlers as to their ideas of what points are most desirable to secure in new varieties. The following letter is, therefore, addressed to all growers, shippers, canners and driers of fruits:

University of California, Berkeley.

Dear Sir: I have accepted an invitation to prepare a paper for the annual convention of the Association of American Nurserymen

which will soon be held in Texas, and have chosen this subject: "Specific Requirements of New Varieties in California Fruit Growing." My idea is to present to this great society the fact that California fruit growers, shippers and preservers do not need new varieties, which are simply novelties which might please amateurs, but there is a demand for new varieties which will remedy some defects in the present standard varieties and for new varieties which will lengthen the season or fill in gaps ripening between varieties now grown largely. It seems to me this will attract the attention of plant breeders and help them to produce something which could be profitably added to our fruit lists. It may also help to reduce the present disposition of new planters to plant too many varieties and to plant many novelties instead of concentrating upon those varieties which the great commercial handlers of fruit need in their industries. Will you kindly assist me in this undertaking by naming the varieties of each fruit you are interested in, which you find to be worth most money, and what points a new variety of any particular fruit should have to be valuable. The sheet I send herewith gives places for observations of this kind. I do not desire to ask too much; please report upon few or many fruits, as you find convenient; a report even upon a single fruit which you are most interested in will be very valuable.

E. J. WICKSON.

As indicated by the letter, a sheet of inquiries will be sent to any reader of the Pacific Rural Press who will help us with the results of his experience and observation, and we would appreciate correspondence on the subject.

THE POULTRY YARD

What Hens Can Do in a Year.

Our poultry readers will remember the accounts which we have given in previous years of the results at the famous Australian egg-laying contests in which pens of hens of various breeds were made to compete in egg-laying for a full calendar year and accurate records of the number and valuation of eggs were kept. We have just received from Australian correspondents reports of the contest, which closed on the first of last month. The contest is provided for by an enterprising journal, the Daily Telegraph, of Sydney, New South Wales, from which we presume the full formal reports can be had when ready. In its issue of April 4th the Telegraph says:

The two egg-laying competitions of twelve months' duration organized by the Daily Telegraph, concluded last Saturday. The fourth annual contest of 100 pens conducted at the Hawkesbury Agricultural College by Mr. D. S. Thompson, Government Poultry Expert, has outdistanced its predecessors in all respects in the matter of egg-production. The No. 2 competition of fifty pens conducted by Mr. J. M'Intosh at Rockdale was arranged in order to provide for breeders who were unsuccessful in their applications for pens at the Hawkesbury College, and who were anxious to have their hens tested. In this smaller test even better results were secured, and the winning pen's total and the average egg yield constitute world's records. The weather conditions were in the main unusually favorable, and in this respect presented a marked contrast to the previous year's experience. The two competitions were controlled by separate committees of management.

At Hawkesbury College.—The 600 hens at the Hawkesbury College, as a result of an increased output, gave a surplus of £240 over the cost of feed, as compared with £248 for the

same number in the third annual test. This, despite the increased cost of feed and the lower value of eggs. The average value of the latter, however, shows up better owing to the greater proportion laid in the winter.

The following compares the results of the four competitions:

	1902-3	1903-4	1904-5	1905-6
Number of pens	38	70	100	100
Winning pen's total	113	1308	1224	1411
Lowest pens total	459	666	532	635
Highest monthly total	137	100	154	168
Average laying per hen	130	163	152	165
Greatest value of eggs	£7 9s 3d	£7 10s 4d	£5 13s 10d	£6 5s 6d
Average price of eggs	1s 1d	1s 3 ³ / ₄ d	1s	11 ¹ / ₄ s
Average value of eggs per hen	15s 6d	15s 9 ¹ / ₂ d	12s 9d	12s 3 ¹ / ₂ d
Cost of food per hen	6s	15s 9 ¹ / ₂ d	4s 5 ¹ / ₂ d	5s 3 ¹ / ₂ d
Profit over feed, per hen	9s 6d	11s 11 ¹ / ₂ d	8s 3 ¹ / ₂ d	8s

The analysis of the average production of, and the value of the eggs laid by the various breeds, are as follows:

Breed	Per Hen Eggs	Per Hen Value
12 Imperials	200.83	16s 10d
6 Black Hamburgs	197.50	15s 11d
12 Langshans	181.08	14s 5d
42 S.C. Brown Leghorns	179.52	14s
12 Andalusians	179.08	14s 2d
12 Golden Wyandottes	178.08	14s 4d
12 R.C. White Leghorns	173.58	13s 9d
6 Baverdilles	173.3	13s
24 Buff Leghorns	171.29	13s 4d
18 R.C. Brown Leghorns	169.66	13s 3d
120 S.C. White Leghorns	167.90	13s
120 Silver Wyandottes	165.77	14s 5d
114 Black Orpingtons	168.01	12s 9d
30 Buff Orpingtons	157.56	12s 7d
12 White Wyandottes	149.58	11s 6 ¹ / ₂ d
18 Minorcas	147.50	10s 6d
12 Buff Wyandottes	146.66	11s 6d
6 Campines	146.16	10s 9d
6 Anconas	132.00	10s 2d
6 O.E. Game	129.50	8s 4d

Mr. Thompson's Review.—"In the report of the first Daily Telegraph annual egg-laying competition, and the first ever held in Australasia," reports Mr. Thompson, "it was stated that the desire of the committee was to make the competition a source of education to poultry-keepers, and to show the world the high standard the industry had attained here in the mother State of the Commonwealth. Both of these objects have been attained. The poultry-keepers have received valuable lessons in many ways, which they have not been slow to avail themselves of, and they have gained greatly by this experience. Before the competition started the Daily Telegraph drew the attention of the public to the fact that New South Wales was importing annually from £20,000 to £30,000 worth of eggs, which were sold in our markets at a good payable price to the importers. Since then the poultry-breeders have done a great deal to fill this gap up, and also to meet the yearly-growing local consumption. The competitions have not only done this, but they have shown poultry-breeders how to get a maximum return of eggs from a minimum expenditure of labor and food. Early breeding has become general instead of exceptional, and good egg-producing strains are fast becoming disseminated throughout the whole of the State.

Weather Conditions.—"The opening week of April gave a bad start, as it was raining continually, for the first conditions was in January, the heat throughout the month being exceptionally trying. The thermometer showed many high readings for the month, but the culminating point was reached on the 24th, when the glass showed 112.6 degrees at the college observatory. This heat was too much for the hens in full lay, and many of them died from heat apoplexy, caused by distension of the oviduct, which is instant death."

Rockdale Records.—The 300 hens at Rockdale gave a net profit of £130, or 8s 8d each. The feed bill in this instance was much higher per head, owing chiefly to Mr. M'Intosh buy-

ing practically from week to week, and thus paying retail prices. Despite this, the returns are in every way satisfactory.

"In reviewing the year's work," reports Mr. M'Intosh, "I can only express the hope that the record is as satisfactory to the competitors as it is to myself. The hens have acquitted themselves well, as the fact that only one pen has scored less than 900 eggs shows; and had it not been that the cost of food was exceptionally high throughout, the profit on the year's operations would have been considerably greater.

"The following table compares the average results from the various breeds:

Breed	Per Hen Eggs	Per Hen Value
6 Minorcas	237.5	19s 11d
6 Langshans	218.5	19s 2d
6 Black Hamburgs	216.83	17s 5d
6 Rose-combed White Leghorns	207.33	16s 4d
12 Single-combed Brown Leghorns	202.58	15s 10d
78 White Leghorns	201.56	16s 4d
78 Black Orpingtons	197.56	16s 4d
12 Rose-combed Brown Leghorns	185.58	14s 9 ¹ / ₂ d
96 Silver Wyandottes	184.01	15s 4d

Weather Conditions.—"On the whole, the weather was favorable to good results. The winter was, for the most part, warm and dry, and as a consequence the hens laid well when eggs were bringing good prices, and thus early established themselves in the matter of values.

"The most trying period was when fierce, cold southerly winds were frequent, these causing diarrhoea, and invariably checking the laying of the less hardy breeds.

Some hot spells were experienced in the summer, but although the runs were sandy, artificial sheltering and plenty of mown grass, etc., spread on the white sand, did much to keep the conditions normal, and only two deaths were attributable to the heat.

Feeding.—"Breakfast was given in the winter about an hour and in the summer about two hours after daylight, and consisted of mash, made as follows: Pollard, about three parts (more or less according to quality); chaffed green lucerne or chaffed white clover, the latter for choice, from 15 to 30 per cent (when neither of these was obtainable, bran was used); maize-meal, about 5 per cent. This was mixed each morning with boiled liver, and the soup therefrom, care being taken to see that the food was not too dry. Three times a week a quantity of rough meadow grass and white clover was thrown into the runs, not so much as green food, but to keep the hens busy scratching, and to act as covering for the otherwise hot, bare sand. As the afternoon feed, good sound wheat was given at about 4 o'clock.

"No general rule was observed as to the quantity of food. Each pen was given as much as the hens would pick up clean—no more—and to be quite sure of this I went round several times to see that each lot had had their fill. I soon got to know, however, which ones were the big eaters (and the difference in the quantity consumed by some as against others of the same breed was really surprising). The only exception to this practice was that in the winter an extra handful was added to the evening ration for a daylight "picking" next morning. The grit boxes were cleaned out every week, and a fresh supply given.

The Financial Aspect.—"The total cost of feeding was £90 13s, made up as follows: Wheat £36 5s; pollard and bran £33 11s, maize meal, £7 15s, grit £3 18s, meat £6 4s, green food £3.

"The monthly laying was: April 2763 eggs, May 4450, June 4384, July 5447, August 6257, September 6654, October 6350, November 5550, December 5305, January 4872, February 3844, March 2960. Grand total, 58,736 eggs, or 4894 per month.

"The value of the eggs produced was £241 10s 9d, from which a sum of £20 15s 5d has to be deducted for commission, etc., making the year's return £220 15s 4d, and the net profit, after deducting the cost of feed, £130 2s 4d.

THE DAIRY

The Chance of Curing Bovine Tuberculosis.

Either to cure bovine tuberculosis or to render calves immune would be a great dairy blessing, and consequently much interest pertains to efforts in that direction. Consul Dunning, of Milan, gives an interesting account of some experiments in the use of the Behring system of vaccination as a cure for consumption which have been carried on by a group of Italian experts:

Several oxen which had been vaccinated with the Behring treatment were slaughtered with other oxen which had been under inspection for some months, while others were allowed to continue in life in order to further develop the effects of the treatment. These animals were slaughtered in Milan some time later under the direction of the physicians interested in the earlier experiments. Of four oxen killed, three had been vaccinated with the Behring treatment and afterwards had the tuberculosis virus injected into their veins. The autopsy, while it did not show definite results, gave encouragement to the investigators. The ox which had not been vaccinated showed tuberculous conditions in a marked degree, while the three which had been subjected to the treatment had remained immune and had resisted successfully, unless unknown conditions affected the result, the several injections of virus intended to test the potency of the vaccination.

The experts engaged on the test announce that at least two of the three oxen showed results which seem to indicate that this method for treating tuberculosis is at any rate well founded, though they expressly add that very much remains to be done. Other cattle will soon be killed for further experiments when the treatment they are undergoing has progressed to a more useful stage.

Useful Products From Skim Milk.

Although fresh skim milk is an invaluable dairy food, the concentration of milk at large creameries located at considerable distance from the farms results in a waste from which by-products are now being made on a large scale. Consul Brunot, of St. Etienne, calls attention to an industry that has been recently created in the west of France, at Surgeres, the seat of several co-operative dairies, and in the space of a few months has grown so rapidly in importance that it deserves notice.

This industry is the extraction of casein from skimmed milk. When the cream is taken from the milk to manufacture butter there remains, besides lactose and mineral elements, a little more than an ounce of casein per quart. Two experienced Germans located at Surgeres and commenced to extract the casein from the skimmed milk. The orders for it from Germany came in so fast that the premises had to be enlarged. The daily production for last year was 2000 kilos, representing 22,000,000 quarts of skimmed milk, furnished by ten dairies, bringing to these latter a profit of \$20,000 a year. Nearly all the casein is exported to Germany, where it is employed in the manufacture of high-toned paper, playing cards, and, when transformed into a special kind of gum, it is used in the stiffening of textiles. In the dyeing industry it replaces albumin to fix the mineral colors, and in commerce furnishes colors composed of casein, hydrate of lime, and coloring matter.

The elementary principle of producing casein is simple. To the liquid contained in large reservoirs very active rennet is added, which coagulates the albuminoid matter. The curd thus obtained is pressed, powdered, and dried in an oven, giving a very hard substance, yellowish white in color, with a slight odor of cheese. This casein is treated by repeated washings, dissolutions, and precipitations until it becomes of transparent whiteness and almost inodorous.

Specially prepared and pulverized, casein constitutes an excellent nutritious food of easy digestion. Over 20,000 kilos of this kind of aliment have been sold monthly by the manufactory of Saugeres. But it is chiefly in the manufacture of artificial ivory called galalith, as an excellent substitute for celluloid, that casein finds its use. Galalith or milk stone is of German invention and is obtained by hardening the casein by means of formaldehyde. The combination of these two bodies gives a hard substance, but as easy to work as wood. More brilliant and more solid, although a little heavier than celluloid, galalith possesses two important advantages over the latter: It is noninflammable and cheaper than its rival, which, being composed of camphor and gun cotton, is both costly and dangerous.

With the milk stone is also manufactured a host of objects rendered attractive not only by their cheapness, but also by their polish and solidity, such as penholders, combs, piano keys, buttons, cigar holders, knife handles, etc. Being a nonconductor of electricity, galalith is extensively employed in all industries based on electric energy.

AGRICULTURAL SCIENCE

Better Equipment for Education.

Professor Elwood Mead, head of the irrigation department of the University at Berkeley, has completed his course of lectures and returned to Washington. Before leaving he talked with a Chronicle representative about the extension in agricultural education made possible by the new University farm, and called attention to the need of supplementing this by better facilities for instruction at the University. He said:

The University farm will furnish much needed facilities for the instruction of students in irrigation, and also makes possible the carrying out of many practical experiments to determine the best means of distributing and using water. In order that it may have the greatest value in both directions, there should be at the outset a comprehensive plan for the irrigation and drainage of the farm. This plan should aim to provide two things; the first is the effective irrigation and drainage of the farm for farm purposes; the second should be to provide facilities for experiments, illustrations and demonstrations for the students in irrigation.

The educational feature should include examples of the different methods of watering fields and all the different methods of dividing and delivering water to irrigators and different types of canals, headgates, flumes and boxes which irrigators have to build and use. By bearing in mind the educational opportunities which the farm should supply when the irrigation system is planned this farm can be made to illustrate all the valuable features of irrigation practice to be found in any country in the world, because the climate of the farm's location will permit of the growing of nearly all of the world's irrigated products.

In irrigation and in nearly all other branches of agricultural science the farm will not, however, supply everything needed for the best training of students. The principles of irrigation engineering, the principles of many of the underlying sciences of agriculture require classrooms and laboratories for their proper presentation, and this instruction should be given in large part at the University at Berkeley, both because this will be the most economical method and because it gives to every student the association and broadening influences of university life. But in order to do this work properly there is needed a different building and better equipment from that which now houses the agricultural college. For both professor and students there is needed a building which will adequately represent the marvelous agricultural wealth of the State.

It is hard to adequately estimate the uplifting influence of architecture, and no one needs this influence more than the young men and young women who would naturally be attracted to the course in agriculture. If in the place of the present building there was a stately structure, a fit companion for California Hall and the new mining building, the term "cow college" would lose at once its derisive significance. Every student entering such a building would feel the dignity of agriculture and a pride in his work that is impossible to any except the most mature minds under present surroundings. And if in this building there could be a museum like the one now in the Ferry building to illustrate the range of the State's production, and another for models of the complicated and costly machinery used in California's agricultural and horticultural work, it would exert an influence in attracting the brightest minds and in giving a zeal and interest in work that would be of immeasurable benefit to the State in the future.

Looking at it from an investment standpoint, no expenditure will be more profitable than one to give the University the best possible equipment for agricultural instruction. The University should not only train its own Burbanks in horticulture and its own Schuylers and Grunskys in irrigation, but should provide these leaders for the rest of the country, and the advantages of the State will make this a great school of practical agriculture for State farmers, but of graduate work if the facilities of the University are made equal to those of other first-class agricultural schools.

THE FIELD

California State Agricultural Society.

To the Editor: The Directors of the California State Agricultural Society have determined to put forth every effort possible for reviving interest in the institution, enlarging its field of operations, and increasing its usefulness to the great industry for which it stands. This is a big State with varied interests, but it is the hope and purpose of the present Board of Directors to extend the work and benefits of the society to the remotest that are comprehended by the word agriculture in its broadest sense. In this endeavor they ask the co-operation of the press and the people. They realize that such co-operation is essential to success—to the creation of a sentiment that will make their work effective.

It is the desire of the Directors that the Secretary shall reach out for the best that is being done in this State, and in this country, and in other countries in industrial lines, and

give the information thus obtained to the people in periodical bulletins.

It is the aim to get in closer touch with the agricultural department of our State University, with the Agricultural Department at Washington, with the experiment stations of the Federal Government, with other State agricultural societies, and with Consular reports that have relation to our interests, and keep our people advised of the latest and best that is being done in the world in those particular industries that most concern them. In short, the intention is to extend the work of the institution along all lines of endeavor in which it may be of service to the people of California within the limits of the great field comprehended by its name.

The work immediately in hand is the preparation for the fair of 1906, which is scheduled to open on the 25th day of next August. In harmony with the general purpose to improve all features of the society's work, it is the determination of the Directors to make this the biggest, best, most attractive, and most comprehensive display of livestock interests and other industrial resources ever assembled in California. The aim will be to secure all products of the State from every part of the State, and present them in a manner that will not only be attractive, but a source of instruction to every one seeking a broader knowledge of California's possibilities. With proper encouragement to reinforce the high aim of the Directors, the State Fair can be made the greatest annual event in California, and the society one of the strongest instrumentalities for the development on higher lines of the State's agricultural and other industrial resources.

In appealing to the press to help accomplish these aims, the Directors realize that they are appealing to the people—to every enterprising man and woman, boy and girl, in California—and they especially appeal to organized bodies, such as patrons of husbandry, chambers of commerce, boards of trade, merchants' associations, manufacturers' associations, producers' associations, promotion committees, and all other bodies engaged in forwarding the interests of California, or of any part or industry thereof.

If every agency in the State interested in the State's welfare gives such encouragement to the State Agricultural Society as the interests it stands for deserves, its influence for good will be felt in the remotest corners of California, and it will become, as it ought to be, one of the strongest arms of the State government for the advancement of those instrumentalities which make for the betterment of the industrial classes and a higher civilization.

J. A. FILCHER, Secretary.

Sacramento.

Temporary Addresses of San Francisco Firms

CENTURY MERCANTILE CO., P. O. Block, Berkeley.

CUTTER ANALYTIC LABORATORY, Grayson and Sixth streets, Berkeley.

CHATFIELD & VINZENT, Real Estate Exchange, Grove street and Van Ness avenue, San Francisco.

DEERE IMPLEMENT CO., 131 Kansas street, San Francisco.

DE LAVAL DAIRY SUPPLY CO., 309 Twelfth street, Oakland.

GULF BAG CO., 8 Telegraph avenue, Oakland.

WESTERN MEAT CO., South San Francisco.

BAKER & HAMILTON, 113 Berry street, San Francisco.

CORRESPONDENCE

Shasta Is All Right.

To the Editor: As subscribers to your paper since we have been in this county, my wife and I offer you our sympathy at the great loss you have experienced by the present calamity to San Francisco, and your own loss, which must be very great. Although we had a slight shock, we had no damage of any kind.

This year to me is the best all-round year we have had for twelve years. Our Muir peaches are full, prunes same, Tragedies heavy, pears very good, apples full, and berries very heavy. All garden stuff likewise very well, and alfalfa is extra heavy this year. Last, but not least, the stork has brought a little baby girl. I suppose you will claim as a daughter of the Golden West.—W. J. B. Martin and Wife, Redding.

From a Loyal Subscriber.

To the Editor: Your circular letter received. You certainly have much courage and genuine "nerve" to write such a letter in the midst of your great loss. I wish there was something I might do or say to help you. I thought almost at once of the "Press," as I knew your office to be on Market street.

You have always dealt kindly with my feeble efforts at journalism, and I appreciate it. While only a subscriber five years, I trust I am as loyal as some of your thirty-year subscribers. I know you will come to the front all right, and if there is anything I can do to help, command me.—Mrs. N. Frank Morse, Fullerton.

Thinks We Saved Something Worth While.

To the Editor: I have received your letter and I am very glad to hear that you saved your life from the fire.—G. Proletti, Vineburg.

An Appreciative Word.

To the Editor: I want to express my deep sympathy for the Rural Press for its great losses. I received your circular and I am very glad indeed to see that none of you have lost heart, and that the publication will be resumed. I have always valued your paper very highly, and your contributions to it particularly. Without throwing any bouquets, I can truthfully say that I have always considered you the best all-around authority on horticulture and agriculture that I know of, and I certainly would dislike to see California lose the benefit of your knowledge.—Old Subscriber, San Jose.

CHANGES OF ADDRESS

DEWEY, STRONG & CO., 10 Bacon Block, Oakland, Cal.

NATIONAL WOOD PIPE COMPANY, 518 Eleventh Street, Oakland.

BYRON JACKSON MACHINE WORKS, 18 Telegraph Avenue, Oakland.

DEERE IMPLEMENT CO., 131-153 Kansas Street, San Francisco.

THE CUTTER LABORATORY, Grayson and Sixth street, Berkeley.

DeLOVAL DAIRY SUPPLY CO., 309 Twelfth Street, Oakland.

WESTERN MEAT CO., South San Francisco, San Mateo County.

HEALD'S BUSINESS COLLEGE, 1451 Franklin Street, San Francisco.

A. VAN DER NAILLEN, 5000 Telegraph Avenue, Oakland.

After all their experiments with poisonous contagious diseases and other recourses to reduce the Australian plague of rabbits, they are coming around to the conclusion that they must be fenced out of agricultural lands, and American fence-makers should take notice. The government of New South Wales has invited tenders for the supply of 4,000 miles of rabbit-proof wire netting, the tenders to close May 17th, the sizes to be 42-1¼-17 and 36-1½-18. Up to this date wire fencing is the only method known that will prevent rabbits from overrunning a field; and as some of these fields contain 2,000,000 acres, there will be a continued demand for this commodity for some time. Our readers know of course that the Australians have to deal with a burrowing rabbit and not with hares which we have in California, and which are more easily kept down. We doubt whether our Southern friends will reduce their rabbits until they get population enough to fill the waste places with small boys and shotguns.

Cork is a long distance crop, but California can grow the cork oak well if one has patience to wait for the product. It might be a good way for some man to provide for his grandchildren. The cork trade in Spain is reported by Consul-General Ridgely, of Barcelona, to be in a healthy condition. During 1905 the exports increased about 10 per cent over the previous year, the totals being 10,992,000 pounds of cork slabs, 73,412,000 little cubes, and 2,299,532,000 cut corks. Also during last year no less than 14,229,500 pounds of corks dust and shavings were shipped from the little towns of Palamos and San Feliu de Guixols.

SAN FRANCISCO.

Serene, indifferent of Fate,
Thou sittest at the Western gate.

Upon thy hight so lately won
Still slant the banners of the Sun;

Thou seest the white seas strike their
tents,
O Warder of two continents!

And, scornful of the peace that flies,
Thy angry winds and sullen skies,

Thou drawest all things, small and great,
To thee beside the Western gate.

O lion's whelp that hidest fast
In jungle growth of spire and mast!

I know thy cunning and thy greed,
Thy hard, high lust and willful deed,

And all thy glory loves to tell
Of spacious gifts material.

Drop down, O Fleecy Fog! and hide
Her skeptic sneer and all her pride!

Wrap her, O Fog, in gown and hood
Of her Franciscan brotherhood!

Hide me her faults, her sin and blame;
With thy gay mantle cloak her shame!

So shall she, cowed, sit and pray
Till morning bears her sins away.

Then rise, O Fleecy Fog, and raise
The glory of her coming days;

Be as the cloud that flecks the seas
Above her smoky argosies;

When forms familiar shall give place
To stranger speech and newer face;

When all her throes and anxious fears
Lie hushed in the repose of years;

When art shall rise and culture lift
The sensual joys and meaner thrift,

And all fulfilled the vision we
Who watch and wait shall never see—

Who, in the morning of her race,
Tolled fair or meanly in our place,

But, yielding to the common lot,
Lie unrecorded and forgot.

—Francis Bret Harte.

The Home Circle

THE CRY OF THE CHILDREN.

Our hills lie naked, gaunt and gray,
With ashes heaped on hearth and head,
We stand in funeral array
And mourn our dead.

When fair winds blow we rate as men
When cities sway and tremble, we
Are but Thy little children then,
Who turn to Thee.

Help us to meet each day's demands,
With Thine own strength our hearts en-
dow.

We ask Thy blessing on the hands
That help us now.

It was our habit, day by day,
To heed Thee not when it was light;
But help us, God; to find our way
Through this—our Night.

—Edgar Goldbury Fields.

THE CANDY HEART.

From out her little dinner pail
She took a cookie plump and brown;
She slipped it underneath my desk—
And I, a bumpkin and a clown,
Forthwith proceeded to invite
My appetite and dull its smart;
But ere I put it out of sight
I saw it bore a candy heart.

Ah! When her glossy pigtail curl
Made way for frizzles, why deny
She managed both by hook or crook
To pass me comfits on the sly?
At recess when we stood apart
And wove the daisy chain, ah! she
Broke with her teeth the candy heart
And gave the better half to me.

And when the daily lessons were
All said and done and put away,
And we strolled hand in hand along
The maple lane at close of day—
We leaned upon the rustic rail
To watch the rivulets below
Scatter their bubbles in the trail
Of the pale moonlight's silver glow.

Tonight the little candy heart
I find among my treasures;
A something sacred, ah! it seems
To me a kiss from paradise.
A candy heart, a golden tress.
Ah! as my fingers gently twine
The silken curl with soft caress,
My lips they sigh: "Sweetheart of
mine."

—Horace Seymour Keller.

Miss Kerrison's Heart.

When I heard that Tom Frisby was
married the news came as a great shock
to me. I asked Jack Goney, my infor-
mant, "Is he married much?"
"Oh, frightfully!" said Goney.
"Who is the creature?" I inquired, af-
ter a tense pause.

And when he replied, "The eldest Miss
Carruthers," I was more shocked than
ever. That Lillian—my beautiful, wild
white dove—should consent to become a
mere tame domestic fowl—and for Tom
Frisby's sake, galled my sensibilities. I
remembered how I had laid the offering
of my own unfledged affections at her
feet, and how she had danced on the
elaborate embroidery words in which I
had clothed my passionate avowal.

"I shall go and see them," I told Goney.
I found that Lillian—no, Mrs. Frisby!—
was already by way of becoming a so-
cial success. She was developing into
that dreadful thing, an ideal hostess. She
was obtrusively tactful and offensively
managing. It was said of her that she
had a knack of bringing the right people
together, which, being interpreted, means
that she strove to pair off her guests
as if they had been vases.

Frisby himself was bolsterously happy
and rosiely content and, moreover, most
beautifully trained to obey his wife's
lightest word.

"Ah," he said, "you will find your af-
finity some day."

"If both of us find my affinity," said
I, "there will be trouble."

But he was in nowise disconcerted. He
merely wagged his fat head at me and
said: "We must look out for a wife for
you."

And from that moment began the un-
conscionable crusade against our clois-
tral bachelorhood, in which both Frisby
and his wife took a meddlesome part, and
which terminated in the lamentable con-
tretemps that it is the purpose of this

story to detail. She, of course, was the
more subtle sinner.

One night Frisby and I were talking as
man to man. We had been telling each
other that we were both rather black-
guards really, but deuced fine fellows
notwithstanding, and we were conse-
quently in a fine glow of self-satisfac-
tion.

"One thing I've forgotten to say to you,"
he remarked. "It really is serious."

"Serious for whom?" I asked.

He paused, and then, dramatically, "For
her," he said.

I dropped the poker into the fender
with a crash. "For her!" I repeated.
"What are you driving at?"

"Perhaps I ought not to have broached
the subject," he faltered.

"You haven't," said I.

"It's not fair to her," he jerked out.
"And yet it's all due to that odious trick
you have of talking to every woman you
meet as if she were the only one of her
sex in the world."

"I don't think they find that particu-
larly odious," said I.

"But lookers on do," said he. "And it
is a bit rough on 'em, you know, old
chap. Of course we who understand you
know it's only your way but girls—inno-
cent, young, unsophisticated—"

I rose also. "Good night," I said
abruptly, offering my hand.

"I'll tell you her name, then," said he.
"It's little Miss Kerrison—if you must
know."

"Oh," said I, rather disappointed. "I
know—the girl who is so awfully con-
scious of her profile."

"My wife's cousin," he said stiffly.

"And you mean to say that foolish chit
is in love with me?"

"Oh, come! Well, I suppose so. But
confound your complacency, anyhow!"

"Poor thing!" I murmured. "Poor, sil-
ly thing! Pretty, too! Well, what would
you advise me to do about it?"

He shrugged his shoulders. "I don't
presume to advise at all," he replied.

"Best way, I suppose, would be to put
her out of misery at once," said I.

"There are worse girls than Nina Ker-
rison," he said.

"But do you think they would suit me
better?" I asked him.

"No," said he. "You are not so bad."

"You overwhelm me," I observed, "with
those touching tokens of your approval."

And then we talked of other matters.
I had not the least intention of going
to the Chandlers' dance the following
evening, but now I determined to go af-
ter all, since Miss Kerrison was bound
to be there, and it were best to get this
painful business over at once.

In the conservatory I made out a dim,
rounded form in filmy white, and came
face to face with Nina Kerrison. She sat
there motionless, her hands in her lap, as
if awaiting her fate in the person of
myself.

"All alone?" I said, lightly.

"I prefer to be alone," she said hastily,
and rose as if to go.

But I understood what an infinity of
meaning the studied curtness of her
words would have fain concealed, and I
whispered, "Please don't forsake me. I—
I came here to look for you."

"Why?" she asked. A most awkward
question!

"Why?" I repeated slowly, to gain time.

"Oh, because those people in there bore
me. And you—you never do that, Miss
Kerrison."

"Well, it is something to be a harbor
of refuge," she remarked. "Thank you.
Then, by the way, is it really true, this
time, that I am to congratulate you?"

"On my good fortune in finding you
here, do you mean? Why certainly," I
said.

"I did not mean that," she replied. "I
meant that—that well, the usual rumor
is out concerning you."

"Indeed!" I exclaimed. "But which of
the usual rumors do you refer to?"

"There is only one—isn't there—that is
commonly linked with the name of an
eligible young bachelor. But is it true?"

"Believe me," I assured her, "it is not
true."

"I am so glad!" she breathed softly.

"Poor girl! At least—that is—" She
would have covered up her indiscretion,
but, perceiving that it was now too late,
she paused abruptly and lapsed into si-
lence.

"Why are you glad?" I asked. I had
not intended to proceed on exactly these
lines, but I found it difficult to be suf-
ficiently brutal now that the necessity
confronted me.

"Oh," she drawled, with a woeful af-
fection of indifference, "I think, as the

song says, 'You are owre young to marry
yet,' you know."

"I wonder what your wife will be like,"
she went on presently. "I do hope she
will be a nice, helpful sort of girl, and
not a mere society butterfly—like me."

"If she were like you—" I began, and
stopped.

"She won't be," said Miss Kerrison
quickly.

"I mean," she explained, "that the ob-
ject of our first fancy is so seldom the
person to make us truly happy, if we but
knew it."

I remembered then that some one had
told me this was Miss Kerrison's third
season.

"First love is the only love," I said
firmly. It was no time for mawkish
scruples. I had temporized with my con-
science too long already. She must now
be made to realize the sad truth in all its
ghastliness.

"That is not so," she said. "Believe
me, Mr. Craven, when I tell you that you
are as yet far too young to know what
is best for your welfare."

"Anyway," said I, "when my fate does
come along—"

And there I made an abrupt end, for
she had suddenly begun to laugh. There
could be no doubt about it. She was
laughing—not hysterically, either, but
with an unmistakable enjoyment as at
an irresistible jest.

"Mr. Craven," she said at last, more
seriously, "I think I'll be frank with you.
My honest dealing may conceivably cost
me your good opinion, but only for a
time. You'll like me all the better af-
terward. And I am sure you have enough
common sense, really, not to think me un-
womanly or immodest in saying what I
am about to say to you now."

"Miss Kerrison," I cried in sore dis-
tress, "forbear, reflect, consider. Don't
'Nonsense!' she exclaimed sharply.
speak yet. You may save us both much
pain if you keep silent."

This was an affront. "Go on, then, if
you will," I said sternly.

"I've an idea," she said, "that we are
at cross purposes, and that it is all the
fault of those dear, foolish Frisbys. Mrs.
Frisby has said something to you about—
well, about me, hasn't she? Please be
straightforward, Mr. Craven."

"No, she hasn't," I answered.

"Mr. Frisby, then?"

"Yes."

"What did he say?"

I turned on her in desperation. "How
can I repeat what he said?" I cried. "Miss
Kerrison, let me implore you to say no
more. Let me entreat—"

"No," she replied. "I will tell you what
they said. They told you I—well—had
a penchant for you."

"They were wrong!" I exclaimed, still
eager to spare her.

"Of course they were," she rejoined.
"As wrong as they were when they told
me—well—that you were—in love—with
my unworthy self. But—" And she be-
gan to laugh again. This woman I tell
you, had no sense of humor, or of de-
cency, either, I should think. "But they
meant well, I suppose. And there's no
harm done—except to our vanity, perhaps.
Anyway, the path they would have had
us tread hardly leads to the Wicked Place,
does it?"

And she smiled at me inscrutably, and
I think she would have added some pleas-
ant, salving words. But just then a man
poked his head round the bead curtain
and she darted up and went forward to
greet him. I heard her call him "Frank,"
and I guessed then that it was for him
she had been waiting so meekly, all alone.
And at last I understood—I knew—that
I—had merely provided some comic re-
lief from the tedium of her vigil.—Ed-
win Pugh.

Domestic Hints.

RICE WITH CABBAGE.—Boil separate-
ly well washed Carolina rice and a small
spring cabbage. Drain the cabbage and
cut into tiny pieces. Mix with it the
drained rice, and add an ounce of butter,
salt and black pepper. A little cream
and a tablespoonful of Parmesan cheese
may also be added, and will be liked. Stir
over the fire until quite hot. Serve with
croutons of fried bread.

HONEY CAKE.—Soften a cup of but-
ter and mix with it two cupfuls of
strained honey, a tablespoonful of ginger,
half a grated nutmeg, a little of the yel-
low rind of lemon grated and a small
quantity of flour. Dissolve a heaping
teaspoonful of soda in a cup of water and
strain into the mixture, then add more
sifted flour until stiff enough to roll out.
Bake in a sheet like gingerbread, and
eat cold or hot.

ORANGE FRITTERS.—Mix one-half
pound flour and one-half pint milk
into a stiff batter, add two ounces
melted butter, two eggs well beat-
en and a very little salt. Peel two or-
anges, divide into sections without crack-
ing the skin, have ready a pan of thor-
oughly boiling fat, put in a tablespoonful
of batter with one piece of orange in the
center, fry a nice golden brown, drain on
kitchen paper, then dish on lace paper,
sprinkling powdered sugar on the top.
They should be cooked and sent to table
as quickly as possible.

CREAM OF CHEESE SOUP.—Scald
one quart of milk with a teaspoonful of
grated onions, a blade of mace, and a
piece of a red pepper about as large as
a knife blade. Make a white sauce with
two tablespoonfuls each of butter and
flour and a cupful of cold milk, and add
it to the hot milk in a double boiler.
When it cooks add a cupful of grated
cheese. Let this melt, and add a little
salt. Beat two eggs and strain the soup
over the eggs, stirring all the time. Whip
until light and serve.

QUAIL.—A quail, as everyone knows, is
naturally one of the driest of birds, and
it is always a question with cooks how
best to preserve its juices. To take off
the skin is to take away the greatest part
of the juices, and such a quail broiled or
roasted would be little better eating than
cottonwood chips. In North Carolina they
cook a quail in the middle of a potato.
This little recipe is worth a column on
skinnig quail.—Colman's Rural World.

DEVILED HAM.—Use the trimmings
of boiled ham and allow one-third fat to
two-thirds lean. Chop the meat as fine as
possible and to four cups add two level
tablespoons of sugar, two level teaspoons
of dry mustard, a saltspoon of cayenne
and one and one-half cups of vinegar. Mix
and press in a bowl.

EGGS WITH CHEESE.—Melt a level
tablespoon of butter in a small frying or
omelet pan. Drop in four eggs unbroken
and cook until the white is nearly set,
then sprinkle each egg with finely grated
cheese and finish cooking. Have four
slices of well-browned toast trimmed
neatly and lay an egg on each slice. Just
before the cheese is sprinkled on dust the
egg with salt and a few grains of cayenne
pepper.

QUICK DESSERT.—Heat two cups of
milk to the scalding point, add two level
tablespoons of cornstarch mixed with the
yolks of two eggs and two rounding table-
spoons of sugar. Cook five minutes, add
the well-beaten yolks of two eggs and
cook until thick, then pour into a but-
tered baking dish, cover with a meringue
made from the whites of two eggs beaten
stiff with one-quarter cup of powdered
sugar and color in a cool oven.

CHAFF.

Arizona Al.—How did the fight come out
between Rattlesnake Pete and Bronco
Bill? Alkali Ike—It resulted in a draw.
Arizona Al.—Sure it did, but what I
want to know is, which drew first?

Competition.—Mr. Tubbs—Well Bob-
bie, how does your sister like the en-
gagement ring I gave her? Bobbie—Well,
it's a bit too small. She has a hard job
to get it off in a hurry when the other
fellows call.—Pick-Me-Up.

"That new parrot of ours must have
belonged to a family moving in the best
society at one time. 'What makes you
think so?' 'I notice that he always be-
gins to talk when somebody sings."

Mrs. Henpeck—They can't punish big-
amy to oservely. No one should have any
sympathy for the man who takes one wife
too many. Mr. Henpeck—The idea, Ma-
ria! Do you think I should be sent to jail?

He—And I am the first man who ever
loved you, darling?
She—Sir, you are insulting.

Mabel—Such a joke with Mr. Gayboy.
We were out on the balcony between the
dances, and he got the sleeve of his dress
coat all over red paint from one of the
posts that were just painted. Maud—And
did you go near the post? Mabel—No.
Why? Maud—Oh, nothing; only you
have red paint all over the back of your
waist.

"Why do you keep such an inefficient
servant as that and pay her such high
wages?"

"My dear, she has been a maid in every
family of prominence in our set."

Hints to Housekeepers.

Damp salt will remove tea stains from crockery.

To render stained water bottles beautifully clean and bright, put in salt and pour on vinegar; stand a few hours, then shake.

An authority on laundering linen writes thus: "Use pure soap, fresh clean water and lots of it, plenty of air and sunshine, and carefully avoid starch. You should be careful to rinse the pieces thoroughly in good, clean water, and then give them plenty of light and air. They should be ironed damp to get that fine sheen so characteristic of well laundered linen. If linen is ironed dry, or nearly so, it gets fuzzy."

Equal parts of turpentine, linseed oil and vinegar make a splendid polish for furniture, etc.

A brush dipped in salt water should be used in cleaning bamboo furniture.

The brushes should always be washed in cold water in which there is a little ammonia and a few drops of carbolic acid added to the water by way of a mild disinfectant.

If pains in the head are brought on by a nervous attack they will often be relieved

by binding a silk handkerchief tightly about the forehead.

A dustpan with a long, perpendicular handle will save many a twinge in the muscles of the back.

The busy housemother is often troubled with tired feet. She will find relief if she keeps them on a cushion while she is preparing vegetables or washing dishes. Pads or cushions suitable for such purposes can be made of several thicknesses of old cloth, bagging, carpet lining or horse blankets, stitched together and covered with old carpet, the edges turned in and over-handed. The whole may then be tacked like a comfortable. When this cushion is not needed hang it up with two loops, one at each end, to keep the edges from curling.

When corks are too large for a bottle, soak them in boiling water for a few minutes; when they become soft, they may be easily put into the bottles.

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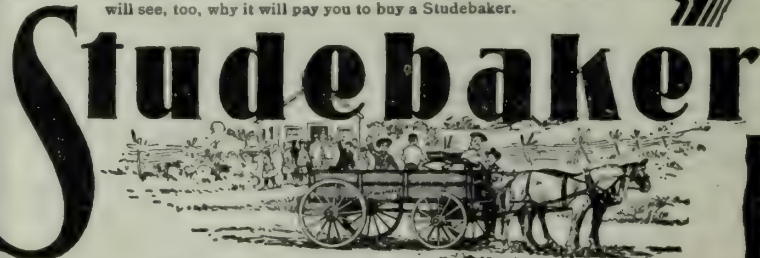
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AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 120

SAN FRANCISCO, SATURDAY, MAY 19, 1906

THIRTY-FIFTH YEAR
OFFICE: 330 MARKET ST

The Earthquake and Its Work

Out of the great album of disaster we select two pictures for this page. We have already promised to refrain from indulging in sensational phases of the disturbance but rather to comment upon certain features which seemed to carry information of wide importance or to promote consolation and reassurance. The pictures on this page are distressing surely, but they are educational also. They represent too things which should not be forgotten. One is the downfall of a poor building on solid ground and the other is the collapse of a fairly good frame structure because it had no enduring foundation. The San Francisco City Hall cost the people about seven millions of money and its material and construction were the embodiment of unsoundness in material and workmanship. It crumbled and fell by an agitation which sound buildings survived. Probably another such building will never rise in California. We have learned that lesson at least. Throughout the city there were numerous instances of frame buildings which should have endured but failed because the ground was shifty or the supports insecure. Here are also lessons which will be of incalculable value in our future efforts at building. These are lessons which are not for California alone. Since our disaster earthquakes have been reported from a dozen States of this country and no one can tell when any of them may have to be tried as we have been with an agitation of sufficient strength to try men's buildings and men's hearts.

Another lesson of the event is that the causes which in past ages have built up mountains and formed valleys, are still at work in exactly the same manner and will continue, as they have, since the dawn of creation. The movement of the earth's crust is accompanied by occasional readjustments of the rock strata, producing what are really only minor tremors of the surface, but which are often fraught



THE RUINS OF THE SAN FRANCISCO CITY HALL, Showing Effect of the Earthquake.

with the most serious consequences to mankind, particularly those who chance to dwell in the vicinity of the line of disturbance—the earthquake line.

The San Francisco earthquake line approaches the line that extends out southeasterly into the Pacific again, reaching the coast near Mussel Rock, in San Mateo County, several miles below the Cliff House, and passing inland through Lake San Andreas, Crystal Lake and southeastward through Los Gatos, Loma Prieta, near Santa Cruz, Pajaro, San Juan, lower San Benito Valley, Peach Tree Valley, Stone Canyon, Chalome Valley, Carriso Val-

ley, west of Sunset six or seven miles, through the west fork of San Emedio Canyon, crossing into the Mohave Desert west of Lancaster, in Los Angeles County, and continuing in a generally southeasterly direction toward the Gulf of California.

Throughout this entire distance of nearly 600 miles this line of movement may be plainly traced by a succession of valleys, lakes and landslips. For example, the fissure in Marin County may be plainly seen and followed for twenty miles, where it is as well defined as a road and in some places resembles a railroad cut. Since April 18th, the ground has cracked open, bulged up or settled, and springs are flowing where none existed before. There seems to have been a very pronounced horizontal movement, in this locality, to the extent of at least 12 feet. A causeway, solidly built, across the line of faulting was broken and thrown the distance stated, the west side going to the north. Buildings constructed on the line of the earthquake were wrenched apart by this horizontal movement, one being a large barn, the other a creamery. In that district, as elsewhere, the greatest damage was done to buildings cheaply constructed on insecure foundations. Most of the wooden structures destroyed, with the important exception of the two above mentioned, were built on stilt-like timbers from one to four feet high, without diagonal braces, and the buildings were simply thrown a distance equal to the height of the underpinning.

It is the occasional sudden readjustment of the slowly moving rock-mass that causes the shock, and regions along these lines of weakness and displacement are therefore subject to earthquakes. No one can predict their coming or foretell their intensity. It is only safe to say that they are likely to occur at any moment. The more frequent they are the less danger there appears to be of destructive shocks. Almost invariably there is a series of shocks, of which the first is the most violent.



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E. J. WICKSON Editor

The Week.

Everything is going well. Only a month from the disaster, greater than any modern city has experienced, and yet things have moved rapidly in the direction of their former channels. Streets are cleared, new electric lines are established in all directions through the devastated district; people are hurrying everywhere in restoration of their affairs and in projection of new and timely undertakings; money is moving freely in small ways, though bank vaults are still cooling and, legally, the State of California is still on a holiday. The relief work has only a fraction of its old burdens, for those who wish work are finding it and those who do not wish it are being taught the necessity for self help. Everything is flowing freely for those who place themselves in the way of it—except intoxicants. When before have a quarter of a million people lived a month in a city without a drink of whiskey? Never, certainly, has there been such a demonstration that the absence of intoxicants promotes peace and lessens crime, for the lesser courts and their officers are almost idle. Nothing but thievery and other meanness, which run with dry bearing as well as wet, come under the arm of the law. Shaking is promotive of good behavior in a greater way than it has usually been credited with.

Away from the metropolis the attitude has been one of generous and patient sympathy. Living near the seat of the disaster and filled with present interest in its details and its remedies one is apt to overlook the inconvenience and losses to which the whole State is heroically submitting for the sake of the metropolis. To blot out the legal life of a busy State for a month and more certainly interferes with many important transactions and causes a frightful aggregate loss of time and energy, and no doubt works individual hardship in many ways, but all such burdens are being patiently borne. Fortunately, production and commerce are generally able to adapt themselves to new conditions and by mutual help and forbearance ordinary undertakings continue in full force. It is a demonstration of strength and soundness in the people and of the truth of their humanity, which it would be impossible to secure in any other way. This experience also will be permanently valuable.

There is a thing which is being tritely spoken of as the "California Spirit," embodying the bravery, the self-sacrifice, the service for others and the determination to rise above misfortune into new and greater prosperity. Probably all that can be justly claimed for such a spirit as California is a difference in degree for the same grand qualities have been manifested in other times and in other places, and have actuated individuals and communities to heroic accomplishments. People having had wide opportunities for observation do, however, declare that there has never been such wide and free-hearted abandonment of rank and station and such enthusiastic recognition of the common element of humanity combined with such all-pervading confidence in the future and vigor to strive together to realize it. Certainly adversity has knit Californians together most indissolubly in purpose and sympathy. There is discernible also a clear appreciation of that which is right and true in motive and action; an aspiration toward a higher moral tone; a resolution for righteousness. That our cosmopolitan population should be harmonized in thought and purpose is great; that it should be bodily and spiritually



FIRST NATIONAL BANK BUILDING, BERKELEY, OUR PRESENT QUARTERS.

uplifted is grand. No sacrifice which greatly avails in these directions can be counted excessive—it is an investment which will yield a hundred fold in the future of California. It is fitting that San Francisco should make such a sacrifice; it is but a justification of the claim to the name which the city bears, for it is really the spirit of endurance, self-sacrifice and of service in upbuilding and uplifting which was eminently manifested in the life and work of St. Francis in which we glory to-day as the Spirit of California!

Editorially we continue to mourn the utter loss of the issue of April 21, which was ready for the press on the morning of the disaster. The type held many contributions of value and interest which we cannot reproduce because neither type, copy nor proof sheet survived the fire. We cannot even remember either the names of the writers, nor the subject matter thus destroyed, except that they were good, and the issue generally one which we expected to please the reader. All that we can do is to express sympathy with writers whose favors thus perished and to invite a reproduction of the matter by them so far as possible. We know there were a number of records of experience and observation which the public would find greatly to its advantage to know.

Upon this page is a good view of our present quarters in the First National Bank building in Berkeley, from which the Pacific Rural Press is now issued. It is the best commercial building in Berkeley, and is the fruit of the enterprise and public spirit of our pioneer banking institution. The growth of this bank is an exponent of the advancement of the University City. It has been achieved by men who are not only capitalists and business men, but good citizens, foremost in everything which makes not only for the material prosperity of the town, but for its intellectual and moral tone. They are prominent in the University, in the schools, in the churches in the civic activities of the city and that such things are not only esteemed in Berkeley, but are rewarded by business success, this building demonstrates. The Pacific Rural Press feels that it is in very good company.

Nothing can shake the interest in the English walnut as a Pacific Coast product. In this issue we have another letter from Mr. Gillet, in which he declares himself not yet satisfied as to the identity of the Payne tree, except as it was originally stated to him, and appeals again to the recognition of the nuts as being the Santa Barbara soft shell. That is an appeal unto Caesar which we cannot pass judgment upon. It must come from the court of last resort, which each interested person holds in his own mind. We cannot only sug-

gest, however, that according to our present observation the Santa Rosa soft shell is a variable commodity. Being grown from seed through several generations of nut planting perhaps it may depart more or less widely from the description which Mr. Gillet gave in one of his previous letters and still be a Santa Rosa soft shell in parentage. He may, in fact, have only had one of its forms under observation. It is again our understanding that Mr. Burbank did not bring this nut to a definite finished form and confine it to that form by any recourse of the plant breeder, nor restrict its multiplication to the grafting process. This fact would indicate that any one desiring this variety at its best must get scions from a tree bearing a thoroughly satisfactory form of it; otherwise he might encounter the variability which is found in seedlings of the Santa Barbara soft shell, or, for aught we know, even a greater variability.

Evidence of the standing of the Franquette walnut on the Pacific Coast can be found in the fact that one of our greatest nursery establishments, the Oregon Nursery Company, is making a specialty of it in a grand way, as our advertising pages of the last issue testify. This company operates on a very large scale, and does not risk its capital without doing everything it can to make sure of the value of the material which it takes up for large scale specialty work. We infer that it has made very sure of the wide value of the Franquette as demonstrated by growers in different parts of the Coast. We hope to secure at some future time the experience in walnut growing of Mrs. Vrooman, from whose orchard the Franquette nuts and scions will be taken. We have known and admired Mrs. Vrooman's intelligence and energy in the building up of her orchard and while the public is so athirst for walnut knowledge we trust she will recognize a sort of obligation to bestow it from her rich and varied experience. Next week we shall have a very suggestive essay on the walnut by Mr. E. G. Ware of Orange county, who has had walnut property of his own and of other owners in his charge for many years, and is a good observer and close thinker along walnut lines.

Who of our potato growers can tell us of trial of the Champion potato in California? Consul Moe writes from Dublin concerning Irish agricultural statistics for 1905, and says that the acreage under potatoes was 616,755. The "Champion" potato was first introduced in quantity into Ireland in the year 1880, after the failure of the potato crop of 1879. Since that year it has constituted the main potato crop of the country.

QUERIES AND REPLIES

Agricultural Chemistry.

To the Editor: In talking with a friend in regard to the best books on chemistry, he advised me to take the subject up with you. I have never studied chemistry and shall have to study now without the aid of a teacher. What would be the best books on inorganic and on organic chemistry for me to secure? My object is to become a proficient agricultural chemist.—Student, Sonoma County.

We regret to say that you can only get a popular understanding of agricultural chemistry by home study without the aid of teacher or laboratory. Of course such knowledge would be very serviceable in understanding the discussions of the relations of chemistry to agriculture, but to become a proficient agricultural chemist certainly requires systematic instruction in connection with the best laboratory equipment. A six weeks' summer course in the University would only give you the most elementary matter. It is designed to be equivalent to the High School chemistry and this only fits for entrance to the University. Regular University students specializing in agricultural chemistry are required to take two years of chemistry in the general laboratory before entering the special laboratory, which is particularly devoted to agricultural chemistry. We cannot, therefore, encourage you to think that you can get anything like proficiency as an agricultural chemist without such systematic training. Agricultural chemistry involves analyses of some of the most complicated organic compounds and understanding of some of the most complicated natural processes. If you would tell us a little more fully what you have in mind we might possibly help you toward such an understanding of chemistry as it is possible for you to attain along the line which you describe.

Blackberry Rust.

To the Editor: I mailed you a little paper box with a few cuttings from a wild blackberry vine, infested with a reddish fungus. Can and will you let me know what it is and how to eradicate it? This is the first I ever seen of this kind.—Observer, Fresno.

We have your letter but no specimens have appeared. It is probable that the fungus that you to speak of is known as "blackberry rust," which affects the cultivated plants. The proper application is the Bordeaux mixture.

Sulphuring Vines.

To the Editor: Several years ago sulphur was used in vineyards to prevent mildew, and this being a wet season I thought growers might be troubled the same way. Will you tell me if you think sulphur is of any benefit, also the quantity to be used per acre and the number of times to be applied. I would like to ask, also, if, in your opinion, there will be any mildew this year?—Vineyardist, Fresno County.

There is no doubt that sulphur is a specific against the common mildew of the grape vine. It is impossible to state how much to apply to the acre. It depends upon the size of the vines and their condition. The sulphur should be of the very finest kind. Recent experiments seem to indicate that "sublimed" sulphur is more finely divided and will go further than ground sulphur. Application should be made in advance of the appearance of the mildew, either by blowing or dusting so that the sulphur can be clearly seen upon the foliage. The number of applications depends upon how favorable the conditions are for the growth of mildew. In some places sulphuring is done several times in the season; in other places where the air is warmer and drier and the mildew makes a lighter attack one or two applications early in the season will prove sufficient.

The character of the season has very much to do with the occurrence of mildew. This spring owing to abundant moisture and rather low temperature fungus diseases are unusually abundant, but may be expected to become less severe as the season advances.

Tobacco for Woolly Aphis.

To the Editor: I have just read a piece recommending tobacco to eradicate the woolly aphis from the apple orchards, if cut and dried and applied to the roots of the infested apple trees in the fall. Is this perfectly safe to use? and how much? Is it not a good fertilizer? and should it be just far enough under the ground to cover well with dirt? If you think this advisable to use, where could I get the seed to plant? I have plenty of good soil in which I could raise all I would need. I have about 60 acres of bearing apples and have some Aphis and am anxious to clear my orchard of it if possible.—Grower, Sonoma County.

Tobacco stems and leaves will check the increase of woolly aphis if buried in the ground around the tree as you describe. This should be done in the fall because the rain will extract the juices from the tobacco which are fatal to the aphis which do most injury by collecting upon the larger roots near the trunk. No injury can result to the tree and several pounds can be used to each tree. It is not particularly valuable as a fertilizer because the amount is small and because the proper place to apply fertilizer is not at the base of the tree. Tobacco seed is very fine and you only need a small quantity, growing the plants in a carefully prepared seed bed and planting out in the open just as you would cabbage plants. It is possible that you can get tobacco seed at Cloverdale by writing to the Manager of the Cloverdale Tobacco Company. There has been a good deal of it grown in that district.

Fertilizers in Plant Breeding.

To the Editor: With a great deal of interest I have been reading reprint of your articles in Sunset Magazine on Luther Burbank. You say "Mr. Burbank naturally looks upon artificial selection as the chief agency through which his many achievements have been attained." I was curious to learn how much Mr. Burbank in his work depended on fertilizing for results, but I do not find that you touch on the subject. Can you say whether Mr. Burbank has made use of commercial fertilizers and to what extent he has found them of value?—Reader, Los Angeles.

We would refer your letter directly to Mr. Burbank did we not know that he is overwhelmed with correspondence and somewhat hindered by it in his regular work. We are sure that he depends upon fertilization to bring the growth of his plants up to the highest possible standard. He counts the full nutrition of the plant as one of the important features of its environment, and uses stable manure, commercial fertilizers, water, temperature and all other agencies in order to secure the fullest development of the plant, and he believes also that this arrangement of environment is very important and has much to do with the ability of the plant to develop new features. Just what he has done with commercial fertilizers we do not know.

Paris Green and Other Things.

To the Editor: How and in what proportion should Paris green be mixed with dust to apply to plants, bushes, etc? Would fine wood ashes be a good carrier? Is the dust spray a proper one for cabbage lice? I am familiar with the kerosene emulsion but find it hard to apply without a sprayer as the lice are

mostly on the under side of the leaves, especially after plants attain size. Is the Paris green mixture advantageously applied to potato blight? Is there such a thing as bud blight in peas; that is, buds after making say one-half inch growth die off? I have been thinking frost was responsible but am suspicious that it is something else.—Grower, Mariposa County.

It is common to use about twenty parts of dust to one part of Paris green in dust spraying. Fine sifted ashes would do, or air-slaked lime, from which all grit is sifted out, would answer. This preparation would have no visible effect on cabbage lice unless they happen to be killed by the lime or ashes. They live by sucking the juice from under the surface of the leaf and are not poisoned by anything placed upon it. Kerosene emulsion is vastly better because that kills by direct contact, and you should be equipped with a small spray pump for liquid sprays as well as with a dusting apparatus. Each apparatus has its own uses. Paris green would have no effect whatever on potato blight, which is a fungus, to be held in check by the use of Bordeaux mixture. There is such a thing as bud blight in pears and it may be produced by several agencies. For example, it is one of the indications of "pear blight," but not conclusive evidence of the occurrence of it. It is sometimes caused by sour sap in the root, and there is a failure of the bud due to the perforation of a boring larva. It would be necessary for you to send some small branches if you desire us to indicate the particular enemy which you have to deal with.

Curled Leaf on Peach Trees.

To the Editor: Inclosed please find a sample of leaves taken from trees planted this season. Were they diseased in the nursery, or what is the trouble with them? They were planted in February on wet, heavy soil, the pruning was done very light, just the very top nipped off. I have had some discussion regarding this, as my theory is that the trees should be pruned back considerably when planted. Am I right or wrong regarding this? And does this have any connection with the curled leaves? Can the ground have any disease before the trees are planted, so that could affect the trees? Some say that the wet ground causes the leaves to curl.—Planter, Stanislaus county.

The leaves which you send indicate the presence of curl leaf on the young trees. This is not a disease which can be claimed to be carried from the nursery, because the germs are present everywhere, and it is freely distributed after planting. The pruning could have no effect upon it, nor is it peculiar to damp ground, although it is often worse on damp ground, but appears everywhere during a time of atmospheric humidity and rather low temperature. A cool, damp spring like the present is, therefore, favorable to curl leaf, and it is for this reason more prevalent than in ordinary seasons. The causes of curl leaf is a fungus, which finds such conditions as we have described most favorable for its growth. The way to control curl leaf is to do thorough winter spraying with the Bordeaux mixture. You can spray at the present time with Bordeaux mixture of about half the usual strength, that is, using a hundred gallons of water instead of fifty to five pounds of bluestone and five of lime, and in that way check the spread of the fungus to leaves not already invaded. The probability is, however, that as the weather becomes drier and warmer the newly developed leaves will be free from the disease.

HORTICULTURE.

Mr. Gillet Is Not Convinced.

To the Editor: In reply to Mr. Payne's statement as it appeared in the issue of April 28 of the Rural Press I have this to say: It is stated by me in my last communication, before producing Mr. Payne's letter of 1900, in which he declared in unmistakable terms that the variety grafted on this tree was the "true Santa Barbara soft shell seedling," I thought I had better first find out what variety Mr. Payne claimed at this time to have been grafted on the tree; so I requested a mutual friend of both myself and Mr. Payne to ask the latter what variety he had so grafted, and the answer came "I have asked Mr. Payne several times what kind of a walnut was grafted on his big tree, but he always said that he did not know." I do not blame Mr. Payne in having answered so, for he had been convinced for fourteen years that the Santa Barbara was the variety grafted on his big tree. When last year his friends told him in positive terms that it was the Santa Rosa variety that had been grafted and it was reasonable to think that he yet doubted whether it was this or that variety that had been used. This reminds me of the following anecdote about Aesop, the fabulist of ancient Greece, who one day being sent on an errand, met the city proctor or judge of that time, who (knowing him to be the servant of Xanthus, the philosopher) asked him where he was going? Aesop answered, "I do not know." At which the proctor was offended, and ordered him to prison for speaking so impertinently. As they were taking him away he cried out, "Oh, proctor, did I not tell you I did not know where I was going?" The proctor pleased with the reply dismissed him, and Aesop went on his errand.

I will say right here that I do not want to drag this friend of mine into this controversy, as he was unaware at the time I asked for the information what it was intended for. I will only say that he is a quiet, straight-forward, honest gentleman, a resident of Campbell and well known to Mr. Payne, whose memory in this instance seems to fail him. He is a man too trustworthy to deceive another in such a way. It was through this gentleman that I addressed myself directly to Mr. Payne. Finally, and as I did not wish to do any injustice to either of the parties connected with this affair, and before producing Mr. Payne's letter I sent for samples of nuts of the big trees, and thought it was as well to secure them through the same party, to whom I was just writing about some business matters between us. I did get samples of them, which I properly described in my article in reply to Mr. Leib's communication. Said my correspondent: "I went to Mr. Payne and asked him to give me samples of the nuts that were raised on the big tree that had been talked so much about, and you will see from the sample that I have sent you, that they are not all of the same variety, but he told me positively that they were all off the big tree; now what do you think of the samples?"

The samples were convincing that the variety grafted on that tree was not the Santa Rosa, but the plain Santa Barbara, of Southern California. For one I do not go much on the latter variety, because of its being too delicate for our climate, but I must acknowledge that it is a variety of wonderful fertility, as proved again by the record of Mr. Payne's tree; but that was no reason for pulling down old Santa Barbara from its lofty pedestal and putting in its place young Santa Rosa.

I will say again that the whole affair should

be regarded as a matter of public interest, and not merely as a matter of friendship.

Here is a tree that ever since it was grafted in 1891, that is for fourteen years, was regarded as a "true Santa Barbara soft shell," and presto! as if by magic, in the year of our Lord, 1905, it turns out to be a Santa Rosa. And I may ask: for what purpose was the name so changed? For whatever myself, Messrs. Leib and Burbank, or anybody else, for that matter, may say about the tree, will not change an iota the nature of its product. Santa Barbara it was when grafted, Santa Barbara it has been for fourteen years, and Santa Barbara it is yet to-day, as the nuts borne on the tree prove "beyond a reasonable doubt," as my friend Judge Leib may be apt to say. Any one having doubts yet, and wishing to dispel them, might go next fall with true Santa Barbara walnuts in one pocket, and true Santa Rosa in the other, and at the time nuts are falling off, and ascertain by comparison to which of the two varieties the nuts of the aforesaid tree belong.

As to whether or not Mr. Payne sells grafting wood from his tree, under any name or no name at all, is immaterial. Nevertheless, the whole affair cannot but be regarded as misleading the people.

In my last communication I advanced the idea that something was the matter with the tree under discussion, that till 1900 it had been steadily increasing its crops every year, bearing on that year 600 pounds of nuts, but that ever since the crop had decreased, and in 1905, after five years more growth added to the tree, bore but 269 pounds of nuts, not one-half of what it did in 1900. Mr. Payne tried to explain the discrepancy in his own way one year was the off year, another year a severe wind broke two immense limbs down, and finally Mr. Payne lets the cat out of the bag, telling us that the "sunburn" disease done away in 1905 with 150 pounds of the nuts. Sunburn! Another disease of the walnut almost as bad as "blight." It showed anyway that I was right in saying that something must be the matter with the tree, bearing lesser crops since 1900, with so much more growth added to it every year. But a word on that so-called "sunburn" disease, a misnomer, for I found it out long ago to be a disease of the walnut affecting the fruit in a similar way as the blight does. In 1892 I went to Saratoga, in the Santa Clara Valley, to inspect 300 magnificent walnut trees, also of the Santa Barbara variety, one foot in diameter near the ground, and owned by Mr. Laurence Russell, who is still living on the place. Mr. Russell's complaint was that his crop of walnuts was every year half destroyed by "sunburn," and he was contemplating on that account taking out the trees by the roots as being unprofitable. I found the trees to be in a most healthy condition, with no die-back about them, and with a thick, dark green foliage. I showed Mr. Russell that many of the so-called sunburned walnuts were right among the foliage and on the north side as well as the south side of the tree, the sun never shining on many of them, and that it was a disease caused by fungus, or insect, or germ in fact anything but the sun. I advised Mr. Russell to graft the trees over to other varieties, that it was worth trying as the trees were large and healthy; but he thought that it was too much trouble and, besides, he had doubts whether other varieties wouldn't also be affected with the disease; so, finally, the 300 fine walnut trees were taken up by the roots, and apricots planted in their place.

This "sunburn" disease—sunburn, so-called—acts differently from "blight;" for the latter starts, nine cases out of ten, at the bloom or small end, penetrating through the hull to the shell, the black spot spreading out on one side, the hull losing its freshness and bright color, and last dropping to the ground all dried up; while "sunburn" starts as a black spot on one side of the nut already more than half grown, till it attains the size of a nickel, the balance of the hull remaining fresh and green, the black spot penetrating through the hull to the shell to which it sticks tight, destroying the kernel inside as effectually as blight does. Walnuts scalded by heat do not get black. This disease of the walnut exists

also in the States of Oregon and Washington, samples of nuts so affected having been sent to me last summer, with the request to examine them and say whether that was not the blight: people were relieved, however, when told that it was not though I do not see what difference it makes whether the crop of nuts be so thinned out by one or the other disease. I was sorry to hear that Mr. Payne's big tree has to suffer from the "sunburn" disease, though it shows that I was right in saying that something was the matter with the tree.

FELIX GILLET.

Nevada City, Cal., May 9, 1906.

We apprehend that the two "diseases" are forms of one malady. The first attack of the blight is by way of the pistil; the later may find other means of entrance.—Ed.

Summer Control of Pear Blight.

Dean B. Swingle of Washington, D. C., who is co-operating with Prof. M. B. Waite of the National Department of Agriculture, and Prof. Ralph E. Smith of the University Experiment Station at Berkeley, in the campaign against pear blight, visited Sutter county last week.

Pear growers were observed to be actively engaged in cutting out the blight which has appeared since the blossoms dropped, and Mr. Swingle suggests that great care should be used in summer cutting, otherwise the blight will be spread rather than eradicated.

If the growers are going to carry on a summer campaign, they should carefully observe the following precautions:

"In visiting the different pear growing sections of the State it is found that nearly every one is cutting out the new infections that have appeared. This in some cases is being done correctly by skillful men and these men are having good success. But ignorant or unskilled labor cannot do this as it should be done. If they are the only help available it would be better to leave the blight alone until fall.

"Three mistakes are being made by many who are undertaking summer cutting.

"First, cutting too closely to the blight.

"In summer, when the sap is flowing and the trees are active the germs are always working down some distance below where they are visible to the eye, but some will not believe this until they have learned it to their sorrow. Every cut should be made from one to two feet below any visible portion of the blight. If this involves the removal of a large branch because of a blighted spur, this should be done by all means, as the branch is surely doomed. It is folly to risk the life of a tree to save a few pears that will be lost in the end.

"Second, failure to disinfect.

"It is even more important to use the disinfectant in summer than in winter. Neglect in this respect will surely result in failure. Corrosive sublimate, four small tablets to a pint of water. It should be used on the shears after every cut and on all large wounds.

"Third, leaving cuttings in the orchard. These cuttings should be burned the same day that they are cut out.

"These details are absolutely essential, and to neglect any one of them is to fail. Those who do not observe them strictly are not following the Waite method of eradication.

"Skillful summer cutting and the observance of all precautions is saving many orchards all over the State; but the neglect of a single one of them will be disastrous."

The Horticultural Commissioners of Sutter county urge the importance of carefully following the above suggestions.—R. C. Kells, T. B. Hull, H. P. Stabler, Horticultural Commissioners of Sutter county.

We are shipping prunes to France, raisin machinery to Spain and all that sort of thing. The latest instance of pushing our things into their ancestral sources of production is sending macaroni to Italy. Consul Chase of Catania advises that American wheat has been introduced into Italy, the first cargo of 145,000 bushels arriving at Catania and Messina in March. This was macaroni wheat.

CORRESPONDENCE

Extension of Rural Delivery Service.

To the Editor: If the nerves and minds of your readers are not too shattered and shaken by the earthquake I should like to call their attention to a bill (H. R. 4428) now before the U. S. Congress that would make life easier in all rural districts. How much of a farmer's time is occupied driving to town on very trifling, though very necessary errands, we ruralists all realize. How many of these errands might be saved us by the use of the telephone and a rural parcels post requires no great stretch of imagination to calculate.

I append a copy of this bill to enable the farmer and storekeeper to get a fuller use of the rural free mail equipment, and wish, if your readers approve, that they would write to their Representatives at Washington asking urgency for the consideration of the measure.

It is no use boasting that we are Americans unless we claim our share in the American government and take active part in this government by the people.—Edward Berwick, Pacific Grove.

The bill to which Mr. Berwick refers is as follows:

Be it enacted, by the Senate and House of Representatives of the United States of America in Congress assembled.

Section 1. That within the limits of the respective rural routes, served by post wagons, parcels of mail matter shall be collected and delivered house to house, by the carriers, in weight up to 200 pounds, and in dimensions up to a barrel—no parcel, however, to be more than 4 feet in length.

Section 2. The rates on parcels thus collected and delivered on the rural routes served by post wagons shall be as follows:

Parcels up to 8 ozs.....	1c
Parcels over 8 ozs. to 1 lb.....	2c
Parcels over 1 lb. to 11 lbs.....	5c
Parcels over 11 lbs to 30 lbs (half bushel).....	10c
Parcels over 30 lbs to 60 lbs (bushel).....	15c
Parcels over 60 lbs to 100 lbs (half bbl).....	20c
Parcels over 100 lbs to 200 lbs (barrel).....	25c

Section 3. This act shall take effect six months from and after the date of the approval thereof.

THE FIELD

Chile Pepper Growing in Southern California.

(By Mr. Allan Knapp at the University Farmers' Institute at Anaheim.)

If a man wants fair returns from any business he must put his mind, and, in fact, his whole self into that business. Even at times when he does exert himself a great deal and does good honest work, he then quite often fails to get the returns expected. But I am ready to say that if the following rules are carried out precisely as I give them, nine times in ten you will have a paying crop of chilis.

General Points—Chilis are most successfully grown on deep, rich, sandy loam, or sediment soil, which will not bake very rapidly. Chillis should be set in damp soil and if land should easily bake you will see the land become hard and will dry out more readily about the young plant. Conditions will thus be such that growth will be very slow.

It has been proven many times that to rotate crops farming would be more profitable. Looking at it from this standpoint it is not wise to grow more than two crops on even the best of soils without fertilizing very liberally. I have never tried commercial fertilizers, but have plowed under cover crops and found them very profitable.

The selecting of seed is a very important factor in growing a good crop of chillis. First, select your plant, a low bushy vine, full of pods of medium length, such as I have here. A tall bush will not produce as many pods and is more liable to be broken by strong winds when loaded with fruit. Besides the end of the pods from a low plant will rest on the ground and in that position they will pop up the branches

providing you will watch your business closely and keep crowding a little earth to the row at each cultivation so as to form a ridge, leaving a furrow between every row ready for irrigation.

Varieties—There are several varieties of chillis, but only two are grown commercially in California. One of these, a very dark, thick meated, cone shaped chilli, growing from 4 to 6 inches long, usually known as the Mexican chilli, are not grown very extensively, but is slowly gaining ground; while the long red, having pods from 6 to 10 inches long, are the best known.

There is another chilli, an extra long pod ranging from 10 to 14 inches. The plant is of a good shape, but it will not produce as many pods, nor will a string of these long pods weigh as much as a string of the other varieties when each is cured and ready for the market. When green they are thick and heavy, but after they have gone through the drying process they are thin and very light. Another feature about these is that they contain very little seed. Just open a pod and find out.

How to Grow Plants—When your seed pods are gathered have them put on a string and hung up to dry against the south end of a building. Do not put them into the evaporator when hotter than 110 to 115 deg. They may stand more heat, but don't lay temptation in the way of the seed, for if you tempt it too much only 50 per cent may respond to your wishes, and the other half may keep you guessing a week longer than those dried in the sun; neither will it make so strong a plant. The seed is important; watch it closely.

The seed bed is also important and a peculiar thing to handle. Much havoc has been wrought among the young plants this season. Why? Who knows the reason? Some say a bug is eating the plant. Others say a worm lays them low. But I think it is too much moisture; and it would take a good deal to convince me that I am wrong. The plant simply lies down and dies. In selecting your seed bed take a new location every year. My idea of a bed is this: Select a location where good drainage may be had. Sandy soil is best, but not so poor that it contains no plant food to nourish the young plant. Plow and level the plot, harrowing or raking with a hand rake as only a small piece of land is used; sow seed in rows 3 inches apart, covering one-quarter of an inch. On this spread one quarter inch with sand. Start your seed beside a large tree and you will have fair success. The tree will drain your land. When the young plants begin to die, take a trowel and dig out the affected spots, and throw them away. The plants should have 5 or 6 leaves on before transplanting commences.

Time for Planting—A number of people planted early this season, as many do every year, and nearly every one lost all or a greater part of their plants. These people planted their best seed, possibly selected, in the first bed and lost it. Then poor seed is taken next time. And what is the result? To plant early and out of doors, where wind and weather has access to the plants, the chillis will die and do so in nearly all cases. What is the use of planting early?

March 10 to 15 is a good time to sow seed unless one has a hothouse. Wet the soil thoroughly before removing plants to field, as roots are damaged less. They should have 5 or 6 leaves before removing.

FRUIT MARKETING

Mr. Powell's Experiments in Orange Shipping.

Mr. G. Harold Powell, the government expert sent to California to study the causes of orange decay, met in an informal way a few packers and fruit men in the packing house of the National Orange Company in Riverside. This was one of the series of little conferences at which Mr. Powell detailed some of the results of this season's experiments to the men vitally interested in this important work, and an outline is given in the Riverside Press. How important is this work may be inferred from Mr. Powell's opening statement that there was

a loss by decay of 5 per cent on all orange shipped from Southern California in 1905. The losses are caused by the blue mold which attacks the orange through a mechanical abrasion, or through a weakened skin. Numerous causes contribute to an abraded surface—clippers, gravel, brushing and washing etc.

That the growers and shippers are perfecting their methods is demonstrated, Mr. Powell said, by the fact that whereas the average amount of clipper cut fruit is 5 per cent this year, last year it was 19 per cent.

The experimental work this year has been to test packing, fruit handled in different ways in the packing houses and shipped under pre-cooling, icing and ventilating. All of the experiments include brushed, unbrushed, washed and imperfect fruit.

Results of the season's experimental efforts were embodied in a series of charts which recorded to a mathematical nicety the results accomplished. The first chart showed an average decay in forty to fifty packing house experiments in which the fruit was left in the house for two weeks in the sweat room. The chart indicated that there was but a trifling decay in the unbrushed fruit, 4 per cent decay in brushed, 12.5 per cent decay in the washed and 36 per cent in the imperfect fruit. Mr. Powell argues that this experiment shows that the orange as it comes from the tree is a perfect fruit, and that the decay increases as the handling grows more complex. The fruit deteriorates by washing, due partially to the rubbing of the skin by brushes, the softening of the fruit and by the fact that the water is full of decay spores.

Another chart showed the result of 25 cars in an experiment to show the result of holding the fruit in the house different lengths of time after packing. The fruit shipped immediately developed 2 per cent decay, a delay of two days developed 5 per cent and five days 10 per cent.

Another chart showed the results of four cars delayed in hot weather. The chart indicated that there was practically no decay for the first day, but the decay gradually increased until the seventh day it reached 5.5 per cent in brushed fruit. The decay in washed fruit decreased much more rapidly, reaching 9 per cent on the fifth day.

Another chart indicated shipping experiments under ventilation, iced and pre-cooled. Under ventilation there was practically no decay in either unbrushed or brushed perfect fruit. The washed perfect fruit showed, however, a decay of 4.5 per cent, imperfect fruit 17 per cent. This per cent was decreased in the iced fruit, which showed on its arrival the following decay: Unbrushed 0.1, brushed 0.5, washed 2.7, imperfect 6. In the pre-cooled fruit there was no decay in the brushed or unbrushed, 0.5 in the washed and 1.5 in the imperfect. The loss was 4 per cent when washed fruit was held in the house four days.

The coast region, mid-valley and upper valley regions were tested for the keeping qualities of their fruit, and there was found to be little difference in the keeping quality as the fruit comes from the tree. Ninety per cent of the fruit in the upper valley is not washed, while ninety per cent of the fruit in the coast regions is washed.

The unbrushed fruit in the three regions has developed about 1 per cent decay; brushed from 3½ to 4½ and washed fruit about 12 per cent.

An experiment for decay with washed fruit showed decay of from 2 to 9 per cent in the top of the car, and from 1 to 5 per cent in the bottom of the car, according to the number of days it was held in the house before shipping. Delayed imperfect fruit showed decay from 10 to 36 per cent at the top, and from 2 to 11 per cent in the bottom of the car. There is little difference in the decay in different parts of the car in perfect brushed fruit.

Summarizing the results of the experiments, Mr. Powell said that sound, clean fruit was a fundamental for successful shipments. Fruit that is mechanically bruised, or fruit that has to be washed is most likely to decay. It should be shipped as quickly as possible after picking to prevent the starting of decay, and it should be as cool as possible when shipped.

THE AGRICULTURAL ENGINEER

Removing Alkali by Drainage.

In address before the Farmers' Commercial and Protective Association of the Bear River Valley, at Garland, Utah, Mr. C. F. Brown, drainage engineer of the U. S. Department of Agriculture, spoke of the work in progress in the removal of alkali by drainage.

At present there is no alternative than to remove these accumulations in the soil than by drainage. The first step is to prevent excessive evaporation by keeping the ground water from three to four feet below the surface. The source of supply must be cut off and an adequate outlet provided for those portions which have become wet. Sufficient deep drainage must be provided to let all water applied percolate readily to the drains.

Surface washing is advisable for that alkali which is concentrated at the surface, but to attempt to remove by that method, that which is distributed through the soil to a depth of 3 or 4 feet without cutting off the feeder is the height of folly. Even with the feeder cut off, the method is unreasonable, and has never succeeded to my knowledge. To remove the alkali from the soil in sufficient quantities to allow the growth of crops, we must depend upon its solubility in water, and provisions for passing water down through the soil.

I take it for granted that no observant farmer who has ever made a drain ditch has failed to observe the salty taste of the water seeping into such ditches where alkali is present. To give you an illustration of where under drainage has proved efficient, I will call your attention first to the farm of Sommer and Sommer, west of Tremonton. This farm is not on higher ground than that around it which is nearly all affected materially above and below and has become almost unproductive from water logging and alkali. This farm as well as the others gave abundant crops the first few years. Many farms above and below have ceased to yield properly. The Sommer farm under the able management of Mr. Mathew Baer is still keeping up its record. Last year it yielded an average of 95 bushels of oats per acre. Has alkali even showed up on section 8 and the last half of section 9? Very little. Has water even stood on the surface and has it showed wet spots? Yes, but not for long. Nearly every wet spot was tapped with a tile drain from three to four feet deep, and the open spot which showed alkali in excess has been honeycombed with drains and it is improving. Every year from one-fourth to one-half mile of tile drain has been put in and will continue to be put in until more wet ground shows up. Mr. Baer reports that the labor cost of his draining has been very close to 50 cents per rod. This is a good approximation according to my experience in digging.

Mr. Louis Getz of Point Look Out has drained with considerable success on his farm. He says that the present high price of tile has prevented him from using as much of it as he would have done. I think he has a mile or more of covered tile drains and he maintains more open ditch drains.

Many farmers have been fearful of the effect of alfalfa roots on the drains, thinking that the roots would force an opening into the drains and clog them up. One of Mr. Brown's 4-inch tile drains runs through a good stand of alfalfa and discharges all the water that a 4-inch tile could discharge without pressure or excessive grade. The drain has been in operation for four or five years. I attempted to locate it in the alfalfa field, and uncover a portion of it, but was unsuccessful.

In the year 1901 the Bureau of Soils, U. S. Department of Agriculture and the Utah experiment station undertook the reclamation of a 40-acre tract of alkali ground in the worst possible stage. It was drained with parallel lines 150 feet apart, and about four feet deep. It was washed several years

SAVE ALL THE GRAIN YOU GROW!



Let Us Reason Together

BETWEEN seed time and harvest, the grain grower has to trust very largely "to luck."

Nature makes the crop in her own way.

But when harvest time comes he must "get busy."

His profits then depend upon the wisdom with which he harvests his grain.

The wise man begins to get ready weeks before the actual time of harvest.

He knows he can't "trust to luck" then, and he does not want to be caught unprepared.

The first thing he does is to make sure that he has the right facilities for harvesting—the right kind of machines for the proper cutting of his grain.

He wants to get every spoonful of grain that Nature has given him.

He wants to get it with

- the least delay in time;
- the least labor on his own part;
- the least hardship on his horses;
- the least likelihood of trouble and annoyance.

He cannot "trust to luck," and certainly he cannot trust to a poor harvesting machine, a worn-out harvesting machine or an uncertain harvesting machine.

How about you and your harvest?

If you are a businesslike farmer, you will get ready for harvest now.

Go to a dealer who handles any one of the International line of harvesting and haying machines.

Get a catalogue, look at the machines, study their construction, and you will see for yourself that they are built to meet every requirement.

In principle of operation—in design—they embody all that the most skilled mechanical experts have discovered in the past 50 years.

In materials they have lumber, steel and iron of the highest grade only—the selected products of the manufacturers' own mines and mills, produced for the purpose of harvesting machine building.

In workmanship, it is the product of the best facilities that money and experience can produce.

In everything that makes a machine reliable, trustworthy, durable and efficient, the

Champion
Deering
McCormick

Milwaukee
Osborne
Plano

Harvesting and Haying Machines, represent the highest grade of excellence.

These machines have been before the public for a long term of years—some of them for more than half a century. Other machines—scores and scores of them—have come and gone. These have remained, growing every year in popularity. Is the stamp of approval placed on a machine by the farmers of America and grain growers of the world worth anything?

Is it not certain that their popularity has been merited? Men do not buy machines year after year, unless the machines do satisfactory work.

To-day the standard harvesting and haying machines embraced in the International line, are better than ever before, because they are the products of riper, richer experience, more expert skill, and better and greater facilities for manufacture than were possible in the past.

The manufacturers of these several machines, by close co-operation, are able to own, control and operate their own coal mines, iron mines, lumber camps, coke ovens, steel mills and other sources of supply, producing their own materials, under their own supervision.

They get these materials when they want them, not being dependent upon uncertain and fluctuating markets; they get them of the right quality.

By co-operation they are enabled to employ the most expert skill in designing improvements and in the actual manufacture of the machines.

By co-operation they are enabled to employ extra facilities for the economical production of machines of the highest quality, facilities which are impossible for an individual manufacturer.

By co-operation they are enabled to surpass even their proud records of the past.

- If you expect to save all your grain;
- If you want a harvesting or haying machine on which you may depend with absolute certainty;
- If you want to be free from "break-downs," delays, and repair bills;

Take a little time, go and talk to an International Agent.

Inspect the machine he handles and get a catalogue.

It will pay you whether you buy this year or not.

If you don't know an International dealer—write to us for the name and address of one nearest you.

International Harvester Company of America, Chicago.

(Incorporated)

WESTERN GENERAL AGENTS: Denver, Colo., Portland, Ore., Salt Lake City, Utah, Helena, Mont.,
Spokane, Wash., San Francisco, Cal.

INTERNATIONAL LINE.

Binders, Reapers, Headers, Header-Binders, Corn-Binders, Corn-Shockers, Corn-Pickers, Huskers and Shredders, Corn Shellers, Mowers, Hay Tedders, Hay Rakes, Sweep Rakes, Hay Loaders, Hay Stackers, Hay Balers, Knife Grinders, Gasoline Engines, Pumping Jacks, Manure Spreaders, Weber Wagons, Columbus Wagons, Bettendorf Wagons and Binder Twine.

and an attempt was made to crop it last year. A partial crop of grain and alfalfa was produced on most of it. It was thought that the failure to get expected results was due more to the poor mechanical condition of the soil than to excessive alkali. It was all plowed up last year and an effort to get a stand of alfalfa will be made again this year. Of course this land has never grown a crop and is hardly a fair test of what we want.

The Utah Sugar Company has made several attempts to relieve water logged condi-

tions and to reclaim alkali lands with open ditches. They have succeeded to a marked degree, but the maintenance of an open drain where there is alternate freezing and thawing is a very expensive item besides the large amount of ground occupied by ditches. (This objection would, of course, not hold in California.—Ed.) The sugar company's ditches have filled up from one to two feet during the last nine months, and are consequently not as efficient as they were.

The Home Circle

CHICAGO, 1871.

Men said at vespers: "All is well!"
In one wild night the city fell;
Fell shrines of prayer and marts of gain
Before the fiery hurricane.

On three-score spires had sunset shone,
Where ghastly sunrise shone on none.
Men clasped each other's hands, and said:
"The City of the West is dead."

Brave hearts who fought in slow retreat,
The fiends of fire from street to street;
Turned, powerless, to the blinding glare,
The dumb defiance of despair.

A sudden impulse thrilled each wire
That signaled round that sea of fire;
Swift words of cheer, warm heart-throbs
Came;
In tears of pity died the flame!

From East, from West, from South and North,
The messages of hope shot forth,
And underneath the severing wave,
The world, full-handed, reached to save.

Fair seemed the old; but fairer still
The new, the dreary void shall fill
With dearer homes than those o'er-
thrown,
For love shall lay each cornerstone.

Rise, stricken city! from thee throw
The ashen sackcloth of thy woe;
And build, as to Amphion's strain,
To songs of cheer thy walls again!

How shriveled in thy hot distress
The primal sin of selfishness!
How instant rose, take thy part,
The angel in the human heart!

Ah! not in vain the flames that tossed
Above thy dreadful holocaust;
The Christ again has preached through thee
The Gospel of Humanity!

Then lift once more thy towers on high
And fret with spires the Western sky,
To tell that God is yet with us,
And love is still miraculous!

—John G. Whittier.

YOUR EYES.

My toil has been of toilers one small part,
Small seems the gain tonight, the purpose sordid;
Yet in your eyes, your cool gray eyes,
Dear Heart,
I am rewarded.

I'm tired to-night, and like some garden
old,
Whose cloist'ring wall denies the gar-
ish city,
Your eyes enshroud me, and my care is
sold
For your sweet pity.

All day the world-care trod the sullen
street,
The world-grief's cry strove up from
out its teeming;
All day I heard and heeded—still, My
Sweet,
Of gray eyes dreaming.

Men battled 'round me on the wave of
trade,
Green lending strength, and Hate a
hand for scourging,
While here and there Oblivion's claim
was paid,
With ruin urging.

Out in the world of triumph and despair
Fame crowns the brave and treads
upon the craven.
My fame lies in your eyes, for it is there
My heart is graven.

—Henry L. Marshall

A TANGLED FAMILY.

The remarriage of Mrs. Vanstone, after a long widowhood, was the popular gossip of the season, yet no one could solve the problem and no one seemed entirely satisfied except the new husband. The Vanstone relations were vexed, the servants sulked and the widow's son and daughter, Charley and Millie, just of age, imagined their prospects blighted.

"Oh, George, what shall I do?" said Mrs. Beverley—which was the lady's new name—ready to cry.

"Don't mind 'em, my dear!" said her husband, with a great, rolling laugh.

"They're only children; they'll grow wiser as they grow older."

But the squire's determined good humor aggravated his stepchildren more than any amount of positive opposition would have done, and they made no effort to conceal their feelings.

"I never, never can call that man father," said Millie.

"My dear, he doesn't want you to," said Mrs. Beverley.

"I can't endure the sight of him!" pouted Millie. "And Charley says exactly the same thing."

"Charley is a disobedient, ungrateful son," sobbed Mrs. Beverley.

But here Mr. Beverley himself came to the rescue.

"Young people," said he, "I don't object to you making yourselves as miserable as you like, but you mustn't torment your mother. I'll have none of this."

Millie lost no time in carrying this revolutionary speech straight to her brother.

"Very well," said Charley, coolly, "we'll accept the challenge."

"I'll not submit to his tyranny," said Millie. "I've got a plan."

"So have I," said Charley, "lots of 'em; only they don't seem to work when I try to put them into practice."

"I've been writing to Louise Vane," said Millie.

"It seems to me as if I had heard the name before, now that you mention it," said Charley, rumpling up his brown, curly hair. "But why should you write to her?—and what has she to do with our affairs?"

"She sympathizes so thoroughly with me," said Millie. "She considers second marriages as sinful as I do. And she has asked me to come to her and stay as long as I please. There is a nice hotel in the village, Charley; and her father is very hospitable. And there is a fine supply of trout and delightful shooting. Louise writes, and plenty of agreeable society."

"Not a bad idea," said Charley, reflectively.

"Oh, George, what shall we do?" cried Mrs. Beverley, turning pale when she comprehended that her children were gone.

"Give 'em their heads," said her husband, composedly drinking his coffee. "Never drive young colts with too tight a rein. They'll be glad to come back in six weeks, or less."

"But it's such a fuss about nothing," said Mrs. Beverley, half laughing, half crying.

"That's the beauty of it," said her husband. "That's precisely what they enjoy!" and the jolly fellow shook with laughter.

Louise Vane received her former schoolmate with effusion.

Her father, a stately, middle-aged gentleman, spoke a few kindly words of welcome.

"Oh, dear!" said Millie, when she was alone with her friend, "I do hope we shall not disturb Mr. Vane."

"Nothing disturbs papa," said Louise. "He will never think of noticing such chicks as we are. Every old maid and widow in the village has tried to marry him ever since poor mamma died."

"How dare they?" said indignant Millie. "I think the Legislature ought to pass a law against second marriages. They are wicked, sinful; an outrage on civilization!"

"Of course they are," said Louise. "But don't worry, darling. Remember that you are with me now."

And the two callow young doves fluttered into each others' arms, with renewed vows of eternal friendship.

Three months of happiness at Vane Lodge followed. Millie and Louise read their favorite authors together, and worked hideous screens and impossible portieres in crews.

And all this time neither she nor

Charley wrote a line to Mrs. Beverley.

"I am afraid they have discarded me," said the poor lady. "I fear that they never mean to forgive me," she added, with a deep sigh.

"My dear, don't be a goose!" said her husband. "You don't regret our marriage, do you?"

"Never," said Mrs. Beverley, with a gleam of spirit.

"Neither do I!" said Mr. Beverley, laughing.

But one day Mr. Vane called his daughter into his study, with a serious face, and when she came out she was drowned in tears, and fled straightway to the haven of her dearest's friend's room.

"Darling!" cried Millie, "what is the matter? Tell me, I beseech you."

"The worst that could possibly happen!" cried Louise tragically. "Papa is going to marry again."

Millie crimsoned to the very roots of her hair.

"He told me so himself," said Louise. "I never stopped to ask him who it was that was to desecrate our happy, happy home. I just clasped my hands and cried 'Papa!' and ran away, sobbing as if my heart would break. Oh, and I had so hoped that, when I was married, we could stay on here just the same; but, with a stepmother, of course, nothing will ever be the same!"

"You married, Louise!" cried Millie.

"Didn't he tell you? But it only happened this morning. Charley has asked me to be his wife."

"But," faltered Millie, "if your stepmother loved you very much indeed—"

"Fiddlesticks!" said Louise; "as if a stepmother could love one! Oh, I hate her already! And you, too, my poor wounded gazelle, will be driven from your refuge. If I could only offer you a home—"

"It's so good of you, darling!" whispered Millie. "But I don't really think that it will be necessary, because, because—"

"You're not engaged to be married, too?" almost shrieked Louise, struck with a certain consciousness in her friend's face.

"Yes, I am," said Millie, hanging down her head.

"And to whom, you precious little conspirator?"

"To—to your father!" said Millie. "Oh, don't blame me, Louise; indeed, I couldn't help it!"—Clare Jaynes.

THE MOTHER WHO "DRESSED UP."

"Say, mother, why don't you ever dress up like Joey Blank's mother?" She dresses up every single afternoon same as if she was going somewhere or somebody was coming to their house. She looks just as nice!"

I remember that I heard a boy of about twelve years say this to his mother once upon a time, and her reply was brief, but comprehensive, for she said:

"Oh, it's too much bother."

Now I know another mother who does dress up to please her husband and children because they like to see her dressed up.

She cares very little for dress in itself and it is often a good deal of bother to dress up each day, but she does it just the same. She has three children. One of them has proclaimed blue as his favorite color; another expresses a decided preference for pink,

while the third likes bright red. One day this mother wears a blue ribbon at her throat and perhaps a blue bow in her hair to please the lover of blue. The next day the little girl who is so fond of pink finds mamma with pink ribbons, and the third child, a boy, always feels that he has been especially honored when he comes home from school and finds mamma in a bright red house dress that he had the honor of helping her select at the store. The other day this boy, whose allowance of spending money is 12 cents a week, took ten of it and purchased a bright red carnation to put in her hair the day she wore his dress, as he calls the red house dress.

Now these children are like a great many other children who love to see their mothers look pretty. Most husbands have the same feeling about their wives. They like to see them dressed up. I believe that the breach between a man and his wife whom I know is widening partly because of the fact that he has a great liking for seeing a woman neatly and prettily dressed, while she runs to wrap-

pers to a discouraging degree. He often goes out alone to concerts or evening lectures because she finds it too much bother to dress up. Her children note the difference between her and the mothers of their playmates into whose homes they go, and the comparison is to the disadvantage of the mother who does not dress up.

I once heard a lady say that when she felt a fit of the blues coming on she could always ward it off by taking a bath and dressing up in her very best clothes. Voltaire said that "Dress changes the manners." In this case it must also have changed the feelings. Indeed, neat and tidy dress often has that happy effect. The imitative faculty is very strong in the child, and if the mother never "dresses up" and falls into untidy ways the children of the home will be very likely to do the same, and that makes it bad for the husband and father, particularly if he is a man who likes to see people neat. When neither father nor mother ever take the trouble to dress up unless they are going somewhere, the children are sure to be woefully deficient in neatness and tidiness.

The mother who would rather dress up for her husband and children than for any one else is as wise as she is loving and true. The child who asked his mother why she never "dressed up like Joey Blank's mother" sounded a note of warning that mother would do well to heed. A downright untidy woman is a blot on the fair face of creation.—Felix Faxon.

CHAFF.

Patient—I suppose, doctor, if my appendix has got to come out, that settles it? Doctor—No, you settle it.

"It seems strange," said Deacon Mayberry as he counted the money after church, "that a large congregation can be so small."

She—I must say that I am disappointed in you. There was a time when I thought you were a man of boundless courage. He—That was when I proposed to you, of course.

Alice—What makes you think your new photographs are so horrid? Gladys—All my girl friends ask for one and my male friends don't.

He—I asked the doctor what I should take to remove the redness of my nose. She—And what did he say? He—He said, "Take nothing for six months."

"Keeping boarders," observed the landlady, "soon makes a woman coldly practical." "Yes, I suppose so," rejoined the cynical bachelor, "but that's no reason why the soup and coffee she dispenses should be practically cold."

Orville Weekleigh—People say you only married me for money, for revenue only. Mrs. Weekleigh—Of course. They only have to look at you to see that I didn't marry you for protection.

"Henry," she said disconsolately, "you didn't give me a birthday gift." "By Jove, that's so," said Henry, "but you see you always look so young that I can't realize you ever had birthdays." Then she was happy and he smiled the mean, subtle smile of a man who has saved money.

She—Speaking about eyes, isn't it odd that impulsive people generally have black eyes? He—No, it would be odder if they hadn't. They generally deserve them.

Mr. Softleigh—Tommy, do you really think your sister likes to see me better than she does Mr. Biggs? Tommy—I'm sure of it, for evenings when he's in the parlor she turns the light down so low she can't see him at all.

Mrs. Henpeck—They can't punish bigamy too severely. No one should have any sympathy for the man who takes one wife too many. Mr. Henpeck—The idea, Maria! Do you think I should be sent to jail?

"Mustache cups?" said the salesman, "yes, sir. Here's a pretty design. Cup and saucer, \$1.98." "But," said Mr. Nurtch, "that ain't the saucer that goes with it." "Oh, yes!" "Not much it ain't. There ain't no mustache guard on it."

Judge—What is your trade? Prisoner (who was caught in a gambling-house raid)—I'm a locksmith. Judge—What were you doing in there when the police entered? Prisoner—I was making a bolt for the door.

Agricultural Review

Butte.

BUYS CATTLE.—Oroville Register, May 10: Reyman and Evans, owners of the Ord ranch, near Gridley, brought to the ranch a thousand head of cows and steers, which were bought from parties above Cottonwood. Their holdings now aggregate a value of \$40,000. The animals will be put on the Butte Creek pasture and will be vaccinated to prevent anthrax.

Colusa.

GRAIN BAGS SCARCE.—Sacramento Union, May 10: The farmers in Colusa county will be compelled to pay a high price for grain bags this season. Before the San Francisco disaster bags were quoted at 7½c and many farmers thought the price too high. There were a great many bags destroyed by fire, which will necessitate shipments from Oregon and Washington. Bags are steadily advancing, and are now selling at 10c, San Francisco delivery.

Glenn.

SUPPLANT HARVESTERS.—Chicago Record, May 1: The combined harvester is nearing its end. The large holdings which have been devoted to wheat raising are being cut up into colony lots and this has had much to do with it, but the fact that the harvester leaves all the seeds of weeds for a "volunteer" the next spring has also led farmers to look askance upon it. Last season a number of self binders were brought into Glenn, Colusa and Yolo counties and the results have been so satisfactory that a demand has been made for them. Some of the flouring mills are offering 10 cents per sack more for wheat harvested in this manner than by the combined method. Further, work in the fields can be commenced at least two weeks earlier where the binding methods are observed than by the more modern process. It is argued by millers that a cause for the lack of gluten in wheat of this State has arisen from the fact that all vital qualities of the grain are burned out while waiting for it to reach ripeness, at which time the combined harvester can produce the best results.

Napa.

NEW CANNERY.—Napa Register, May 11: E. H. Foster of Foster Bros. Co. stated that the company's new cannery will be in readiness for the peaches, pears and tomatoes as soon as they come. Cherries will be bought up, pickled and sent East to be converted in maraschino. There will be practically no apricot crop this year, but the peaches and pears and tomatoes will all yield heavy crops. There never was such a demand for canned goods as now because nearly all the supply was wiped out in the San Francisco fire.

Riverside.

LOCATE CACTI GARDEN.—Riverside Press, May 10: D. Griffith, connected with the National Department of Agriculture, is in the city with a view to locating here a cacti experiment station. It is the purpose of the government to locate an experiment station to develop the prickly pear into a plant of commercial value as feed for stock. The government has already established stations at San Antonio, Texas; Organ Mountain, N. M., and a third near Tucson, Ariz. Mr. Griffith will make tests of the thornless cacti developed by Burbank. He says that spineless cacti are less hardy than the thorny varieties, and it is to breed a hardy variety that he will bend his energies.

Sacramento.

DEVELOPING RURAL PURSUITS.—Napa Register, May 11: To increase the interest of California boys in rural pursuits the directors of the California State Agricultural Society will offer twenty cash prizes ranging in amount from \$1 to

\$20 to the schoolboys of this State between 10 and 16 years of age who send to the State Fair, which opens in Sacramento on Saturday, August 25th, the best wheat or barley or oats or rye in the straw. The following conditions must be adhered to: Each boy who desires to compete must send at least four bundles 4 in. in diam. when tightly bound; the four bundles need not be all of one kind of grain, but may be one of one kind and three of another, etc.; before shipping the bundles should be boxed or carefully wrapped with burlap or cloth and along with them must be sent the name, age, photograph and postoffice address of the sender. The grain sent in will be judged by a board of competent grain growers and the money sent to the winners by the officers of the society. Length and strength of straw, size and fullness of heads and neatness of package will be taken into consideration. All competitors must notify the society of the fact by August 10, so the directors will know the quantity coming in time to prepare for installation. The grain must reach Sacramento on or before August 20, 1906.

SHIP WOOL DIRECT.—Sacramento Union: W. B. Hinchman of the Atchison, Topeka and Santa Fe railway is in receipt of a telegram advising that, effective May 7, a rate of \$2.50 per 100 lbs on wool, in grease, in sacks, carloads, minimum weight 14,000, from California common points to Missouri river and east thereof, will be published by the California lines. This is of interest to sheepmen, as heretofore they have been compelled to sell to operators and forward to San Francisco for compressing, whereas they may now ship direct to the Eastern markets.

San Bernardino.

BEETS PLANTED.—Chino Champion, April 28: Ten thousand two hundred and fifty acres of beets are provided for the Chino sugar factory this year; 8000 acres are already planted and the remainder contracted for. A force of fifty men is preparing the factory for work and 350 men will be required during the run, which is to begin about the middle of July.

San Joaquin.

KILL RUSSIAN THISTLE.—Lodi Sentinel, May 12: The Russian thistle was reported in this county over a year ago, and it has now become such a menace that the authorities are moving in the matter. This serious weed pest has not such a foothold in our State that it cannot be extirpated. The last Legislature passed a law making it a misdemeanor for any owner to allow it to grow on his property.

DRIED FRUIT SHIPMENT.—Lodi Sentinel, May 10: A mid-season shipment of dried fruits from the Buck & Cory orchard was made from Acampo. The consignment consisted of three carloads, Chicago being the destination of two cars and Portland one. The value of the shipment was \$12,000. The orchard comprises 800 acres and is a portion of the 2400-acre tract set out by the late Senator B. F. Langford.

STOCKTON POTATOES.—Stanislaus News, May 11: The dealers of Stockton have a serious question in the storing of next year's crop of potatoes and onions. There are no available warehouses in Stockton, the San Francisco wholesalers having leased them. As that city is the natural center for products of the surrounding country, arrangements will have to be made for the storing of them. The only way is to construct new warehouses, and this will probably be done. Some of the big firms are now planning new houses to be built in time to take the coming crops.

Shasta.

ANNUAL ROUND-UP.—Sacramento Union, May 11: Thirty cowboys are riding the Ono and Igo range, rounding up cattle preparatory to driving them to

the mountains for the summer. The cattlemen lost a large number of cattle last winter on account of lack of feed and cold rains. Four thousand cattle are ranged in the Ono, Igo and Bald Hills sections each winter and then taken to Trinity county for the summer season.

Sonoma.

CATERPILLARS DO DAMAGE.—Stanislaus News, May 11: Caterpillars are doing serious damage to fruit in Sonoma county, and in many places have denuded the trees of foliage. Efforts to check their ravages have proved unavailing in some districts. Despite the injury done, however, there is every indication that there will be good crops. In the vicinities of Forestville, Sebastopol, Healdsburg and Dry Creek valley the caterpillars are worst. The orchards have the appearance of having been devastated by fire. To stop the devastation the caterpillars are shaken from the trees and a coating of tangle-foot tar placed around the tree near the roots. The worms will not attempt to cross, but gather near the circle, where they are killed with a solution of coal oil.

Stanislaus.

EASTERNEERS FARMING.—Modesto Herald, May 3: One hundred and eighty acres have been planted to alfalfa this season for the account of Eastern purchasers, and two hundred acres will be planted to pink beans for like accounts. Next season there will be an increased acreage of alfalfa and a large acreage for trees and vines on this tract for Eastern people who expect to make their homes here after the lands are developed.

FINE HERD.—Modesto Herald, May 3: This county has the only herd of thoroughbred Dutch Belted cattle on the Pacific Coast. G. Strader a year ago brought from Newton, Sussex county, N. J., a herd that now numbers forty. They are coal black and every one is wrapped completely round its middle with white. The only Belted Dutch cow ever sent to Cuba was "Carrie B." from this herd. Mr. Strader finds them excellent milk stock, with steers big enough for beef. Indeed the bulls sometimes weigh 2000 lbs.

Sutter.

NEW BURBANK BERRY.—Stanislaus News, May 11: One of Wizard Burbank's productions in the berry line will be introduced to the Marysville market in a few weeks, as soon as the crop on the Schumaker place, near Yuba City, has ripened. The new berry is a cross between a raspberry and a Japanese wineberry, and has been christened "Burbank's Phenomenal." The fruit is pronounced the superior of both the raspberry and the loganberry. In color it is the same as the latter, but twice as large. The "Primus," another of Burbank's new species of berry, has been tried at the Schumaker place, but was a failure. The roots for both crops were secured at Capitola last year.

FIRST SHIPMENT OF CHERRIES.—Sutter County Farmer, May 4: On Thursday evening of last week a dozen boxes of cherries were shipped from this place to Seattle by J. B. Wilkie. These are the first cherries for this season from the northern part of the State. From all reports the crop will not be heavy. The white cherries will make the largest yield but they will not be ripe for some time.

Tehama.

STOCKMEN FORM ASSOCIATION.—Red Bluff News: Half a hundred stockmen of this county held a meeting at Red Bluff for the purpose of organizing a stockmen's association. The following officers were elected: A. J. Van Martre, president; E. J. Blossom and T. A. Spences, vice-presidents; E. Ellsworth, secretary; H. C. Kauffman, assistant secretary; W. H. Hoy, treasurer. P. R. Garnett of Glenn county spoke of protecting the sale of cattle and opposing all

combinations of wholesalers. He advised all the counties to form organizations, and later a State association, which will guard the grower against impositions. Regulation of price might be secured and arrangements made for distribution of cattle for market. Organizations can work to better advantage than individuals.

Ventura.

BEANS AND BEETS.—Oxnard Courier, May 11: The planting of Lima beans throughout the county is now on and by the end of the week there will be thousands of acres. In the Mound and Satcoy sections conditions were never more favorable. The yield this year promises to be better than that of last year, when the crop was a record one. It is estimated that the acreage will be from 35,000 to 40,000, which is about the same as that of last year. Prices also promises as good or better this year than last. Last season a number of farmers contracted their crops at 3 cents a pound and it was this figure upon which a basis in price was fixed. The price never went below this figure, but many who held on sold for more. Not so many ranchers are contracting this year. The old crop is practically all out of the hands of the growers, and what is left—something like 150,000 bags—are in the hands of dealers. From all over the valley come flattering reports of the beet crop now growing. There are upwards of 16,000 acres tributary to the Oxnard factory planted to sugar beets, and from the reports a banner sugar-making campaign awaits the machinery.

Yuba.

WOOL SALE POSTPONED.—Marysville Appeal, May 13: The spring wool sale concluded by the sale being postponed until June 8. Prices will be better after the financial situation, caused by the disaster at San Francisco has improved. Many of the growers were of the opinion that they should receive better prices than those offered. It is estimated that about one-third of the wool in the warehouse was sold. The prices paid ranged from 1 to 2 cents more a pound than was paid at Stockton.

PLENTY OF CANS.—Marysville Appeal, May 3: It was generally reported that the canneries in Marysville and Yuba City might not run this summer on account of the scarcity of cans, but there will be an abundance for all of the fruit put up by local plants. C. Coates of the California Fruit Canners' Association stated that the canneries in Marysville and Yuba City will run full blast, and looks forward to a record-breaking year. Mr. Coates has sent an order for 1,500,000 cans. The company's can factory in San Francisco was not burned.

DOMESTIC HINTS.

STRAWBERRY SHORTCAKE.—Make a layer cake like the following recipe and bake in three shallow tins: Take two cupfuls of powdered sugar and cream and beat it with half a cupful of butter. Beat three eggs very light and mix with it and stir in slowly one cupful of milk. Sift two teaspoonfuls of baking powder through three cupfuls of flour. One teaspoonful of vanilla. Very slightly crush or cut in two some strawberries and cover the top of one cake when cold, sprinkling with sugar; put on top another cake and then the last cake, and decorate the top with either icing or whipped cream and berries. Serve with cream.

DEVEILED MACARONI.—Take one cupful of boiled macaroni cut in short pieces. Make a sauce by cooking two tablespoonfuls of butter and two tablespoonfuls of flour with a little salt and mustard (and curry powder if you have it) together. Stir in one cupful of stewed and strained tomatoes and cook until

thick. Put a layer of the macaroni into a buttered baking dish, turn over it some of the sauce and sprinkle with three or four tablespoonfuls grated cheese. Add the rest of the macaroni and sauce and more grated cheese and cover all with bread crumbs and a lump of butter. Bake until the top is nicely browned.

RICE CROQUETTES WITH TOMATO SAUCE—Stir egg into one well beaten one cupful of hot, boiled rice, adding one teaspoonful of melted butter, salt to taste and enough milk to make the batter of the right consistency to mold into croquettes. Let this get cold and form into oblong pieces. Roll them in egg and cracker crumbs and let stand for an hour before frying. Heat up some tomatoes in which a green pepper has been chopped and pour over each croquette as served. If preferred, a little grated cheese can be added to the tomatoes instead of pepper, with a very little onion juice.

PLAIN OMELET—Mix one-half teaspoonful of flour with four tablespoonfuls of water, and add to the beaten yolks of four eggs. Put in a half teaspoonful of salt and a dash of pepper, and lightly stir in the beaten whites. Put one-half tablespoonful of butter into a hot frying pan, turn in the omelet, and when the center looks dry run a knife around the edges and fold over. Slide carefully on to a warm platter.

ORANGE CHEESE CAKE—Take out the pulp from two oranges; boil the peel

until it is quite tender, put it into a mortar, and beat it into a paste with twice the weight of the oranges in pounded sugar; then add the pulp and strained juice of the oranges, with a piece of butter the size of a walnut; beat all these ingredients well together, and lay the orange mixture in some patty pans lined with some rich puff paste; bake for about twenty minutes.

MOLASSES CAKE—One scant cupful of sugar, one cupful of New Orleans molasses, one cupful of sweet milk or cold coffee, butter and lard the size of an egg, one teaspoonful of soda, flour just enough—about two and one-half cupfuls.

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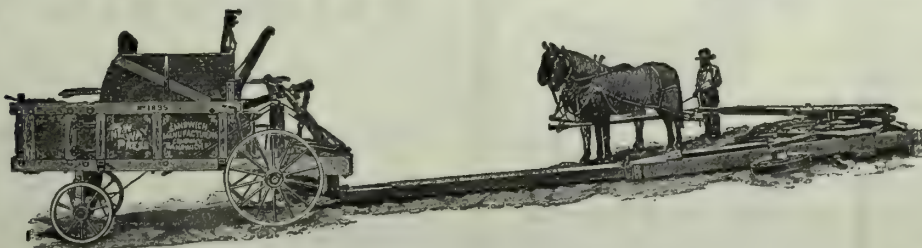
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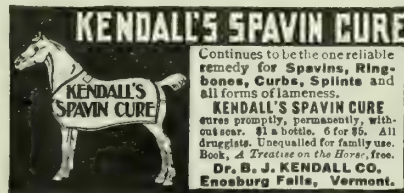
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AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 21

SAN FRANCISCO, SATURDAY, MAY 26, 1906

THIRTY-FIFTH YEAR

In San Luis Obispo County.

San Luis Obispo is a county of most picturesque coast scenery, of rich oceanside pastures, of exceptionally rich and productive coast valleys, of wonderfully interesting buttes and of lofty mountain chains, of high interior valleys and plateaus and of distant stretches but little removed from their natural wildness. There is probably no county in the State which can show a greater variety of things cultural and things natural than San Luis Obispo. And there is one product which is distinctly peculiar to the county, and that consists of young persons of both sexes who are about to graduate from a three-year course in secondary technical education by direct gift of the State of California. There are other secondary technical schools in the State, but they have been founded by private munificence and in some cases supported by tuition fees, but the California Polytechnic School is the only one of its kind and grade which is established, equipped and maintained by direct legislative appropriation, and in which tuition is free as in the public schools.

The State undertook something rather new and unique in the establishment of this school. It is charged "to furnish to young people of both sexes mental and manual training in the arts and sciences, including agriculture, mechanics, engineering, business methods, domestic economy, and such other branches as will fit the student for the non-professional walks of life." The undertaking has proved a marked success, and the public has shown its appreciation of the effort by the number of pupils which have come from all parts



SCENE NEAR AVILA BEACH IN SAN LUIS OBISPO COUNTY.

of the State. The first year there were but a score; the second year, two score; and the present, or third year, five score, or a round hundred, have been in attendance—a gain rate of more than 100 per cent a year. It is seldom that a school grows so fast. It has

a good farm and outfit of school and farm buildings, shops for working in wood and iron and the like, and there is now being constructed a domestic science building which will be the greatest of its kind in the State. The faculty includes experts and specialists in all the

branches contemplated in the law establishing the school, and next month there will be eight graduates—two in agriculture, two in mechanics, and four in household arts. These first fruits are of course but an intimation, numerically, of the harvests to come.

We select by courtesy of the Polytechnic Journal, which is the students' publication, two pictures which are suggestive of the things we have noted. One shows a corner of the dairy barn at the school and the short horn contingent of the school livestock with students in attendance. A beginning has been made with several breeds and good herds for educational purposes will ere long be realized. The other picture is also exponent of San Luis Obispo in another of its attractions—a quiet cove near Avila beach, one of the famous beaches of the coast. The scene is quite characteristic of the coast region with its low rounded hills dotted with oaks and covered with pasturage, and the rim of highest mountains beyond. It is a picture of quiet rural beauty amid which kine thrive and human life proceeds so smoothly that it knows not the end nor the beginning.



WITH THE STOCK AT THE CALIFORNIA POLYTECHNIC SCHOOL.

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THE WEEK

We did not realize how greatly the disaster had multiplied our labors until we noticed that our printers had been adding 100 to the numbers of recent issues. The last issue, for example, was put forth as No. 120, when No. 20 is all that we can rightly claim for it. We especially note this fact for the relief of librarians and other exact persons who like to arrange publications by Vol. and No. Our experience is that reference to the date of an issue is a safer and more intelligible procedure, but we never expect to be able to reform the habits of these exact persons. We cannot, however, refrain from a smile at the trouble they will have with several of our recent issues.

We have been shaken a little of late in our modest resolution to print very little of the praise which subscribers always freely give to our publication. We have hitherto reserved such things for our personal comfort and encouragement. The trying experience of a month ago suggested at least two reasons for departing temporarily from our usual reticence: first, the feeling of gratitude to those who could praise anything at such a time; second, the feeling that we needed something in the way of vindication—something of a "character" to get a new place with. And so we have printed many letters which have made us strong and happy and have helped us to proceed. We cannot deny that recent experiences have drawn us nearer to our readers; or, rather, have disclosed the fact that such a nearness has always existed. The fuller realization of this will enable our journal to even better perform the functions in the rural life and industry of California which are widely conceded to pertain to it. Such improvement will be mainly possible through the continuance of the freedom of communication between reader and editor which recent issues have demonstrated. Let this, then, be our special request: when any reader asks for something which he wishes to learn through our columns let him send, with his question, some useful fact which he has himself learned from his work. In this way we can secure a freshness and pertinence in our publication which can be attained in no other way.

To those who are ordering our book "California Fruits and How to Grow Them," we can only say that only about a score of copies of the third edition remained unsold at the time of the fire and they were consumed. Thus the disaster closed the history of the third edition and closed it rather disastrously, for it destroyed all the engravings, and new illustrations must be secured. Fortunately, however, no records of facts which have been continuously gathered for placing in the next revision were lost, and we shall take up the preparation of the fourth edition at once, and expect to bring it out early in the autumn if possible. The success of this work has been rather exceptional for a treatise on a single industry of a single State for the three editions aggregated 8000 copies, but this is explained by the uniqueness and prominence of the California fruit industry and the fact that all other semi-tropical regions of the earth have looked to California for guidance in policies and methods. We have enjoyed, therefore, in the circulation of this book not only the constantly increasing interest in California, but the demand from all other parts of the world where such fruits as we grow have been attempted. The fourth edition will present a very careful revision of the whole and a considerable extension of the practical parts, so that it may be a better guide to actual work and bring the whole subject up to date. We shall be glad to hear from any reader suggestions for the correction and improvement of the work.

Speaking about the fruits which we grow and their progress in other parts of the world, it is interesting to note that Consul-General Washington writes from Cape Town that the infant fruit-growing industry of Cape Colony is making rapid advance into the export trade. He gives the following figures showing the ratio of this growth as indicative of larger operations: Cape Colony shipped to foreign markets, through Cape Town, the following orchard products: Season of 1904, 103 packages of apricots, 149 packages of peaches, and 52 packages of plums—total value, \$289. In 1905 the shipments were 2060 packages of apricots, 2430 packages of peaches, and 1100 packages of plums, the whole having a value of \$1303. These figures are not large, but the rate of increase is high. It will of course be remembered that South African seasons are opposite to ours and their fruits ripen while our trees are dormant. Turning this fact to commercial account by marketing summer fruits from the southern hemisphere in northern winter markets is one of the interesting features of recent long distance shipping enterprises. South Africa has decided advantage in this work through proximity; the Australian States have a serious handicap because they are situated in the wrong ocean.

California lost in the European prune trade last year because we had too few prunes and they sold at relatively high prices. Consul Brittain, of Kehl, reports that "during 1903 and 1904 there were 40 carloads of California evaporated fruits sold in Strassburg, Germany, while in 1905 it was impossible to find an American prune in the market. The French prunes have replaced the American fruit, not because the latter did not give satisfaction, but for the reason that the American producers appear to have abandoned the German market." The Consul thinks we are careless about the German trade. That is not the case. We could sell the fruit at better prices than the Germans were willing to pay.

If other means to secure labor at prices which our fruit growers can afford to pay fails, there seems to be one recourse left, and that is to get their help to join the "Flying Rollers." It is reported from Benton Harbor, Mich., that the Hebrew settlers there, known as the "Flying Rollers," have about 800 acres of the finest farming land in the county, two-thirds of which is set in splendid peach orchards. They are constantly increasing their land holdings and there is prospect that they may control the peach market of Berrien county in the near future. Labor costs them nothing, as they are a co-operative organization, and they have a great advantage over other growers. They expect to ship six to eight carloads daily this season.

The sad effect upon the export dairy trade of dallying with bogus butter products is clearly seen by contrasting our policy for the last quarter of a century with that of Canada. In 1880 the United States exported 39,000,000 pounds of butter and 12,000,000 pounds of cheese. Twenty-five years later, in the calendar year 1905, this country exported 16,000,000 pounds of butter and 8,000,000 pounds of cheese. This tremendous decline, notwithstanding the increased demand abroad, was due to the methods followed by some American exporters, who shipped adulterated butter, sold oleomargarine for butter, and used similar methods in the exportation of cheese. The Canadian Government did not permit of such conduct on the part of its people, and as a result Canada last year exported to the United Kingdom alone 32,717,104 pounds of butter and 76 per cent of the 274,000,000 pounds of cheese which Great Britain bought in that year. Products which are "just as good" do not please Mr. Bull.

The San Francisco disaster is having an ill effect upon the butter product, as might be expected, but there seems to be reason to think that it is being made even worse than it ought to be by present trade methods. The complaint is that when large shippers of creamery extras are paid at the rate of 16@17c as a declared price for extras, consumers have to pay 25c and upwards at the retail stores. Such butter going at wholesale at 16@17c ought to retail at 20@21c, but it does not retail at that price, and shippers wonder what becomes of the large margin which seems to rule. Those who, under the present regime, have the authority to look into food prices, ought to pay some attention to the matter and see if impressions prevailing in the producing districts are well founded or not.

We are glad to state that our casual observation of refugee camps and the way the unfortunates are provisioned places them, even in distress, immeasurably above the normal condition of many European people. How the world would be shocked if it should hear that the people of California were eating dogs and horses. It is well that the world should have such a high conception of what an American ought to eat, and we trust the day will never come when they will be less well-fed. But for all that, Consul Harris of Mannheim, Germany, reports that two sorts of animals for slaughtering purposes have, to be sure, never until now reached as large a consumption as in the fourth quarter of 1905, namely, horses and dogs. While the number of horses slaughtered in the fourth quarter of 1904 amounted to but 35,966, it rose in the fourth quarter of 1905 to 52,584. Most of these horses were consumed in a few north German States. According to official records, there were 2,405 dogs slaughtered during the fourth quarter of 1905, as against 1,762 during the same period of 1904. Hence it will be seen, as a German newspaper says, that "our nation's food depends more and more on the dog."

The possible deadliness of water should be borne in mind by all who are planning summer outings. Professor Charles S. Hyde of the University of California said that deaths from "water-borne" diseases were twelve in 100,000 with properly filtered water, eighteen with pure ground water, twenty-four with impounded protected supplies, twenty-eight with water from long rivers, thirty-nine with water from large lakes, forty-four with upland streams and from seventy to one thousand with polluted waters. It is not surprising that some substitutes for water are so popular.

QUERIES AND REPLIES

Propagating Peach Trees.

To the Editor.—This last spring I planted about 1500 peach trees (dormant buds) of the Orange Cling and Phillip's Cling varieties. About 15 per cent of the buds died, but the roots are growing. Is it possible to re-bud those that failed this coming June and get a start before fall? If so, what kind of wood is used for buds—this year's growth or last? The trees are on peach stock. Which is better stock for the peach: peach or almond? Which is the best seed for peach seedlings, budded or seedling pits?

I have about 5 acres of Elberta peaches that have had the curl leaf 3 or 4 years. This last spring I sprayed them with 5 lbs bluestone, 5 lbs of lime to 50 gallons of water. It helped them, but did not stop it all. Should they have been sprayed twice, and if so at what time? ORCHARDIST, Riverside county.

It will be quite possible for you to rebud the peach trees which failed wherever you can get a good strong shoot to take the bud. The buds must be of this year's growth, and if you do not find good plump buds for June budding you can bud later—say in July or August—and let these buds remain dormant for a start next spring. If, however, you do find good, well-formed buds in June, put them in, and then, as soon as they are seen to have taken, reduce the top somewhat and force the bud into growth during the latter part of the present season. Most of our peach trees are grown upon peach seedlings obtained from pits furnished by the driers and canners. It is held to be best to take these pits when the canners or driers are running upon well-grown yellow peaches. Very little, if any, attention is paid in California to securing pits from seedling peach trees; in fact, some large nurserymen at the East have abandoned the use of seedling pits, preferring to take pits from the California canneries. The Elberta peach is quite subject to curl leaf and the present season has been bad for curl leaf nearly everywhere in the State. In ordinary seasons thorough spraying with the bordeaux mixture, according to the formula which you mention, will reduce the curl below the point of injury, providing thorough application of it is made just before the growth starts. It is not usual to spray more than once.

Leaf Aphis of the Apple.

To the Editor.—Can you tell me of some effective way to destroy green aphis on apple trees? We have some trees that are badly affected, but only a small proportion of the orchard. Would fumigation be any good—if so, could you give directions how to proceed? Could one use sulphur to fumigate, or would that hurt the tree? They tell me here to let them go, as they will leave after the trees get 8 years old; but it looks as though they would kill some trees if not checked. I am new at the apple business and would appreciate information. GROWER, Santa Cruz.

Fumigation would certainly destroy leaf aphid, and a very mild sort of fumigation at that, because the insect is easily killed. If you could arrange to cover the trees in some way, a little tobacco smoke such as is used for killing plant lice in green houses would be very effective. It would not be safe to use sulphur because of the great danger of defoliating the trees. A fumigation with cyanide, as is used in the South for citrus trees, would undoubtedly be effective and possibly would be safe after one had experimented for a time to determine what strength of gas a deciduous tree would endure, but this method has not been reduced to practice. Your neighbors are mistaken that these insects will leave trees when they attain a certain age. They will infest the new growth of any tree no matter how old. Altogether the best way to get these insects would be to get a good pump and spray the trees thoroughly with a nozzle that will reach the under side of the leaves, using either kerosene emulsion or whale oil soap, one pound to four gallons of water. These lice are not difficult to kill; almost any mild insecticide will kill them if they are thoroughly treated with the remedy.

For Larger Prunes.

To the Editor.—I have your work upon California fruits, and am interested in prunes, having an orchard of 30 acres about 10 years old. Your chapter on plums does not give me all the information I desire, particularly with reference to fertilizing.

I have a "side hill" orchard, having a gentle slope to the east, perhaps 300 feet above the lowest part of the valley. My rows are 1000 to 1200 feet long, having a slope of about 50 feet in that distance. The trees are well cared for and as thrifty as any in the valley. My prunes, varying with the year, run from 65 to 90 per lb.; they are mostly what is known as the French prune. I did not know but possibly the soil had been exhausted before the trees were set out, and for three years I have, in portions, tried fertilizing with a compost made of 1 part dove manure and 3 parts ground gypsum, but so far can see no effect from it: at least, there is no marked effect. It seems as though, with good soil and a thrifty tree, I should get prunes which would average larger. Can you make any suggestions in this line? The orchard is continuously cultivated from the time the rains stop until it is time to gather the fruit.

GROWER, Santa Clara county.

We must infer from what you say that your trees do not need fertilizing because the material which you have applied would contain all needful substances. The best thing for you to try now would be the application of water about the middle of July, to see if it is not a fact that the trees have exhausted their supply at that time and are, therefore, unable to bring the fruit to more satisfactory size. Cultivation may be very effective in securing size of fruit in a situation where there is plenty of water in the soil, which simply has to be preserved from loss by evaporation through cultivation, but there are many situations and soils in which no amount of cultivation can be effective because the moisture is lost by drainage. We would certainly try water before speculating any further on the subject.

Woolly Aphid.

To the Editor.—Can you tell us what to do for our apple trees that are full of cottony scale? We have tried different things, but have not been able to find the right thing.

AMATEUR, West Berkeley.

Your apple trees are infested with the woolly aphid. One of the best treatments where one has a few trees in a garden is to remove the earth around the base of the tree and put in several pounds of tobacco dust, which can be had from the cigarmakers. It is simply tobacco refuse reduced to as fine a powder as convenient. The juices are extracted by the winter rains or by summer irrigation and they destroy the insects which collect around the larger roots. Another treatment is to use about five gallons of fresh wood ashes close to the base of each tree, putting it on at the beginning of the rainy season and allowing the lye to be leached out by the rains. These insects exist both on the roots and on the top of the tree and where they are destroyed on the roots as proposed they make very little show on the branches. A good way to treat the insect on the branches on a small scale is to make a little cloth swab and touch each of the clusters with kerosene. On a larger scale the insect on the top of the tree is destroyed by spraying with kerosene emulsion.

Vinehoppers.

To the Editor.—I send you a bottle of insects which are now making their appearance on our vineyards. There were a few last year. I should like to know what they are and whether there is a remedy or something to stop their work. There were some last year, but

not as early as this. Later in season they turn a yellowish-green color. They are as hard to catch as a flea.

VINEYARDIST, Acampo.

The insects are the vinehopper. They are exceedingly hard to handle and no perfectly satisfactory method has been yet devised. Fortunately, sometimes when they appear in great numbers early in the season they become less afterwards, but of course one cannot guarantee that that will be the case this year, as some years they occasion much injury.

Pear Blight and Blister Mite.

To the Editor.—I am sending you a branch of a pear tree. Will you kindly inform me what is the matter, and if you can suggest a cure. Almost every tree in the orchard shows several limbs like the sample.

GROWER, Princeton.

Your pear tree is affected with the regular pear blight, concerning which we have published so much during the last year describing the joint effort which is being made against it by the University Experiment Station and the United States Department of Agriculture at Washington. We published last week an account of what can be done during the summer time. The winter treatment we have also fully described and probably supplementary statements will be published the coming autumn. Your pear leaves also show black spots. This is the work of the "blister mite." It is not at all connected with the blight, which destroys the whole of the leaf and the branches as well. Nothing can be done against this blister mite at this time of the year, but a thorough spraying in the winter time with winter strength of kerosene emulsion destroys it.

Eucalyptus Growing.

To the Editor.—Something more than a year ago I planted two packages of eucalyptus seeds. I planted them in what I thought a proper location. Not one of the entire lot sprouted. They were planted in rich sandy soil prepared in beds for the purpose, and an attempt was made to shelter the beds from frost. I was compelled to buy trees from the nursery, of which two kinds were sent me—one called "Blue Gum," the other called "Sugar Gum." I am anxious to grow some from the seed and have prepared shallow trays with 1½ inches of loam in them. In these I purpose putting my seeds in November or December, and will keep them housed. I wish to get seed of several kinds of eucalyptus, about 200 seeds of each. Where can I get them?

I am getting good results from the trees set out in April. The red gum especially is doing well. They are set in every kind of soil on the place, but those in loose gravel do best. Some in an alkaline loam do well, but the soil about them has to be loosened frequently. It is now 5 feet to water—in July it will be 10 to 12. The summers are very hot, 100 deg. to 110 deg. being frequent. If you care for a report on the trees I will gladly send it. EXPERIMENTAL, Sacramento valley.

You will succeed with the shallow trays which you describe, if you are careful to give the seed very little covering and keep continually moist but not wet—never allowing the surface to become really dry. As for eucalyptus seed of several species, the San Francisco seedsmen carried a number of them, but the present state of their supply we do not know. The trade will probably be re-established and advertised before you need the seed. You can get seed of a number of varieties from the Fresno nurserymen.

We are glad to hear of the successful behavior of the trees which you planted out in April. We see no reason why they should not succeed admirably, as they do in other parts of the interior valley, and should be very glad to have further reports of their growth, with photographs if convenient for you to get them at some time, in order that we may publish the results of your experiment. The success of the eucalyptus on alkali soil depends directly on the strength of the alkali. There is, however, abundant evidence that some of our interior alkali soils have too much alkali for these trees.

Alfalfa Meal.

To the Editor.—Will you kindly give me some information about alfalfa meal? I would like to learn something about the process of manufacture, feeding value, also the names of manufacturers in California if there are any.

ENQUIRER, Idaho Falls.

Alfalfa meal is simply alfalfa hay finely ground with suitable machinery. Its feeding value is the same as the alfalfa hay of which it is made, but a little higher efficiency is supposed to be secured by the greater digestibility of finely-ground material. If you address the California Co., at Fresno, and Modesto, you will reach the parties who have control of the production.

HORTICULTURE

FRUIT LABOR AND OUTLOOK.

To the Editor.—As requested in your issue of May 12, I send a short report upon fruit varieties that I am growing on a commercial scale. I have not written on any others, as no doubt your correspondents in the various fruit sections of our State will touch upon them.

In the last issue of the "Pacific Rural Press" you publish a letter signed "Immigrant, Connecticut." There is a business-like tone to this gentleman's inquiry, and unless something better than a workingman's position can be found for the writer, I should like to offer him steady employment on one of my farms at \$30.00 per month and board with a chance for promotion. I understand that he desires to come in August. This would be satisfactory to me. I desire to mention, that during the harvest season I employ at least 150 men, and that in consequence the social surroundings may seem to him somewhat rough during this time, but I shall try to give him decent quarters and a chance to gain a general idea of fruit harvesting in the fall and of pruning and cultivating in the winter and spring. With his previous Eastern experience he should have no difficulties of finding a good opening after a year's work in California.

There seemed to be a general idea amongst the trade that an extra large crop of prunes will be produced this year. This, so far as my observation in the Sacramento, Napa and Sonoma Valleys leads me to believe, is not warranted by the facts. The crop is fair in most orchards, very heavy in but few. I have heard only by report from the Santa Clara valley. Some attempts have already been made by dealers in cured fruits to purchase futures at a low figure, based upon exaggerated reports of an enormous crop.

Wine grapes are showing up well, also Muscats and Thomson's Seedless. Sultanas are rather shy in Yolo districts. Apricots are practically a failure and almonds below average. Also peaches and pears are far from being satisfactory.

I sincerely hope that financial conditions will permit the banking interests to be as liberal to the fruit grower as they have been during the last few years. If not, there is danger that advances from the dealer will be asked and accepted. This would likely result in a demoralization of prices on such fruit crops, that at the present time promise good returns to the producer.

Woodland.

G. H. HECKE.

This is a personal letter, but we hope the writer will not object to publication, for the points made are important. We do not try to keep names of correspondents, consequently cannot carry the message to the Connecticut inquirer unless it should reach him in this public way, but Mr. Hecke's offer may interest other good men. We see no reason why the banks should not treat the fruit men as usual. Prosperity of the rural banks at least depends upon their promotion of the prosperity of the rural producer.

WALNUT GROWING IN CALIFORNIA.

By E. G. Ware, of Garden Grove, Orange County, at the University Farmers Institute at Anaheim:

According to present indications, Southern California is not going to have a cinch on the walnut industry in the future years. The high price of nuts for the last few years has boomed the industry until nuts are being planted quite extensively in other sections. At Salem, Oregon, I am told by people who live there that they think they have a good locality for growing walnuts.

A walnut tree near Salem produced the past year forty dollars' worth of nuts, and indications are that walnut orchards will be planted quite extensively in that locality in the near future. When the right nut is found for each locality walnuts will be produced all over the Pacific Coast. This will take some time, so for a number of years yet Southern California will be the main factor in walnut industry.

Soils, Stocks and Varieties—In setting out a walnut orchard there are several things to be considered: Location, soil, water, and the kind of trees to set out—seedlings, budded or grafted trees. If grafted trees are used the kind of root on which they are grafted is an important item.

The Santa Barbara soft shell cannot stand the extremes of either heat or cold. One year when the thermometer indicated 115 degrees for part of three days, we lost half our crop.

If the tree is on the soft shell root, the soil should be at least three and one-half to four feet deep and free from any hardpan, as the root is so soft it cannot penetrate very hard ground. The deeper the soil the better.

It is much more satisfactory to have water to irrigate with when needed than to attempt to grow an orchard without it.

The grafted walnut can be put on several different kinds of roots—its own root, the hybrid root, eastern black walnut, and the California wild walnut root. By having a variety of roots to graft on we can at least double the acreage of the walnut industry in California. We can graft on the root that will grow the best on the land we wish to set out.

Black adobe soil seems to be one of the best on which to grow walnuts; the trees are very vigorous and the foliage a very dark green. I think the land will average a larger crop of nuts than any other class of soil. ["Black adobe" soil differs considerably in character in different parts of the State. Mr. Ware has reference probably to a heavy black loam.—Ed.] Alkali or salt land, if not too strong, if the irrigation is managed right, will grow good trees if budded on the wild walnut, which on the soft shell root would not grow at all.

When we have a dry year the orchard on this class of soil must be irrigated in the winter before the trees start out or the growth of the previous year will die back, and in some cases the whole top of the tree will die back to the body; under the same conditions winter irrigation will make these trees come out in the spring without any die back. Five years' experience proved the above to be correct in my case.

The wild walnut root will grow in soil that is too hard for the soft shell root to penetrate, and is practically gopher proof. They do not like and seldom will touch the root. The wild root has the disadvantage of being inclined to sprout, and the sprouts have to be carefully removed without injury to the bark. If you injure the bark, in some cases the wound will not heal, but will begin to rot and slough just below the ground and as a result the tree dies.

Trees for Planting—In selecting trees for an orchard the indications are that the majority of the growers are going to put out budded or grafted trees if they can get them, as the demand is far in advance of the supply.

In selecting a grafted walnut it is better to select one of the quality that the market demands—one with a name and a pedigree; a record of how many nuts it bears; blight resistance, etc.

In buying a budded nut without name or pedigree you are in the same position as the man who puts out a seedling orchard. You have to wait until the nuts come into bearing to prove what they are going to do. After finding a desirable seedling to graft from it takes at least seven years to get an idea of what it is going to do.

The Hinde's Placencia Perfection is one of the grafted walnuts that has been grown long enough to be known to the trade. We put out five acres of these nuts in 1898. We have kept a record of the nuts produced. The third year they produced $\frac{3}{4}$ of a pound to the tree, the fourth year $5\frac{1}{2}$ pounds, the fifth year 12-23 pounds, the sixth year 17-33-100 pounds, seventh year 33-4-10 pounds, eighth year 29-39-100 pounds; being eight years out and producing 99 pounds of nuts per tree in all.

This is not a large yield, but part of these years have been bad for blight, and this tree is not any more resistant to blight than the ordinary seedling.

It is hard to find the equal of the Perfection nut as to quality, and it sells at an advanced price.

Now that many nurserymen are studying the grafting and improvement of the walnut, we may look in a few years to have trees immune from blight and producing much larger tonnage per acre than we now get.

Planting and Product—In setting out an orchard a very important point is how far apart to set the trees for the most profit. I have spent two years in gathering data on this point. In find in the majority of cases the most profitable orchards have been set 40 feet apart each way, and trees up to 15 or 16 years old in the orchard bear as many pounds of nuts per tree as trees set 50 feet apart each way. An orchard with trees set 40 feet apart contains ten trees more to the acre than one with trees set 50 feet apart. The expense is about the same in each except picking and curing the nuts of the ten trees of the former, which is one cent per pound.

A seedling tree in good condition will bear on an average up to sixteen years an average of 525 pounds of nuts. If nuts sell at 9 cents per pound, the product of the ten extra trees in the orchard will make a net profit in excess of the 50-foot orchard, of \$420 per acre. When the orchard with the trees forty feet apart is sixteen years old, dig out every other tree in each row—break joints, and leave them "quincunx," that will leave only four trees to the acre less than the orchard with the trees fifty feet apart.

Mr. Ware gave, says the Anaheim Gazette, the following figures showing the yield of the Kossert orchard in this city during the past four years: In 1901, 10,000 pounds of nuts; 1902, 5900 pounds; 1903, 5500 pounds; 1904, 6500 pounds.

Pruning—When you set out an orchard cut the trees off about five feet high; do it with a saw. Don't use a knife or shears. If cut with a saw they seldom die back to amount to anything, while if shears are used they are inclined to die back more or less. Prune the trees as soon as the nuts are harvested, removing the branches that grow out from the under side of the lower limbs. This will relieve them of the weight and give them a better chance to grow up.

Mr. Waite Writes About the Peach Blight.

George C. Roeding, of Fresno, is in receipt of a letter on the peach blight from Mr. M. B. Waite of Washington, D. C., pathologist in charge of fruit diseases, United States Department of Agriculture. The body of it is as follows:

We are perfectly familiar with this trouble in your State, from observation on the ground. A year ago, early in February, when I first came to California, this matter was called to my attention, and I made a microscopical examination of it at Sacramento, identifying it as the gumming fungus, resulting from the attacks of a tiny microscopical fungus known to botanists by the outlandish name of *Coryneum beijerinckii*.

We are very glad to say that from our observation in the field at that time we were able to point out the defects in the attempted treatment of this disease by spraying. We made a suggestion to J. S. Brown and others at Suisun, which they followed up. This suggestion was the key to the situation in regard to treating the disease. We found, early in February, the disease already present, though but slightly developed on the twigs. When we suggested bordeaux mixture as a possible remedy, it was stated that bordeaux mixture had been tried without success; so also had lime sulphur salt been used on the trees unsuccessfully. An examination showed that the spots had already begun to appear before the bordeaux mixture had been applied, late in January and early in February. We therefore recommended spraying in the fall or early winter, considerably in advance of the very first appearance of the disease. This has been done successfully by Mr. Brown and one or two others at Suisun.

I examined these sprayed orchard trees about March 10th. The result was very striking. The contrast between the sprayed orchards and unsprayed trees just across the fence and in the neighborhood was very pronounced. The trees were in full bloom or going out of blossom. However, it was regarded as a little early to be certain of the ultimate result. I shall hear more fully from Mr. Brown very shortly. I expect to publish an account of this matter and make it available for California fruit growers, so that they can use it on next season's work. There are some undetermined points in regard to the matter which will need further work. For example, last season success came from spraying during the holidays, but the question remains as to whether infection in a warm, rainy autumn might not take place sooner. Possibly last fall may have been somewhat abnormal in this respect, and being dry may have kept the disease in check up to a later period than usual. On the other hand, we hope to find out that *Coryneum* has a regular season for infection, somewhat later than January 1st, enabling us to spray up to that time. We are planning to look up these matters next fall and winter, in connection with our pear blight work, so as to be able to outline a perfectly safe and reliable course of treatment for this disease. It looks now as though one thorough spraying with bordeaux might be all that is necessary. I am afraid, however, this is too good to be true, and that it will require at least two or three such sprayings to guarantee success under all conditions.

The Pistachio Nut.

To the Editor.—The Pistachio nut and tree have been a good deal written about of late. The Editor of the "Rural Press" has shown that it is no new thing in California, and that its commercial value is, as yet, unknown on this coast. Therefore, the statements that are made as to the great profit to be derived from a crop of Pistachio nuts are a little premature. It may be safely asserted, however, that the tree succeeds admirably in warm, well-drained soils, and that it stands the hot, dry summers well, which is but natural. The Department of Agriculture has now taken up the matter, with a view to the establishment of Pistachio nut growing on a commercial basis, and to this end has been disseminating seedlings, which distribution will be

followed by a selection of grafting wood being sent to the proper parties as soon as there is sufficient supply on hand.

It may be interesting to some to know that the Pistachio tree has been bearing for a number of years in California, planted by M. Denicke (who will be remembered by the older generation of growers as a pioneer in the fig industry), on a property in Fresno county recently owned by the writer. On our land near Morgan Hill we have trees growing raised from Californian-grown seed.

Morgan Hill.

LEONARD COATES,

President Leonard Coates Nursery Co.

We understand also that the Rev. Mr. Fuller's plantation of Pistachios near Saratoga is in very promising condition.

POULTRY YARD

Locust Trees on the Poultry Range.

Mr. C. H. Dwinelle, of Fulton, Sonoma county, makes an interesting suggestion to poultry people through the Petaluma Argus. He properly says: The choosing of trees for shade and ornament about the farm and poultry yard is an important matter. The common locust (*Robinia pseudacacia*) is not generally appreciated as it should be in this connection. It is a close relative to alfalfa, both of them belonging to the Pulse family (*Leguminosae*), which also includes the clovers, peas, beans, etc. Both the leaves and the blossoms of the locust are eaten with avidity by hens, so that the tree can be made to furnish the needed green vegetable matter during several months of the year. Probably the food value of green locust leaves and fresh alfalfa do not differ very materially. To the human taste they are about the same, perhaps with a trifle in favor of the locust. They are easily stripped from the trees by a sweep of the thumb and forefinger along the stems. This is easy work for "light hands," old people, women and children.

The blossoms can be fed in the same way. At this date, May 1st, they are in their perfection. Try putting a locust blossom lunch before a lot of hens that are in confinement, and see if they do not appreciate it.

Where the trees stand in the poultry yard, and have long low branches, these can be brought down by weights so that the hens can help themselves, or step ladders can be arranged so that the hens can go up to the higher parts of the tree. They will soon learn the trick if the step-ladders have an easy grade, and blossoms are scattered upon them.

When the locust leaves are stripped from a branch during the growing season it soon sends out a new growth, particularly if the tree is watered. Where the locust trees stand outside of the poultry yard considerable portions of the branches might be cut off and hung where the hens could strip them. The trees would make up for the loss if liberally manured and irrigated.

When the leaves ripen and fall in the autumn, if the tree is in a poultry yard, the hens will pick them up with as much eagerness as corn.

The locust may be started at this season from the seed, which should be covered with boiling water in a bowl, and let stand till cold, and for twenty-four hours thereafter. In winter suckers may be readily found about some old tree and transplanted.

Prof. M. E. Jaffa, of the University of California, could do a service to the poultrymen by making analyses of both the leaves and the blossoms of the locust, and showing how they compare with alfalfa, the clovers, etc., in food value.

Besides its food-producing value to the poultryman, the locust is one of the most valuable timber trees that can be grown. If a central straight stem is grown it will soon be large enough to make a fence post or a wagon tongue. Locust is the standard for boat trenails, and is highly prized in cabinet making.

[Prof. Jaffa has this examination now in progress and the results will be published in due time.—Ed.]

FLORIST AND GARDENER

California Grown Roses for Eastern Planting.

In earlier issues we have alluded to the important specialty adopted by some California nurserymen of growing open-air rose plants for large scale sale at the East. A recent account of such an undertaking is that prepared for the Los Angeles Times by Major I. J. Rochussen, whom we had the pleasure of seeing the other day as he passed through this part of the State on his way to Portland. The Major is a good horticultural writer and his sketch will be read with interest.

The Plan and the Motive—The Jackson & Perkins Company, a nursery firm of Newark, N. Y., pays special attention to raising roses and other shrubbery. In 1897 they resolved to start a nursery in Southern California. For that purpose they bought in the Villa Park school district, Orange county, ten acres of land, the soil whereof is a sandy loam, mostly heavy. There they started a nursery for roses exclusively, which ever since has been in charge of Mr. W. W. Perkins, a member of the firm.

The object was and has ever since remained, to raise rose bushes, and after a year's growth to ship them, the roots wrapped in moss, to the Newark nursery. This is because rose bushes here grow so much more rapidly in California than at the East that they attain in one year more than twice the size of similar bushes of the same age raised at Newark. Wood growth is thus wonderfully expedited. With every variety of roses grading depends on size, and the grade determines the value. At Newark, Marechal Niel roses wholesale for \$25 per hundred; Queen of Prairie for \$10 to \$12; La France in the fall of the year for \$12 and in the spring for \$10; tree roses all fetch one same price, whatever may be the variety—\$35 in the fall and \$25 in spring. They will be budded on stems from two to three feet high. When a first-grade bush is worth \$8, a second-grade bush of the same variety will command \$7.

Cuttings from the East—At first cuttings or slips, three months old and rooted, were expressed from Newark to California. This was first done in January, 1898. They were planted in nursery rows on part of the ten-acre field, and about one year later, after they had developed into big bushes, they were shipped back to Newark by freight. The varieties were American Beauty, Mrs. John Laing, La France and General Jacqueminot. Of the bushes developed in California 60 per cent grade number one, while only 25 per cent of the bushes developed at Newark at the same time from similar plants of the same age will grade this high. The expense of expressing the three-months-old plants from Newark was \$12 per hundred pounds, and 3000 cuttings weighed about that. A beginning was made with that number. To ship bushes back in carload lots costs \$1.10 per hundred pounds, and \$3.15 in lots less than a carload of twelve tons. According to the one-year-old bush being more or less vigorous a car holding twelve tons will contain from 65,000 to 85,000 bushes.

The first experiment proved such a success that the firm extended their operations from year to year, and went on buying more land. First five acres were added, then another five, then twenty, till now they have seventy acres. Every year a larger number of three-months-old cuttings were expressed from Newark; the second year ten times more than the first, that is 30,000 instead of 3000, till in 1900 the number of 90,000 was reached. Then the expressing from Newark was given up, not so much in order to avoid the cost of expressage, but more because so often the young plants in transit in the express car were injured, principally by frost, so that whole boxes might become worthless. The change was determined on despite the fact that with the wide range of thermometer between noon and midnight here, cuttings or slips do not root so easily; and labor is higher priced than at Newark.

Management of Cuttings—From that time cuttings or slips have been taken from bushes about to be shipped to Newark, without injury to those bushes. Both hard wood and soft wood cuttings are taken. The former are cuttings from wood already hard, the latter from young tender shoots. The process with such cuttings is as follows:

Cuttings are planted in so-called propagation beds, in a layer of sand six inches deep and underlaid with a layer of fresh horse manure a foot and a half in thickness. Each propagation bed is covered with a glass sash. The cuttings are watered every day. They are left in the propagation bed for six weeks, during which time they become properly rooted. Then they are taken out and placed in pots filled with earth as rich as possible with humus. The plants thus potted are placed in a greenhouse, where the temperature by night is kept at 70 degrees Fahrenheit by means of hot water in

pipes, and by day at 60 degrees through solar heat. When in the morning the outer air is unusually cold, artificial heat is again supplied. The plants are watered every day and left in the greenhouse from thirty-five to sixty days, after which they are planted in nursery rows in the field. The length of time in the greenhouse is determined by climatic conditions. If the spring is cold the planting out is delayed. They are left in the rows till next winter, then shipped to Newark.

Cuttings always are taken from bushes in December, January or February, when the air is moist and cool. Later, after sap has begun to flow freely, the time has come for forming not roots, but buds.

Mr. Perkins began with his own cuttings to the extent of 120,000, but last winter he shipped 387,000 bushes. This winter he will have altogether about 350,000 bushes to ship. This is not quite so many as last winter because last spring was very cold and changeable, which caused him to lose over 30 per cent of the plants, while the ordinary loss is only from 10 to 15 per cent. He has already shipped one carload, and calculates on shipping three more.

Mr. Perkins has grown over one hundred different varieties of roses. As to all he has found sandy loam, and even a clay soil, preferable. Only a few varieties do at all well on light soil. These are the roses of the Rambler family, the Dorothy Perkins (thus named after a niece of Mr. Perkins) and Vick's Caprice. The La France, American Beauty and Ulrich Brunner prosper only in heavy soil, and do best in clay.

Roses With Fruit Trees—The larger part of the seventy acres is also planted in orange or walnut trees. The orange trees are either young stock, or old trees recently budded over. This necessitates fertilizing more heavily than would be required if only roses were being raised on the land. Mr. Perkins applies altogether two hundred tons of animal manure to the seventy acres—one hundred tons of sheep manure, which, hauled at the ranch, costs him \$2.50 per ton; cow manure, thirty-five tons; balance, horse manure, the two latter laid on costing him \$2 per ton. He also sows peas or alfalfa between the rows of trees, in so far as possible without interfering with cultivating. He finds that from two-year-old alfalfa he gets more nitrogen when plowing it under than from peas. Chemicals he has not yet applied, except 4000 pounds of bone and blood spread broadcast over the field, but he contemplates doing so.

The Best Varieties—He considers it best for roses to be budded, especially the weaker kinds. A vigorous stock, like the Manetti or the Ragged Robin, will add strength. In his last winter's shipment were 20,000 budded bushes. But there is one objection; a stock or root may throw out a sucker. That sucker may be more vigorous than the scion. An ignorant grower may not notice its being only a sucker, and not merely neglect cutting it off, but even cut the scion off instead. The standard size for roses at Newark is from twenty to thirty inches, with three stalks and no more. Running roses should be four feet. Climbing roses should have two runners at Newark; but in California one is preferable not to tax the root too heavily.

All the hundred varieties of roses tried by Mr. Perkins here do well, but best are the Diebach, Ulrich Brunner, Paul Neyron, La France, all kinds of tea roses and ramblers, the Clio, Magna Charta and Caprice. Hardest to raise he has found the American Beauty and the Mrs. John Laing; they are delicate and strictly hothouse flowers. The Marechal Niel he has found to do but poorly when budded on its own root, but well when budded on Manetti stock. At Newark it has to be kept during winter in a hothouse.

What Mr. Perkins contends for is good growth. As has been said, in one year he can make bushes reach a size in California they could not reach in less than between two and three years at Newark. After they have reached Newark, of course, the climate there will determine the blooming, just as if they had been raised there. He cares only for the Newark market, and does not aim at local trade. He has ascertained that, howsoever excellent California is for the wood growth of roses, the climate is not so favorable for blooming, by reason of the cool nights and the great variations of the thermometer between the different hours of day and night.

The varieties which he has found to blossom best here are all the tea roses and the ramblers; also the La France, Meteor, Marie Von Houtte, Safrano, etc. When budded on Manetti or other wild stock, or on Baltimore Belle, the following varieties may also succeed, but not otherwise, namely: the Alfred Colomb, Marshal P. Wilder, and Lord Dufferin.

THE FIELD

The Situation in Hay.

To the Editor.—The total arrivals both by water and rail during the past week amounts to 1970 tons, in comparison with 4720 tons, which was the total for the week preceding our recent great conflagration. Although hay has been sold in the regular manner for fully two weeks past, yet matters are not yet back in their old channels, and it is difficult to report the market intelligently and comprehensively. Scattering shipments by rail, coupled with quite steady arrivals by water, has kept the market supplied during the past month, although if there had not been a good supply in several of the large warehouses here which escaped the flames, there would have undoubtedly been a hay famine here on several occasions. The S. P. Co. is gradually getting matters into shape so that we may expect an early delivery of the large number of cars that have been in transit for several weeks past, but which have been blockaded at out of town points.

The consumption of hay on this market has been greatly curtailed during the past month, the demand having been hardly one-third of its previous volume. This will soon be somewhat increased, although it is our opinion that for many months there will not be more than one-half the usual consumption of hay here. The draying and teaming business may be greatly increased after a few months, but it will take a long time for the dairymen and other trades people to resume their former operations.

Owing to the very light supply of hay, the market has had a very firm tone for the past two or three weeks; as soon as transportation becomes normal, we look for a material drop in prices from the present range.

San Francisco, May 15.

SOMERS & CO.

THE VETERINARIAN

The Disinfection of Stables.

By Clarence M. Haring, D. V. M., in Circular 19 of the Agricultural Experiment Station of the University of California.

By disinfection is meant the destruction of the germs of infectious disease. Negligence in properly disinfecting stalls and stables where animals affected with contagious diseases have been, is frequently the cause of a reappearance of the disease.

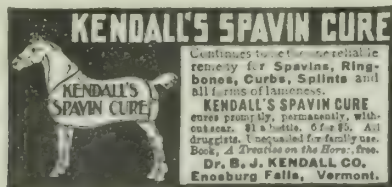
Many failures to eradicate tuberculosis from dairy herds by the repeated application of the tuberculin test and the prompt removal of all reacting animals, are due to the fact that the stables were not disinfected. It is a universally accepted fact that herds of cattle, when kept closely together in large stables, are the most liable to be badly infected with tuberculosis. This is especially marked when the stables have been in constant use for a number of years. Under such conditions the dissemination of tuberculosis is very rapid, and continues after all diseased animals have been removed and other cattle substituted. Since bovine tuberculosis is so widely disseminated, most dairies in which the tuberculin test is not frequently applied become infected. There can be no question but that frequent disinfection retards its spread, and thorough disinfection of the stable at least once a year is a precaution which should be taken by all.

The bacilli of glanders will remain alive under natural conditions in stables for four months; hence a stable in which a glandered animal has discharged virus will retain its infectiousness for a long time after the animal has been removed, provided it has not been disinfected. There are many other contagious diseases of animals which necessitate thorough measures of disinfection in order to make eradication certain.

In view of the importance of disinfection in preventing the spread of disease, the following directions are recommended for use in combating infections:

1. Permit the Entrance of a Plentiful Amount of Light.—The bacteria of tuberculosis and most other disease-producing germs are destroyed by the direct rays of the sun within a short time. They are destroyed by less intense light more slowly, and will live for long periods in dark places. There are numerous other advantages in having plenty of light in a stable that are not necessary to mention here.

2. Clean the Stable Thoroughly.—Cleanliness is an important adjunct to the work of disinfection. The cleaning of the stable includes: (a) removal of manure;



(b) removal of piles of fodder; (c) removal of rotten woodwork and loose boards, especially of the floor; (d) sprinkling with a disinfectant, to lay the dust, and sweeping of the ceilings, walls, and floor; (e) removal of dried accumulations about mangers, floors, and drains. The practice of washing the floors and ceilings with water before applying the disinfectant has, in most instances, the disadvantage that the water carries the micro-organisms to be destroyed into cracks where they will not be affected by the later application of the disinfecting solution.

3. Apply Chemical Disinfectants.—After the stable has been treated as recommended above, it is ready for the application of chemical disinfectants. These are substances which poison the germs. There are many of them. Some are far more efficient than others. Among the most active are carbolic acid and corrosive sublimate.

Carbolic acid, when pure, is crystalline. It readily assumes the liquid state in the presence of a little water. As usually dispensed it consists of 95 parts of pure acid and 5 parts of water. For use as a stable disinfectant this should be mixed with water in the proportion of one to twenty, or one pint of acid to two and one-half gallons of water. The "crude carbolic acid, saturated solution" is much weaker than the above, and should not be diluted with water.

Bichloride of mercury, or corrosive sublimate, is a most active germicide, and has the advantage over carbolic acid for use in a dairy stable, in being odorless. This substance is poisonous and must be used with great care. Before it is applied it must be dissolved in water, in the proportion of one part to one thousand. One ounce of corrosive sublimate dissolved in eight gallons of water makes a solution of the right strength. In making the solution the corrosive sublimate should be dissolved in one gallon of hot water and then mixed with enough cold water to make eight gallons. It corrodes metal, hence the solution should be kept in a wooden tub or earthenware crock.

There are many other efficient disinfectants, but the two above described are cheap and obtainable at any drug-store. In the employment of commercial disinfectants, it is necessary also to know the destructive value of the solutions for the organisms to be destroyed. There are many so-called disinfectants that, in the strength of the solutions recommended, are inefficient.

Disinfectants can not destroy germs with which they do not come in contact. The disinfectant should be applied in sufficient quantity to thoroughly saturate the surfaces, including the adhering particles of dirt. In the application of the disinfectant it is well to use a broom and thoroughly scrub the floor and lower parts of the walls. The solution can be applied to the ceilings and upper parts of the side walls with a spray pump, and must be carried into every crevice and recess into which dirt can enter.

After disinfecting, whitewash the stable. Although whitewash is not an active disinfectant, in the usual meaning of the term, it is an excellent purifier and should in all cases be used in stables after they have been thoroughly cleansed and disinfected with other agents. If chloride of lime is added to whitewash in the proportion of one pound to three gallons, the value of this application is greatly increased. It is advisable to whitewash cow stables frequently, at least once in six months, and better every three months. Hot whitewash for this purpose is better than cold.

In preparing the above directions, abstracts have been freely made from Pennsylvania Circular No. 2, by Dr. Leonard Pearson, and from "The Pathology of Infectious Diseases of Animals," by Dr. V. A. Moore.

THE RANGE

The California Cattlemen's Association.

Unsatisfactory market conditions and unjust methods of weighing cattle were responsible for the organization of the California Cattlemen's Association, which has for its president J. R. Hebborn of Salinas and William Pinkerton of Pleyto for its secretary. The principal objects of this association are: First, to secure protection from the "beef trust"; second, to obtain prices for livestock commensurate with the prices charged by the butcher; third, to reduce the evil of sending cattle to the slaughter house to be killed on commission; fourth, to remedy the method of weighing cattle from the producer to the wholesaler.

Some fourteen years ago, when a new meat company engaged in business in San Francisco, the wholesale and retail butchers of this city became frightened at the prospect of having to compete with such an adversary, which was alleged to be a representative of the "beef trust" of Chicago. Consequently, as a protection to themselves, they organized an association of wholesale and retail butchers, consisting of about 34 wholesale and 450 retail butchers doing business in San Francisco. This combination is known as the San Francisco Butchers' Board of Trade. It has unquestionably been a great protection to its members since its formation, but in what manner it has proved beneficial to the stockraisers (the producers) is a question the latter are trying to solve; for, notwithstanding the loudly proclaimed purposes of the San Francisco Butchers' Board of Trade to promote competition and prevent monopoly, there is little, if any, competition among the wholesale butchers, and, unless a radical change is made, there never will be. In the first place there are no public stockyards maintained in California, as there are in nearly all the older States. The producer has had no alternatives but to accept the prices offered by the wholesalers or ship his livestock to some one who slaughters on a commission basis; the producer has learned by experience, however, that he will get less that way than by selling direct to the wholesaler. To the butcher every sale is in his favor. He demands that the producer allow for a shrinkage in the cattle; that is, to stand them for from twelve to fourteen hours without food or water before they are weighed, which means a gift to the butcher of fifty to seventy-five pounds of dressed beef on each 1100-pound steer, besides the hide, which for the past year represented one-fifth of the total value of the steer. In addition to this, the California producers have been getting about one-half the price for their cattle in comparison with prices paid in Chicago.

Hence it will be observed that by these methods the San Francisco butchers have grown wealthy protecting themselves at the expense of the producer. The former have never made attempts to establish modern packing plants, neither have they reached out for new trade, but have been satisfied to let thousands of tons of eastern beef and pork pass via the ports of San Francisco and Seattle to the largely increasing markets in the Orient and the islands of the South Pacific.

A combination of wholesale butchers in control of this market, employing the wasteful want of system of the days of "49," will eternally stop export trade, which means that whenever our stockmen produce a surplus they will be glutting their own market.

Cattlemen in California have no desire to quarrel with the wholesale butchers; that was not the purpose of the organization, but they do propose to make a fair profit on the business of raising cattle, and this they will accomplish if the stockmen of this State will awaken to their own interests and stand together firmly and indissolubly.

Every stockman reading this is invited to send his name and address to J. R. Hebborn, Salinas, Cal.

THE SWINEYARD

A Mixed Diet for Hogs.

Some experiments just reported by F. B. Linfield of the Montana Experiment Station show that when running on pasture, hogs will keep in good condition and even gain in live weight on a light grain ration. There are yet many other facts, however, to be worked out along the lines of this test.

The important point brought out in the test is the value of some supplementary food added to the grain ration in fattening hogs. In the tests no peas have as yet been fed, but with the other grains the best results cannot be obtained without some supplementary food. Skim milk, sugar beets, clover or alfalfa have been used and their value seems to be in the order named. It is apparent that in some way these additional

foods have a value beyond what their composition would indicate. These supplementary foods seem to act in two or three ways. First, they seem to stimulate the appetites of the animals so that they eat more of the grain and make more economic gains because there is a larger surplus over the requirements of the body to turn into meat. Second, these supplementary foods may aid the digestion of the hogs so that they can make better use of the food given them.

Why the hogs fed the half grain ration gained so rapidly is probably due to the fact that when they did not get as much grain as they would eat, they ate much more of the pasture and thus obtained much more feed in this way than would the hogs on the full grain ration.

It should not be forgotten in this connection that as hogs in the local market vary considerably in price at different times of the year, that the cheapest gains, if they lengthen the time of feeding, may not be the most economical if the slower gains carry the hogs over a period of high to a period of low prices. The reduced price for the hogs may destroy all the profit arising from the cheaper gains made.

The following are summarized results:

The tests seem to show that when feeding grain to fatten hogs some supplementary food is needed to get the best returns from the grain.

Considering all the experiments the value of the supplementary food is in the following order, namely: 1st, skim milk; 2nd, roots; 3rd, pasture; 4th, clover or alfalfa.

After deducting the estimated value of the supplementary food, in none of the tests did the hogs return market prices for the feed when they were sold for 4c per lb. live weight. The range was from 74c to 92c for grain worth \$1.00 per 100 lbs. If sold at 6c per lb., the returns on the feed was substantial, ranging from \$1.80 to \$1.90 per 100 pounds.

It required, according to these experiments, the following amounts of food for each 100 lbs. of gain:

On grain alone, 528 lbs. grain; on grain and clover, 487 lbs. grain and 200 lbs. clover; on grain and pasture, 401 lbs. grain; on grain and roots, 376 lbs. grain and 280 lbs. roots; on grain and skim milk, 311 lbs. grain and 888 lbs. skim milk; on $\frac{1}{4}$ grain ration and pasture, 300 lbs. gain.

The value of these supplementary foods is figured from their value when fed with a full grain ration, except in one case. What the value of these foods would be when fed in some other way, is a question these tests furnish us no light upon.

PATRONS OF HUSBANDRY

The International Institute of Agriculture.

Our readers know Mr. David Lubin of Sacramento and admire his insight and industry in the study of economic questions and his devotion to the advancement of agriculture. They also know that he is the author of a world-wide institution which is just beginning its career, and we have urged Mr. Lubin's appointment as the representative of the United States in that organization, which we trust will be realized.

On his recent return to this State from a sojourn in Europe, Mr. Lubin was welcomed by an enthusiastic gathering at Mills, Sacramento county. He was fittingly presented by Judge P. J. Shields, and made a stirring address on the purposes of the new world-wide organization in the interest of agriculture.

The International Institute of Agriculture, Mr. Lubin said, is a representative body composed of approximately one hundred or more delegates from the leading nations of the world, with a working committee from the same body sitting permanently in its palace in the city of Rome.

Its chief and immediate functions are the determination of those general facts of agricultural production which go to fix equitable prices throughout the world.

Since the market price of any commodity is determined by the quantities of such product commercially available, with the condition of growing crops, it is of essential importance that these facts shall be authoritatively collated and intelligently reported in such form as may be comprehended by any producer.

Under the existing system figures covering these points are furnished in the United States by the Department of Agriculture, but inasmuch as several important producing countries of the world have themselves no system of collecting this information, the department reports are imperfect, and therefore to a degree valueless. It is this situation which provides ready to the hand of the commercial manipulator the opportunity which he uses so effectively to the detriment of the capital and labor of the farm and the capital and labor of the factory.

Proceeding in the exposition of his subject, Mr. Lubin said that the International Institute of Agriculture would, at its inception, be composed of delegates representing thirty-seven or more countries, by delegations varying in number from one to five, according to the rank of each nation, fixed in Victor Emmanuel's protocol.

To Be Housed in a Palace.

For the suitable housing of this body the King of Italy is providing a beautiful palace in Rome to be its permanent home, and toward the support of this establishment he has awarded a fund of \$60,000 in American money annually. Each participating country will sustain its own delegates. The United States is entitled to five delegates, but if it elected to send but one, he will be entitled to the five votes apportioned to Powers of the first class.

Work to be Done.

The business of this institute will be to gather and disseminate information of the available commodities on hand and the condition of the growing crops. It will have, through its official and other connections, not more than through the exceptional character of the delegates selected, facilities for obtaining and distributing information which no other bodies, either private or official, have ever had.

Likened to a Clearing-House.

Stating briefly the character and functions of the institute, Mr. Lubin declared that it might be likened to a clearing-house for the collection and dissemination of authoritative information essential in the regulation of values and in the equitable distribution of the world's agricultural production.

Mr. Lubin gave an interesting history of the objections encountered in his efforts personally made in different countries to enlist co-operation in this project. It was argued that the rivalries and jealousies of contending nations would be an effective bar to the development of dependable information. He met this argument with an exposition of the fact that within the chamber of the institute nation would be pitted against nation and interest against interest under conditions which would make it impossible to reserve essential facts or to present erroneous statements.

In the further development of the scheme he found that what had been urged as an objection was in reality one of the strongest points in favor of his plan. The institute is to shed the light of intelligence upon contraction and expansion from all causes which affect the growth and marketing of agricultural and horticultural staples. It is to afford a world-wide vision of world-wide industry.

CORRESPONDENCE

The Department of Agriculture Approves.

To the Editor.—I am in receipt of your circular to the readers of the Pacific Rural Press, and I desire to express to you my congratulations on the prompt steps you have taken to resume business and the courage with which you and your fellow citizens are meeting the results of this terrible calamity. In this the Secretary authorizes me to speak for him as for myself.

As soon as you advise me of your readiness to receive them, I should be glad to make up a shipment of our publications now available, as I presume you will wish to restock your library as soon as possible. I should send these without waiting to hear from you but that I am in some doubt whether it would be convenient for you to receive them at Berkeley until you are settled in new quarters. With sincere good wishes for your future success, I am, very truly yours,

GEO. WM. HILL,
Editor and Chief.

Thank you sincerely; we shall be glad to receive such a valuable help in our work a little later.—Ed.

From Twenty-Five Years' Experience.

To the Editor.—One who has been a subscriber and reader of your valuable paper, devoted to the agricultural and horticultural interests of the State, for a period of a quarter of a century, sends greeting to you, and begs to assure you that no one of your subscribers can feel a deeper sympathy for you in your hour of severe trial and financial loss, nor rejoice more that you are enabled in so limited a period of time to continue the good work of furnishing your patrons that valuable information, encouragement and assistance which has made the "Rural Press" one of the most welcome and enjoyable visitors to the agriculturist's household.

Accept my best wishes for your success, which you so richly deserve.

Saratoga. MRS. JNO. SHUMER.

Thinks It Would Do Good.

To the Editor.—Your editorial in the "Press" of April 28th was highly appreciated in this family. If you could spare a dozen copies I would be pleased to distribute them where they would do good, but I do not wish to appear greedy in the matter, if that is too many.

Fulton.

C. H. DWINELLE.

We are glad that you thought it good, and sorry that no supply remains.

The California Spirit.

To the Editor.—I can, in a measure, appreciate the irreparable and irredeemable loss sustained to the "Rural Press" by the destruction of your notes, references, back files, etc.—to say nothing of the more direct financial shrinkage. But, fortunately, the spirit of the old Californian is everywhere in evidence.

Morgan Hill.

LEONARD COATES.

A Tenderfoot With a Tender Heart.

To the Editor.—I wish to congratulate you upon your speedy recovery from the recent calamity. I wish to enroll myself among your permanent subscribers. I am a "tenderfoot" in the agricultural line, and I am amazed and gratified at the value of your paper to people like myself.

Sacramento Valley.

NEWCOMER.

A Welcome to the State Park.

To the Editor.—Please accept for the "Press" my sympathy for your losses, which must be great and severe, and my sincere good wishes for the future. I hope to see a Greater Rural Press grow up with the Greater San Francisco.

If when settled you would at any time like an article descriptive of the State Park in the Big Basin here in Santa Cruz county, with photographs, I shall be glad to give it to you, and should be glad through your columns to extend an invitation to those who wish to camp during the coming season to come into the park, where they can live as cheaply as anywhere and get close to nature and the simple life. Wood, water and camping privileges are open to all. Some 2500 people visited the park last year, and I expect this number to be much increased the coming season.

Boulder Creek.

J. H. B. PILKINGTON,

Warden of California Redwood Park.

A Cordial Approval.

To the Editor.—When I learned that San Francisco was burning, my thought was first of the people, and then that we would probably be without the "Rural Press"; but thanks to your typical California pluck, we are not to be denied it. So long as I am a farmer and a producer of fruit, I feel that I cannot afford to be without the "Pacific Rural Press." I have the feeling and assurance that back of it there is a broad, wholesome and uplifting culture that is indispensable to the best interests of rural California.

This bears my personal sympathy, and best wishes for the commendable success you are achieving, and which you so fully deserve. I have your circular letter of April 21, filed away with other letters that are dear to me, and which I prize highly.

Santa Cruz.

C. D. HOOVER.

A Word from the North.

To the Editor.—The first copies of the "Pacific Rural Press" since the plant was destroyed have been received by me, and I rejoice to know that I may have it in the future. We have sent about \$5000 to the sufferers from North Yakima and vicinity and know it is needed and will be properly used.

I enclose check for renewal of subscription, for I know you will need it if you ever did.

No. Yakima, Wash.

M. W. RUSSELL.

THE MARKETS

San Francisco, May 22, 1906.

Out of the confusion of the past few weeks the markets are gradually getting into some sort of shape, though there is still a good deal of uncertainty and quotations are hard to fix and generally uncertain and unreliable. Communication is, however, getting better daily and the outlook is for a rapid improvement from now on. The San Francisco produce houses were practically all wiped out by the fire, but most of them are again getting under way. The handlers of dairy produce are as a rule located in the vicinity of the Lombard-street wharf, while the handlers of fresh fruits and vegetables have congregated at or near the Greenwich

street wharf. Some have, however, secured more or less permanent quarters in the wholesale district south of Market street. Communication may be had with any of these houses by addressing letters to the old addresses, as the postoffice has arranged to deliver mail so addressed to the new addresses.

Wheat.

There is a good deal of interest in spot wheat, although conditions are very unsettled. Considerable business in spot is being done at Port Costa, where the grain trade is now temporarily centered. Millers are buying quite freely, as their plants are now at work to supply the unusual demand created by the late disaster. No. 1 shipping wheat is being held at from \$1.27½ to \$1.30, with inferior grades selling as low as \$1.18¾. There is no exporting at present from San Francisco, and there has been none from either the Columbia river or Puget Sound for the past two weeks. In the North the spot market is very dull with the larger holders showing increased firmness in their ideas. Sellers claim to be expecting an advance, but buyers are showing no disposition to take up the lots offered even at present prices. It seems doubtful if any more wheat cargoes will clear from the coast during the next two weeks. Late crop reports are not particularly favorable. Reports of dry weather in Oregon and Washington are current, and advices from both States are to the effect that the heat is damaging the wheat to a large extent. No future business is being done in California, and there will be nothing done in this line until the banks and the Merchants' Exchange open. In the Eastern centers future wheat has a stronger tone. July wheat is selling in Chicago in the neighborhood of 81c per bushel and September wheat in the neighborhood of 79½ cents. The report of the Department of Agriculture for May shows that the area of winter wheat is about twenty million six hundred and twenty-three thousand acres, or about 6 per cent less than the area harvested last year. The condition of the growing crop is slightly better than it was a year ago.

Barley.

The barley market continues weak and the condition is generally unsettled owing to the lack of all official trading in grain. Some inquiry for barley is reported from various points on the Pacific coast, and with the resumption of business the situation should be steady with conditions rather favoring sellers. It is not thought that any great supply remains in first hands, though dealers are known to be holding some supplies in the North. Advices from Portland state that feed barley is in fair demand for shipment to California at \$24 and that brewing is selling at a normal demand at \$25, with very little to be had.

Oats.

The oat market is laboring under the same general conditions as the other grain markets, though the limited supplies and the filling of government orders have given oats a decidedly stronger tendency. California buyers are now endeavoring to secure first-class oats for both cereal and feed purposes in the North, but as the northern cereal mills have recently been active buyers, it looks as though very little choice stock could be had. Oregon oats are now selling in Portland at from \$31 to \$32 for No. 1 white. Eastern oats show no change in values.

Flour.

California millers are quite busy owing to the destruction of considerable quantities of flour in the fire. Several of the larger establishments expect a good demand for some time to come. Flour is, however, being shipped in from the North, and the outlook is that the acute shortage will be supplied in very short order. All the large mills in the North have plenty of patents on hand to accommodate the California demand. The exporting of flour to China and Japan continues from northern ports, though without any special activity. No new orders for the Orient are reported. The Central and South American markets, which are usually supplied from San Francisco, do not appear to have been disturbed by the temporary stoppage of shipments.

Mill Stuff.

But little business in mill stuffs has been done in this market since the fire. This week some orders have been placed in the North for shipment to this point to replace the large quantity of feed destroyed by the fire. In the North supplies do not appear to be any too plentiful, as the large export mills have not been running to any great extent and the output of the smaller mills is hardly equal to the demand in the Pacific Northwest. Advices from Portland state that there is a good demand all over the Pacific coast, but that supplies are inadequate. Bran is now selling in Portland at \$17.50 and shorts at \$19.

Bags and Bagging.

Bags are at present very scarce and high. All grain bag stocks in San Francisco were destroyed and some doubt is expressed that a sufficient supply will be on hand to care for the coming grain crop. During the days immediately following the big fire the producers of bags at Calcutta and other Oriental points were uncertain as to the outcome and declined to ship. Last week, however, the railroad and steamship companies became aware of the situation and have been working hard to induce producers to ship promptly. By this means it is hoped to secure enough bags to supply the demand. It seems certain, however, that bags will be very high throughout the season. It is already claimed that a small stock which escaped the fire in San Francisco has been sold at 10 cents.

Hops.

The local hop market has not revived and there seems little prospect for any important transactions here for some days. Even under normal conditions of general business, the hop market would probably be dull just now. In Washington and Oregon conditions are not active, though holders are generally firm. Prices range on recent sales from 7½ to 11½ cents. Estimates of the hops now held on the coast are seven thousand bales for California, five thousand bales for Oregon, and but little more than one thousand bales in Washington. The outlook for the next crop is promising all along the coast.

Hides.

The hide situation shows no change either East or West except that in San Francisco transactions are very light, owing to the unsettled conditions here. In Chicago and other Eastern points hides are maintained at the same high level. The somewhat weaker demand for leather has checked the volume of business, but has not served to weaken prices.

Wool.

The Boston market for wool shows but little life, the dullness being almost as pronounced as at any time in recent years. Apparently it is a waiting game all around. The large consumers are pretty well supplied and are not disposed to purchase freely under present conditions. Manufacturers of woollens complain somewhat of the quietness of trade. In the West there is a deadlock between the grower and the buyer, and some of the leading buyers have called in their men. California wools are quiet in the Eastern markets, although they are in fairly good supply. In California there is nothing doing. The railroads have made a through rate to the East of \$2.50 per hundred for bag wool, owing to the destruction of the baling presses.

At Red Bluff on May 20th about 3000 bales were offered and 770 sold at 21c to 24¼c per pound, and the balance was cleaned up the next day with 24c as a top price.

Fresh Fruits.

The markets of San Francisco and Oakland show considerable interest, nearly all varieties in the market being well cleaned up. The principal trading is in strawberries, cherries and oranges. Small quantities of apricots have arrived from Coachella and have been sold at \$1.50. The demand for gooseberries and currants seems to be a little slack, though receipts are fairly well disposed of. Longworth strawberries range in price from \$6 to \$8 per chest according to quality, while the larger varieties sell at from \$3 to \$5. Large shipments of California strawberries are now being diverted to Portland and Seattle, where they are readily disposed of at good prices. Cherries are also being shipped north, where they are bringing from \$1.25@ \$1.50 per box. Apples continue to go into consumption, notwithstanding the entry of other seasonable fruits into the market. The outlook for crops for the ensuing year continues about as heretofore. The peach crop will be uneven, and in some sections, notably in the San Joaquin valley and along the American river, the crop will be below the average. The peach districts of Placer county and Yuba valley are reported in good shape. In the Santa Clara valley and in Kings county the apricot yield is fair, though the quality may be not of the best.

Vegetables.

The principal vegetable market of San Francisco is now the Greenwich street wharf, where most of the leading houses have established themselves temporarily. The market is decidedly uneven, as prices go up and down from day to day according to the scarcity or over-supply of certain varieties. Neither the producers nor the commission houses have as yet gauged the demand accurately, and as a result prices continue uneven. In Oakland the situation is steadier, though there is a tendency to overload the market there in some varieties. Just at present new potatoes, asparagus, and rhubarb seem to be firm in both Oakland and San Francisco. Peas have been bringing low prices and receipts have fallen off, though without putting the market in very good shape as yet.

Dried Fruits.

While reports from the fruit-growing sections are somewhat conflicting, the outlook just at present is for a larger output of dried fruit than was expected a few months ago. The destruction of fruit canning plants in San Francisco, as well as of the American Can Company's can factory, will tend to reduce the pack of canned goods and may result in the drying of large quantities which would otherwise have gone to the canneries. It is, however, still early to make predictions, and the quantity of fruit shipped out green will have a considerable bearing in the situation. The prune situation is in good shape with present stocks low, and the coming crop not any too plentiful. Advices from San Jose indicate a fair yield of good quality. In the north the yield will be heavy, and in the San Joaquin valley about average, according to the present outlook. The Santa Clara prune growers have now fixed prices on a 3½ cent basis. In New York and other Eastern markets business is generally quiet in dried fruits, though prunes are firmly held at prices ranging from 7½ cents to 8¼ for 50s-60s.

Citrus Fruits.

The orange market in San Francisco is hard to gauge as business has been very uneven, but, taking the country over, the market generally shows weakness. New York and other points to which heavy shipments have been made seem to be overloaded. There are supposed to be something over five hundred cars of navel oranges still in the State, but these are being shipped out rapidly at present. There has been some buying of Valencias for future delivery and prices are reported to range from \$2.50 and \$4.00 at Los Angeles. There is a wide range of prices in the lemon market, as there is a great difference in the quality of stock now offering. Fancy lemons are ranging this week in the neighborhood of \$2.15 per box. Grape fruit is weaker and the demand is falling off, both East and West, owing to the advent of berries and deciduous fruits.

Hay.

The arrivals of hay at San Francisco last week amounted to 2,100 tons. For the first time since the fire the railroad companies began bringing in hay, and small shipments are now arriving by rail each day. The bulk of the receipts, however, continue to come in by water, and these have been in the main of the medium and poorer grades. Prices have been entirely nominal, as no definite basis has yet been arrived at for transacting business. It is hoped that conditions will become more settled by June 1st or shortly after. The San Francisco Hay Association has just issued a statement, showing the amount of hay in storage at points tributary to San Francisco. The statement shows that on May 1, 23,800 tons were held in this territory. This is a much smaller amount than was on hand at the same date last year. The San Francisco trade holds that the entire supply of old hay will go into consumption by the time the new crop is cured and ready for marketing. The escape of the larger hay warehouses, the hay wharf and the railroad yards from fire in the late calamity has left conditions favorable for an early resumption of business on a normal basis.

Dairy Produce.

The San Francisco Wholesale Dairy Produce Exchange is again holding regular sessions in San Francisco and is issuing quotations for butter, eggs and cheese, daily. The prices, however, are not as well adhered to as formerly, owing to the unsettled condition of affairs. Many of the leading commission houses are now located temporarily on Lombard street wharf and vicinity, while a few are out in the wholesale district south of Market street. Shippers can reach practically all of the principal houses by mail by addressing their letters to the old addresses. In both Oakland and San Francisco butter and eggs are in fairly good demand, and the oversupply which was talked of a couple of weeks ago seems to be a thing of the past. Shipments are now coming in and are being absorbed with considerable regularity. The cheese market is unsettled with the demand only fair.

Beans.

During the last few days there has been a brisk shipping movement in beans as well as a steadily improving demand for local use. Altogether the market continues in excellent shape for the selling interests. All varieties are moving freely, though at somewhat uneven quotations. Large whites are pretty firmly held at from \$2.40 to \$2.70.

SAN FRANCISCO, DAUNTLESS.

The California Promotion Committee issues the following truthful and interesting statement:

On April 18, 1906, San Francisco experienced an earthquake followed by a disastrous fire of four days' duration, which swept over four square miles of densely populated area.

The earthquake did some damage to poorly constructed buildings, but it was demonstrated beyond a doubt that the modern building of the higher type is not affected by seismic disturbances.

The disastrous effects of the fire were appalling, the loss running into the hundreds of millions of dollars, with insurance of possibly two hundred millions. All of these millions and more will seek reinvestment.

Fortunately the water front was not seriously damaged and the vast shipping through the finest harbor in the world was but little disturbed. Many manufacturing plants and a large section of the residence district of the city remained intact.

Within a few days after the catastrophe street cars were running on several streets and on Market street as far as the ferry. This traffic was extended day by day until it is fast approaching normal conditions.

At three o'clock on the afternoon of April 18th a Citizens' Committee was organized for relief and for the regular business of the city. This provisional government by committees worked in admirable harmony with the Mayor and federal authorities and at once developed an orderly and wonderfully efficient plan of operation.

The health conditions remained wonderfully good. At no time was an epidemic threatened. The loss of life was comparatively small, many a minor catastrophe in recent history having resulted much more disastrously in this respect.

Business confidence remained unshaken after the disaster, and the banks all demonstrated their solidity. At no time was a panic threatened. Before the ashes cooled wholesale and retail trade was resumed in original places where the buildings remained and in temporary structures in cases where the buildings had been burned.

The people of San Francisco, millionaires and wage-earners, refugees and householders, showed a spirit of fortitude and optimism probably unequalled in the history of the world.

San Francisco is now in course of reconstruction; the debris is rapidly being removed and the hum of industry has supplanted the roar of the flames. The abiding results of the fire will be wider streets, more imposing edifices, larger parks, and a complete fire-fighting system which will utilize the waters of the ocean. The real estate market weathered the storm and shows great activity.

San Francisco is the city of opportunity. The vast fertile country back of it promises the yield of an exceptionally good year's crop. The chance for business investment is magnificent; Eastern and local money will be poured in freely while the rebuilding progresses. The history of all such events as that which has just transpired proves that the ultimate result is a general improvement in conditions and a vast increase in community wealth.

HORTICULTURE**That Sample from Mr. Payne's Walnut Tree.**

To the Editor.—As I was the medium through which Mr. Gillet obtained the sample of walnuts, I will explain exactly my connection in the controversy of the famous walnut tree.

During my business correspondence with Mr. Gillet, I was asked by him what variety of walnut was grafted on Mr. Payne's big walnut tree. My answer was: "I have asked Mr. Payne Sr. several times what kind of walnut was grafted on his big tree and he always said that he did not know."

As late as August 23, 1905, accompanied by my son, I went to see Mr. Payne Sr. on business in regard to some livestock. During our conversation I asked him to what variety of walnut his tree was grafted, to which he replied, "I do not know."

Receiving a letter from Mr. Gillet requesting me to obtain a sample of the nuts, I went to Mr. Payne Sr. on March 15, 1906, and asked him if he had any nuts from his big tree, as I would like to get a few.

He said that he did not know, but he would go in the house and see.

On his returning with the sample I asked him if they were from the big tree and he replied, "Yes."

That was the exact sample sent to Mr. Gillet.

Why I was given two varieties of nuts when Mr. Geo. C. Payne stated in his communication that the tree was only grafted once, is for Mr. Payne Sr. to explain, as any reader could see by my letter to Mr. Gillet that I discerned two varieties.

After taking his word for it that they were the true sample, and doing a favor for a friend, previous to this controversy, what object would there be in my sending Mr. Gillet a different sample of nuts than those presented to me by Mr. Payne Sr., is also for him to explain.

Santa Clara, May 20.

J. LUTHER.

HOME CIRCLE

THE SPIRIT OF FORTY-NINE.

There wasn't no Pacific Heights when me and Jim came here,
The salt-sloughs ran on Mission Street
with sand dunes far and near;
Three wa'n't no bricks nor pavin' stones,
nor railway systems when
We set old 'Frisco on the sands—and
we'll set 'er there again.

When doubters said, "Impossible," we
laughed their doubts to scorn.
'Twas pack train through the desert lands
and cutter 'round the Horn;
We lined the beaches with our dead, the
hillsides with our bones—
When 'Frisco was a roarin' camp we laid
the corner-stones.

'Twas us that plowed the thoroughfares
and built the wharves by day,
'Twas us that formed the Vigilantes to
drive the wolves away;
We built the schools, we made the laws;
and them that wasn't fair
Got settled with a shotgun—but they got
it on the square.

Yet there she's lyin', flatter than the day
I seen the town.
The monuments is in the streets, the
churches tumbled down—
But there's the same old Argonaut a-cryin'
in our men,
"We built 'er up in Forty-nine—and we'll
build 'er up again."

—Wallace Irwin.

TWO SCHOOLS.

I put my heart to school
In the world where men grow wise;
"Go out," I said, "and learn the rule;
Come back when you win the prize."

My heart came back again.
"And where is the prize?" I cried.
"The rule was false, and the prize was
pain,
And the teacher's name was Pride."

I put my heart to school
In the woods where the wild birds sing,
In the fields where flowers spring,
Where brooks run cool and clear,
And the blue of heaven bends near,
"Go out," I said, "you are only a fool,
But perhaps they can teach you here."

"And why do you stay so long,
My heart, and where do you roam?"
The answer came with a laugh and a
song—
"I find this school is home."

—Atlantic Monthly.

Mrs. Grantham's Expert Advice.

"Nettie," said Mrs. Grantham, "you must be more strict with John or you'll be sorry, mark my words. I noticed this morning when he told you that he wouldn't be home for dinner that you didn't ask him why. You seemed to take it for granted that it was all right. Does he often stay in the city at night without telling you what keeps him?"

"I wish," replied Nettie, "you wouldn't try to make me suspicious of John. I know he's all right. I'm not going to conjure up a bugaboo and let it make me miserable."

"All right," said Mrs. Grantham, who had come to live with the Plunketts for a few weeks, and whose suit for divorce had recently been filed, "go your own way. I don't want to interfere. But I can see what's coming as plainly as if it were all pictured out before me."

Nettie Plunkett rushed into the library, took a picture of John from the mantel, and kissed it, declaring that he was an old dear, and that she trusted him implicitly.

At breakfast the next morning Mrs.

Grantham, addressing her brother-in-law, said:

"I think I heard you come in last night, didn't I, John?"

"Oh, did you?" he asked. "I supposed I was quiet enough to keep from waking anybody."

"Quiet? You fell half-way upstairs. John, I want to give you a solemn warning. Now, don't think I have any desire to interfere with you and Nettie, but do you know how many men fail in business and how many homes are ruined in this country every year on account of strong drink?"

"No," replied John Plunkett, "I have no head for figures. Nettie, I'm afraid I may have to stay in town again this evening. You won't mind, will you, dear? It's business, you know."

Nettie Plunkett looked stealthily at her sister and saw that her darkest suspicions were aroused.

"It seems to me that it is necessary for you to be away from home a good deal," Mrs. Grantham remarked.

"Oh, no. I'm not likely to be away again for months."

He went upstairs, whistling, and Mrs. Grantham turned upon her sister, saying: "I'm sorry for you, Nettie. You see where you're drifting. There you sat and never made a murmur. That man is deceiving you."

"You always made your husband tell you where he went and why, didn't you?" Mrs. Plunkett asked.

"Not only that, but I made it my business to find out whether he was telling me the truth."

"Why, was he in the habit of lying to you?"

"You never can tell when a man will try to deceive you. It's best to be on the safe side. I wouldn't trust any man for a minute out of my sight. Sh-h! Do you know what I think? I think John was intoxicated when he came home last night. I could tell it by his walk. Nettie, you will rue it if you let this go on. Put your foot down and stop it. Don't you let him step out of this house without telling you where he was last night and where he is going tonight, and who is going to be with him!"

Mrs. Plunkett rushed away from her sister and went upstairs. Half an hour later she and her husband returned to the library, where Mrs. Grantham was reading a pamphlet on "The Treatment and Cure of the Liquor Habit."

"Caroline," said the younger woman, "I have just had a serious talk with John, and he and I have come to the conclusion that we may as well make our case plain to you. We have been married nearly seven years. How long had you and George Grantham been married when you separated?"

"Twelve years, but I wish you wouldn't mention that man's name to me. John, I hope you will not think I am trying to interfere here, but there are certain things I can't help seeing. You and Nettie are traveling on a dangerous road, and you will both live to be sorry if—"

"Wait a minute, Caroline," her sister broke in. "I want to tell John how—forgive me for calling him by name again—George got started on the downward path. He began by staying away from home at night and drinking a great deal, didn't he?"

"He didn't stay away from home at night while we lived together. I wouldn't put up with it. As for drinking, he never tasted whiskey, that I know of."

"But didn't business ever keep him away?"

"When it did I made sure that it was business and nothing else."

"I suppose you warned him daily of the evils of intemperance, didn't you?" Plunkett asked.

"Yes, heaven knows I did all in my power to save that man."

"But," asked her sister, "how could you always tell whether he was truthful in

reporting what he did when he had to be away from home?"

"Oh, I had ways of finding out. I went to his employers in the first place. But of course men always believe in standing together in such things. You can't get one of them to tell on any of the rest. So I soon found out that the only safe way was to have him shadowed by a detective."

"Who paid the detective?" asked Plunkett.

"Why, I did, of course."

"But your husband earned and gave you the money."

Mrs. Grantham's face flushed angrily, but before she could give expression to her thought Nettie Plunkett asked:

"Did—did your detective ever find him where he had no business to be?"

"He claimed he didn't. But you know what I just told you about men standing together. I haven't any doubt that he was as bad as he could be."

"Still, you haven't any proof," said Plunkett.

"No, unfortunately, I haven't."

"Did he ever swear at you or beat you or throw dishes at you?"

"Certainly not."

"Why did you leave him?"

"He left me. I expect to get my divorce on the ground of desertion."

"Forgive me for asking you this," said Plunkett, "but do you think you are doing your sister a kindness in coming here and trying to get her to go the way you have gone?"

"What do you mean?"

"You were not able to live with one of the best men I have ever known. I was with George last night. He told me all that you have been telling us here."

"Oh!" replied Mrs. Grantham.

"There's nothing to prevent a reconciliation, is there? There's no unpardonable sin on either side. He simply went away. There was nothing more than that, was there?"

"No. When did he come back?"

"He returned yesterday morning. I intended to bring him out here tonight, but I think I'll give up the idea."

Mrs. Grantham breathed hard for a moment and then asked:

"Why?"

"After thoroughly considering the case I find that I have nothing against him."

When Mrs. Grantham, miserable and lonesome, left the Plunketts that afternoon she looked back with mingled pity and contempt upon her happy sister and said half aloud:

"Oh, what fools some women are!"—S. E. Kiser.

HOUSEHOLD HINTS.

Fried Cakes.—Whip together the yolks of three eggs, the white of one egg and an eighth of a pound of sugar. Add a tablespoonful of cream, a half ounce of butter and work in about a half pound of flour. Knead until the dough does not stick to the fingers. Roll out very thin with a little more flour and cut in any shape desired. Fry to a light brown in deep boiling fat.

Swiss Creams.—Beat the yolks and whites of two eggs separately; with the yolks put two tablespoonfuls of brandy, and stir them together in a basin stood over a saucepan of boiling water, till the mixture is like honey. When cool stir in the beaten whites of egg and pour into glasses or cups.

Bacon and Cabbage.—Cut the bacon into rashers, boil the cabbage and drain. Fry the bacon, and when cooked put it on a hot dish. Put some chopped cabbage into the frying pan, add plenty of pepper, and fry in bacon fat, and put round the bacon. Put about a tablespoonful of vinegar into the pan, boil, then pour over the bacon.

Ginger Cake.—One cup of molasses, one cup of brown sugar, one cup of cold black coffee, half cup of butter, one and one-half pints of flour, one and a half table-

spoonfuls of ginger, one teaspoonful of soda, one teaspoonful of cinnamon, three eggs.

To Use Cold Potatoes.—Chop them fine—THREE—Narrow Meas—Rural Press ly, place a layer in a pudding dish, season with salt, a little mace, and bits of butter, sift some flour over, then put more potatoes and seasonings. When the dish is full, pour milk over, set it in the oven and bake a nice brown. Allow half an hour for the baking of this dish.

HINTS TO HOUSEKEEPERS.

When frying croquettes or doughnuts in fat, it is well to drop in a small bit of bread when smoke begins to rise. If in about five minutes the bread begins to brown, the fat is ready for use.

If oil cloth has become shabby put a little glue in one pint of water, dip a piece of flannel in it and go over the oil cloth with it. When dry, the appearance of the cloth will be much improved.

Wipe off furniture with a cloth wrung out in hot water before applying furniture polish. A high polish will result, and will not show finger marks.

Clammy hands may be improved by washing in very hot water, and when thoroughly dried dusting with fuller's earth. A sprinkling of ordinary starch, powdered and scented with verbena or sandalwood, in the gloves, will also help to do away with the unpleasant feeling.

Massaging the face is quite as much of a help to nerves as a preventive of wrinkles.

Vanilla should be kept in the dark.

Towels that are worn in the middle should be cut in two like the sheets, and hemmed to make hand towels.

Two or three times a week one should have a hot foot bath; ten minutes is long enough. The nails should be trimmed lower in the middle than at the corners. Shoes should fit closely, but not tightly. Loose shoes are as damaging as tight ones. But, above all things, don't have a shoe too short. A short shoe is the cause of ingrowing nails and bunions, and makes an easy, graceful walk impossible. Thin soles often lead to very bad corns that almost cripple the owner.

A galvanized iron lemon squeezer should not be used. The lemon juice when brought into contact with the iron forms a poisonous salt.

Light rugs may be satisfactorily cleaned by sprinkling with cornstarch mixed with one-sixth its bulk of prepared chalk. Let the starch remain for several hours, brush it out and hang the rug in the sun for several hours before putting it down.

FASHION NOTES.

A useful country hat is made of matting that incloses tea boxes. Take a piece eighteen inches in diameter, cut and opening in the center large enough to fit the head, then use for crown a piece fourteen inches in diameter and plait around opening for the crown. Stain all over with green dye, gather around edge lavender and green sateen; tie knots in straight piece of sateen five inches apart and trim front of crown. Turn up and fasten, then fill with knots of same, and you have a pretty summer hat for fifteen cents. Another pretty yard hat is also made of the matting which incloses tea boxes, or of common floor matting. Take a piece eighteen inches in diameter. Cut an opening for the head. Line all with red swiss. Make a red swiss crown and a gathered ruffle around edge, and make tie of same one-half yard long and three inches wide.

If you want to look distinguished wear a tailored shirt waist and have it made on severe lines. The good models are made with the plainest narrow shirt sleeve finished with a two-inch linen cuff in which buttonholes are worked which fasten by small pearl buttons. A group of lengthwise plaits up and down the middle seems a favorite style for the

back and the tendency in front is to trim from the shoulder. One model has the fronts stretched plainly to the long shoulder seams until near the shoulder. Three narrow straps are stitched in the plain places, are pointed at the bottom, and graduated, the ones next to the narrow fastening band being longest. Two little pearl buttons are set at the end of each strap and the waist is fastened with pearl buttons.

Brown linen, which has a "cool feel" is used for shirtwaist suits made for service. These are trimmed with gold buttons, and the skirts are circular. Nearly all of these skirts are made with a couple of narrow plaits down each side of the front seam. Kilt skirts cut much as they were last year are seen on dull blue chambray and linen suits, with Peter Thompson waists. The insignia are more elaborate than formerly on the sleeves and are embroidered on a separate piece and tacked on. Black and white mixed in elaborate stitching makes an attractive trimming on dull blue. Such a little suit can be had for \$15. These "service dresses" are easy and comfortable for golf or tennis, and are hard to find ready made. This is true of the goods that will wear, and of that which is well made. There are \$5 gingham shirtwaist suits but they are not as well made as any amateur can do, besides being of the thin weight, which never tailors well.

CHAFF.

"Pa," remarked the eternal questioner, "what does 'etc.' mean?" "It is something," explained pa, "which you write when you can't think of any more words, but desire to say something else."

"Will you think of me when I'm gone?" asked the lovelorn youth, who seemed unable to tear himself from her presence. "Oh, yes," answered the fair one, as she strangled a yawn. "That is, if you ever give me the opportunity."

Office Boy—I'll bet de boss is goin' ter marry de typewriter. Bookkeeper—Why do you think so? Office Boy—'Cause he's beginnin' ter kick about havin' ter pay her a salary.

"Yes; we had to drop Mrs. Jones from our 'mothers' society.'" "Why?" "She insisted on bringing her baby with her."

He—There's one thing I will say you make quite as well as your mother used to make. She—What's that, Fred. He—Trouble!

"Did Simkins get any damages in that assault case?" "Did he? My dear fellow, you ought to see his face."

She—I suppose you will commit suicide if I refuse you. He—That has been my custom.

"I am sorry," said the doctor, "but your little girl will not be able to speak for several days." "Then it will be safe," said the anxious mother, "for me to invite the minister to tea, won't it?"

Mrs. Economy—How much are the spectacles? Oculist—Two dollars. Mrs. Economy—Can't you knock off one dollar? I'm blind in one eye.

"Miss Ethel," he began, "or, Ethel, I mean—I've known you long enough to drop the 'Miss' haven't I?" She fixed her lovely eyes upon him with a meaning gaze. "Yes, I think you have," she said. "What prefix do you wish to substitute?"

AGRICULTURAL REVIEW

Stanislaus.

HOGS WANTED.—Stanislaus News, April 30: A Modesto company offers the following prices for hard grain-fed, trimmed hogs weighed and delivered: From 130 to 200 pounds, 6¼c; from 200 to 250 pounds, 6c; from 250 pounds and over, 4¼c to 5¼c.

Alameda.

PEST VS. PEST.—Livermore Times, May 18: The ground squirrels near Livermore are disappearing, wasting away with some disease. Farmers rejoice, but there is one drawback; the coyotes, which lay for the ground squirrels, are driven by hunger to grow bold and attack the poultry yards.

Butte.

BLASTS STOP EGGS FROM HATCHING.—Oroville Register, May 17: J. Mullen of Big Bend reports that there is complaint among the farmers of his community over the fact that blasting operations by Western Pacific contractors are preventing the hatching of eggs. The heavy blasts occasion a constant jar, which seems to affect eggs in process of fertilization. As a result the turkey crop in Big Bend is apt to be light this year.

Glenn.

PARASITE LOSS.—Willows Journal, May 15: Thousands of pest-eating bugs were destroyed in the Ferry building at San Francisco, where State Horticultural Commissioner E. Cooper kept a propagating plant for ladybugs and other pest destroyers. Many of the bugs were of rare varieties. The State sends agents to various parts of the world to collect insects that prey upon scale and other pests.

LOSING YOUNG TURKEYS.—Orland Register, May 19: Complaints are coming in from the farmers of this section of the loss of young turkeys. The young fowls are said to be dying off at an alarming rate and the exact cause seems to be unknown, some claiming it to be due to the cold weather, while others suggest cholera. It would be well for some one who is interested in the matter to send to some of the government poultry experimental stations, where the diseases of poultry are made a study of, and no doubt an infallible remedy would be immediately sent to the poultrymen.

Los Angeles.

CITRUS RETURNS.—San Bernardino Sun, May 8: This promises to be the banner year in the citrus belt of Southern California. It is estimated that the citrus crop will bring \$30,000,000. Of this sum it is estimated that two-thirds will go to the growers. The Eastern market is paying twice as much this season as last for all lines of citrus fruits except Valencias, lemons and unusual shipments of navels. It is estimated that \$10,000,000 will go to the packers and shippers and the Eastern market will continue so firm that the present high prices will be advanced. This section of the State has shipped 25,000 carloads of citrus fruits, of which 4,000 cars were lemons. It is estimated that 2,500 cars of Valencias will be shipped in June.

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Placer.

PORKER WEIGHS 600 POUNDS.—Sacramento Union, May 1: J. French brought into Lincoln 70 head of hogs for shipment to Sacramento. One of the porkers, a cross between a Berkshire and Poland China, was the largest hog ever raised in this section. The big fellow was three years old and weighed nearly 600 lbs. It could not be driven owing to its great size, and had to be hauled. None of the hogs were grain fed, but averaged 175 lbs. and were sold for 6¼c per lb. on board cars at Lincoln. They were raised by B. French.

Riverside.

COMBINED HARVESTER STARTS.—Perris Progress, May 17: A. B. Miller, who is farming 3,000 acres of land at Rosena, started his combined harvester at work Monday. This is the first grain cut for this season and is said to be fine. Two years ago the land was desert, but it was cleared, summer-fallowed and seeded early last fall. It is estimated that a part of it will average 30 sacks of barley per acre.

San Bernardino.

ANOTHER MEDAL.—San Bernardino Sun, May 16: E. F. Van Loven, manager of the San Bernardino County fruit exchange, has received a gold medal from St. Louis, which was awarded the exchange for the fine exhibit of citrus fruits displayed during the Exposition.

FREAK ORANGES.—San Bernardino Sun, May 15: J. Yarnell, who is picking the last of his navel oranges, and the last in the district, has run across a freak in the orange line. It is a cluster of 25 oranges on one branch, and they weigh ten pounds. The oranges are crowded so close that they are in several instances mashed out of shape.

GOLD MEDAL.—San Bernardino Sun, May 15: Rialto citrus growers are puffed up over a gold medal that has just been received. William Buxton, of the Citrus Union at Rialto, prepared an exhibit of oranges and pomelos for display at the World's Fair at St. Louis, and many months ago received notification of the award, and the diploma which accompanied it, but by express yesterday came the medal itself.

NAVELS YET TO GO EAST.—San Bernardino Sun, May 16: The California Citrus Union shipped forty cars of navels during March, which netted growers \$27,000, or \$2.36 per 100 lbs., as the fruit came from the orchard. Only one packing house has as yet shipped any sweets, and it is estimated that there will be between 100 and 200 cars of sweets and Valencias yet.

Santa Clara.

RAISIN ASSOCIATION HAS ASKED FOR ACCOUNTING.—San Jose Herald, May 18: Sheriff Ross has received summons which he is to serve on a number of Santa Clara county defendants in a suit brought by the California Raisin Growers' Association, with headquarters at Fresno. The suit, which is brought in Fresno, is for an accounting and a readjustment of payments to the different members of the association. There are some twenty-five hundred defendants in all, located in various parts of the State. The complaint alleges that all of these persons or firms turned in fruit to the association, that this fruit was all put in together and sold for the benefit of the different members. Various payments were made and the claim is now set up that some were overpaid and others did not receive all that was due to them. The suit is therefore brought for a new accounting in order that the affairs of the association may be closed up, there being on hand at the present time about \$20,000 from the sale of raisins. The Santa Clara county defendants to the suit are Ida G. Dodds, Mrs. S. H. Humphrey, Alice L. Humphrey, Flora G. Gowanlock, Andrew Holm, W. W. Morgan, Leonard

Coates, C. H. Williams, W. F. Pennebaker, Mrs. K. H. Sim.

San Luis Obispo.

WORLD'S FAIR MEDAL.—Paso Robles Record, May 19: Mr. Gerst has received the medal and diploma awarded him by the Louisiana Exposition at St. Louis in 1904, for the finest almonds exhibited. The almonds that won the honors were grown on Mr. Gerst's farm in the Oak section from a variety of trees which he originated.

San Joaquin.

STOCKTON MULE MARKET.—Stanislaus News, April 30: There is at present a deal under way which will bring \$150,000 to San Joaquin county. About three years ago in less than four months \$250,000 was spent in Stockton for mules to be used by the British in South Africa. Experts on this animal say the best mules are raised in the San Joaquin valley. They are larger and stronger than those brought from other sections. A. F. Rooker deserves the credit of making Stockton the best-known mule market in the world. Five years ago he opened up a place of business and kept increasing his corrals. Last Monday the local firm sold one lot of mules for \$14,500. A few days since J. A. McCullough of Newman secured an order for 900 head of mules for the Fiji Islands, and he has sent a notice to the Stockton market asking that as many of the animals as possible be sold him. It is expected that he can be accommodated with about \$150,000 worth. The mules are to be used on the island plantations as they are far better adapted for this work than horses. The eight agents of the British Government who purchased mules in Stockton three years ago for South Africa stated that they failed to find better animals than they bought there.

BUYS ALFALFA LAND.—Lodi Sentinel, May 15: J. Blakesley has purchased W. A. Young's twenty-acre tract near Woodbridge. The land is mostly in alfalfa. The price was \$6000.

Sacramento.

CHERRIES BY EXPRESS.—Sacramento Union, May 17: The deciduous season is on. Cherries have gone forward by Wells-Fargo's Express. The service has been good, but complaint is made that the charges are too high, being about three times that of ordinary freight. About eighteen carloads have been shipped, two-thirds being carried by express. The freight shipment which arrived in fine condition, was sold in Chicago, and grossed the sum of \$4,233, or nearly \$2 per box. This shipment, which went out on the 10th, reached Chicago at noon of the 17th, and was sold on the morning of the 18th. Apricot shipments will be light. The first box of apricots left on the 15th, being the product of the Key High orchard. In addition to being short, apricots are also late. Eastern reports are that strawberries are poor and are lessening in quantity. Oranges, usually popular by reason of their cheapness, are selling at a high figure. There should be a continuing good market for cherries. The dark cherries are being cleaned up, and will be followed by the Royal Anne, for which there promises to be a good market. The crop is large—greater than ordinary. There has been practically no rain damage, the danger of frost has gone, and everything looks promising for the California fruit growers.

Shasta.

HEAVY PRUNE CROP.—Special to Sacramento Bee, May 12: A fruit buyer estimates that the Shanahan prune ranch will this year produce 500 tons of dried prunes, or from \$30,000 to \$50,000 worth of fruit, depending on the market price. The ranch may be taken as a type of others in the Anderson prune belt. It is 200 acres in extent, and has between 18,000 and 20,000 trees. At 4c. per lb. the product will bring \$40,000. There does not seem to be much danger of damage from frost.

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San Bernardino.

SHIP MANY TREES.—San Bernardino Times-Index, May 14: Secretary Pease, of the county horticultural commissioners, has filed his April report with the supervisors. The report says many trees of all kinds have been shipped into this county, but principally apple and orange trees. Four thousand apple trees have been planted on one ranch. One of the inspectors has superintended the cleaning by stripping off leaves and brushing the trunks with a solution of whale oil soap on 3000 orange trees. The demand for Valencias has been large. Some of the trees were brought in infected with red scale. Cutworms are appearing in limited numbers. Florida red spiders are also showing up. We have a good supply of Vedalia now and have already supplied colonies. Frost has made a reduction in the apple crop. The cherry crop has also suffered.

Stanislaus.

PEACH BLIGHT HAS RUN COURSE.—Stanislaus News, May 18: The report of the San Joaquin County Horticultural Commission is as follows: The peach blight has run its course for this season, and while damage has been done, it is not extensive. From experiments we are sure it can be controlled, and if the growers will take precautions a repetition of the damage will not occur. The planting season is over, and a large acreage of trees and vines has been set out; we are placing beneficial parasites in different parts of the county.

WILD BEASTS ON RESERVES.—Stanislaus News, May 11: Wolves and mountain lions are giving the stockmen trouble in the national forest reserves. Complaints have been made to the Forest Service of the loss of cattle and sheep. Protection is sought by the stockmen; and the Forest Service, which collects a fee for grazing permits, has assumed the task of finding measures to aid owners in exterminating the animals. The Service has sent an expert into the field to study the wolf problem. The man selected for this work is V. Bailey, Chief Field Naturalist of the Biological Survey.

Sonoma.

EGG MARKET LIVELY.—Petaluma Argus: The present condition of the local egg market is booming. After the earthquake there was no market. Many of the poultrymen gave their eggs to the relief committee.

Thursday morning the egg market opened at 12c. with an advance of \$1.50 cash per case. Then the eggs began to come to supply a product which for several days had been a drug on the market. Friday morning the egg market opened at 15c. per doz. buyers paying cash and agencies fighting for the goods. Eggs are coming in by the hundreds of cases and the poultrymen are receiving cash for their product.

Sutter.

GRAPE OUTLOOK GOOD.—Yuba City special to Sacramento Bee, May 19.—J. W. Bevin, of the California Winery, has about secured from the grape-growers the 1,000 tons of grapes necessary to complete the five years' contract with the winery. On account of the destruction of the Marysville winery the growers have no local market for the disposal of their wine grape crop, and the California Winery at Sacramento has offered Yuba and Sutter county growers \$11 per ton under a five years' contract, providing 1,000 tons are guaranteed. The outlook for this season's grape crop is encouraging, especially the wine grapes. The price of \$11 per ton is in excess of that paid for wine grapes last year. If the contract is made, the winery people promise to build a winery here.

Solano.

FRUIT SEASON HAS BEGUN.—Vacaville Reporter, May 17: Fruit shipments in carload lots for 1906 commenced from Vacaville on May 17. This is the same date on which the first carload left last year. That car, however, contained cherries, apricots, peaches and plums. This car was loaded entirely with cherries, with the exception of two crates of apricots. It was consigned by the Frank H. Buck Co. to Chicago. This shipment has been preceded by eleven cars by express, and also by several cars which were partially loaded here and completed elsewhere, including the ones sent from Cordelia and Suisun last week. Reports received from sales already made in the East show that excellent prices are prevailing and a good demand exists. Fruit men estimate this year's crop as follows, percentages based on a normal yield: Cherries—Early varieties, 50 per cent; Tartarians, 75 per cent; Rockports and Royal Annes, 100 per cent. Peaches—Early varieties, 75 per cent; later varieties, 60 per cent. Plums—Japanese varieties, 50 per cent; Tragedies, 40 per cent; other varieties, 75 per cent. Prunes—60 per cent. Pears—Good crop; probably a 15 per cent loss from blight, but a better crop than last year. Grapes—Looking splendid.

Tehama.

SHEEP SHIPMENTS.—Corning Observer, May 18: A number of sales of sheep have been made during the past few weeks, and these bands have been loaded in Red Bluff. The average price paid is said to have been \$2.90 per head. Following are some of the shipments made: G. B. Wilcox, 2,500 to San Pedro; G. D. Wilcox, 2,000 to Stockton. Swain Bros., 700; I. B. Burrell, 600; Flournoy Bros., 1,200; D. C. Mitchell, 195; Finnell Ranch Co., 2,018, to San Bernardino. Barry Bros., 1,863 yearlings; Ellison & Saunders, 1,136, and Willard Bros., 780, to Santa Barbara. Barry Bros., 2,500 stock sheep and 2,100 lambs, to Madera. Mrs. J. Trede, 800; J. Heavey Co., 1,600; M. Johnson, 600; D. P. McNett, 300; A. Johnson, 340; A. Avella, 2,000, to the Moulton ranch in Colusa county. Owing to the scarcity of stock cars the railroad company has raised the price from \$85 to \$110.

Tulare.

PRUNE TREE BLIGHT.—Visalia Times: A blight has struck a number of the prune trees in the county and owners of orchards are alarmed. The blight seems the same as that which has affected the peach trees. The trees that are affected seem as though a fire had struck the leaves, causing them to shrivel. If allowed to continue the fruit will be affected.

Yuba.

WILL SCOUR WOOL.—Marysville Appeal: It was decided that the Wool Growers' Association will put up a scouring plant in Marysville and will grade and scour all their wool before it is offered for sale. With this method the prices will be more readily determined. An experienced man will do the grading.

HOPS SHIPPED.—Marysville Appeal, May 17: The Wheatland depot is again packed with hops for shipment. The hops are from the Durst ranch.

Nevada.

PEACH CROP POOR.—Grass Valley Special to Sacramento Union, May 18: The statement that this will be a record-breaking year for a fruit crop does not seem to be based on fact, if the opinion of Supervisor Samuel Weeks of Rough and Ready is correct, and he has made a study of conditions in the fruit world for several years and is a very close observer. He states that the heavy rains which came and lasted for a month after the fruit had blossomed were the cause of destroying the entire peach crop of this part of the State. "I do not believe

that there will be fifteen boxes of peaches picked in the entire Rough and Ready district," said Mr. Weeks, "and ordinarily each farmer and orchardist in that section will average several hundred. This is true of apples also, except the very late varieties. The cherry crop also is very poor, although the storms seem to have affected cherries only in spots. At the beginning of the season my trees were filled with blossoms that formed into small cherries, but after the heavy rains the fruit was all knocked to the ground. There are others in that section who have fared the same way. Mr. Segestrang, however, will have a large crop of cherries, but his peach crop will be a total failure. I believe this year is the hardest the farmers have experienced in the past twenty years or probably longer. The dry weather of last fall played havoc with their cattle and their losses from that source at least took off the profit for a year. The fruit crop is now a failure, and there is little opportunity for the out-of-town people to make any ready cash this summer." Mr. Weeks stated that the hay crop in Rough and Ready and Penn valley was less than half of what it is in ordinary years, and that although the last rain helped considerably there will still not be half a crop. There will be plenty of hay, however, as is always the case when there is a poor crop. The farmers in the valleys of Yuba county and other places on the plains will cut their grain and make it into hay, while, if they had a big crop, they would sell it for grain. For this reason hay will not be high this summer and fall. In Grass Valley many of the cherry trees are loaded with fruit, but those who make a living off their fruit are not looking forward with very much encouragement to a prosperous year.

A Visit to a Creamery.

One of the recent additions to Placer county's industries is the Placer County Creamery, and it is giving strong evidence from the continual growth of its business that it is an institution that has come to stay.

Many people have an indefinite idea of how the milk goes through various processes until it is put on the market in the shape of butter, when the most modern machinery and methods are used. The old hand churn of our fathers has become a thing of the past, as well as the obsolete ways of handling milk and cream. Up-to-date machinery has taken the place of the old way of making butter by hand and one man now makes hundreds of pounds of butter by means of machinery in the time it would take the old-fashioned housewife to make four or five pounds.

A representative of the "Republican" visited the Placer County Creamery one day last week and was shown through it and the processes explained to him by Holger Troest, who has charge of the butter making. He learned his craft in a dairy school in Copenhagen, Denmark, and finished his schooling by taking a course in dairying at the University of California.

The milk and cream are brought to the creamery by the farmers, weighed and samples taken for testing. The cream is put in one vat and the milk in another. The cream is run from the vat into the ripener, after being Pasteurized, where it is kept at a certain temperature until it contains the amount of acid desired.

A sample of each lot as it comes in is taken in a bottle and corrosive sublimate is put into it to keep it sweet. It is tested twice a month for butter fat to ascertain the value. Eighteen grams of cream by weight are mixed with 17½ cubic centimeters of sulphuric acid and whirled around three times in the tester,

water being added each time. If it is supposed to be very rich half the quantity of cream is taken for the test and the reading is doubled. The neck of the test bottle is long and slim and graduated to 50 per cent, for here the cream is tested for acidity to find out the amount of acid in it, by using an alkaline solution of a certain strength. In nine of cream two or three drops of phenoptaline are dropped. Then the alkaline solution is allowed to drop into it while it is constantly stirred. When it changes color the amount of solution in the test tube used is measured giving the degree of acidity, and is a test by which to judge the ripening of the cream generally about about five or six per cent.

The ripening of cream generally takes from 16 to 20 hours, according to the condition in which it is brought to the creamery. From the refiner it is run into the churn, which can churn and work 800 lb. of butter at a time. The churning takes from 30 to 45 minutes. When the butter has come the buttermilk is let out and the butter is washed with water, salted and worked.

After it is properly worked it is taken from the churn and put into a butter mold which will hold 400 lb. Here it is cut into squares, each containing full two lb. and then wrapped in paper. The butter mold is an ingenious contrivance. The butter is put into it, side and bottom boards having first been put in, the latter just the width of the squares and put in crosswise. The butter is pressed up against a number of vertical wires that cut it into blocks of the proper width lengthwise. As soon as this happens a cutter cuts it crosswise, making a perfect block, and the narrow board on which it rested drops down, making room for another lot of butter for cutting. The eight blocks or rolls are removed with the board they rested on and set aside to be wrapped, and the process is repeated. At present about 200 pounds of butter are made daily and the amount is constantly increasing as more farmers bring their milk.

The milk that is brought in goes through a different process. It goes from the vat to the milk heater, where it is heated to 85 deg. and then runs from the heater to the separator. The separator makes 9000 revolutions in a minute. As milk is heavier than cream, it is thrown by centrifugal force to the outside of the separator, and runs out on one side, while the cream flows out on the opposite side. From the separator the cream runs into the pasteurizer, where it is heated to 160 deg. and then suddenly cooled to 40 deg. The milk goes to a starter and it is sterilized to kill all germs and spores. Then a little lactic ferment, invented by Prof. Storch of Copenhagen, which consists of the desirable germs found in milk, dried and powdered, is put into it. This gives a proper flavor to the cream. After one day in the starter, all the milk but a little is drawn off, a little being left to start a fresh batch. All cream from both vat and separator is put in the ripener and cooled to about 65 deg., and then the milk prepared in the starter is put in with it and revolved in order to mix it thoroughly. The ripener has a water jacket by which it can be heated or cooled as desired. The cream is now tested and when it contains the proper amount of acidity it is cooled down to between 52 and 56 degrees and churned.

The creamery is getting cream from Georgetown, Cool, Alta, Clipper Gap, Bowman, Wolf Creek, and near Grass Valley; also from Lincoln, Loomis, Penryn and Rocklin, and will get some next week from Colfax. On Monday its butter five or six per cent.

The milk for the milk routes is delivered by farmers at the creamery platform and immediately poured into cans belonging to the creamery, which are scaled out each day to keep them sweet.



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PROFESSOR JORDAN WRITES OF EARTHQUAKES.

Dr. David Starr Jordan, in recent issue of the New York Independent, gives his views on the causes of the San Francisco earthquake.

Briefly his explanation is that the disturbance was caused by the slipping northward of the mountain ridge that forms the backbone of the peninsula on which San Francisco stands. The slipping was along the line of an old crevice, technically known as a "fault."

He says: "Most of the earthquake shocks about San Francisco have been due to frictions and readjustments along the line of this old fault. The very violent shock of April 18 was clearly due to this. The old fault in the rock re-opened, breaking the surface more or less for a distance of upward of forty miles. The mountain on the west side of the fault slipped to the northward for a distance of between three and six feet without change of level on either side. The strain on the mountain, whatever it was, became relieved and after various petty tremors of readjustment the earthquake was over.

From the first grinding movement along the line of the fault, waves of intense violence were propagated along the earth. The motion was horizontal, at first back and forth, and then as waves from more

distant points came in, they coalesced into most extraordinary twists.

The result was the snapping off of chimneys and spires as though from the lash of a whip. Brick walls were crumbled and feeble buildings crushed like egg shells. Buildings of steel construction swayed in wide amplitude to the injury of their neighbors. Solid masonry stood fairly well if not too high. Buildings of steel structure were mostly unharmed.

Concrete reinforced by steel wire (Roman construction) bore the shock perfectly. Wooden houses were unharmed as to walls, but generally lost their chimneys, which were often broken off at the base. Pictures and crockery were flung about, and the plaster on the first floor largely thrown off, that of the ceilings being intact. Roofs in general were unharmed.

The direct damage of the earthquake in San Francisco was not great. Old brick buildings were crumbled and chimneys flung about, but the modern steel structures received little if any injury. Even the slender Call building, some thirteen stories high, swayed in perfect rhythm. The ruins of San Francisco was due to the fires, which broke out simultaneously in dozens of places in the closely built wooden district south of Market street.

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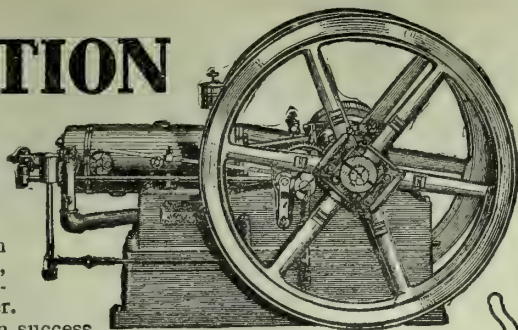
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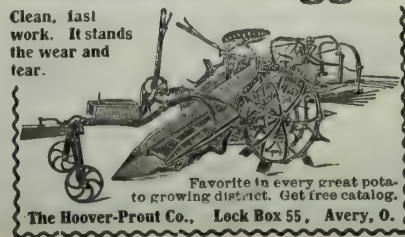
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Vol. LXXI. No. 22

SAN FRANCISCO, SATURDAY, JUNE 2, 1906

THIRTY-FIFTH YEAR

A MONSTER CENTRIFUGAL PUMP.

The pump has been an important agency in civilization ever since history began. In fact the history of pumping has to be traced backward to the misty era which is only now being cleared up by excavations and the recovery of long buried inscriptions and relics. When it was that mankind departed from drawing water with a rope or thong and began to pull or push it with other appurances, it is difficult to determine. But although the art of pumping is so ancient it was reserved for quite recent times to do great things with the pump and to devise forms of pumps which for volume and efficiency in delivery surpass anything which was dreamed of half a century ago. In fact the very present time shows each year designs and construction, motive power and practical uses which are both a credit to modern inventive and economic science and an agency by which this science is enabled to still further advance.

We are led to these rather trite comments by the recent construction and installation by a California manufacturer of a pumping plant which is said to be the greatest of its kind in the world. Its present use is to supply water for a mining enterprise but it is available to drive water in immense volumes for upland irrigation or for town supply or for many other economic

uses. For this reason a brief account, in connection with the portrait of the pump on this page, will be interesting to many of our readers. The installation in this case was in the Rogue River region in Southern Oregon. A dam was constructed in the river. It was a tremendous task, and two years were required to complete it. Over 4,000,000 ft. of lumber were used, and over 3,000,000 tons of rock were filled into the monster cribs, which were first pinned to the bedrock by 40-ft. piling. The dam has a length on the crest of 265 ft.; it is 120 ft. thick on the bed of the river, and is eight feet wide on deck. It has an 80-ft. abutment, 80 ft. wide. The penstock is 120 ft. wide, and has twelve 10-ft. gates by which the water is admitted to the turbines.

The fall of water over the crest of the dam is 20 ft., and this develops 6,000 h. p. At present, four turbines are operated, developing 1,200 h. p., all of which is delivered to the one pump. Two additional turbines are being installed, the power of which will also be delivered to the one pump, that it may operate to its full capacity.

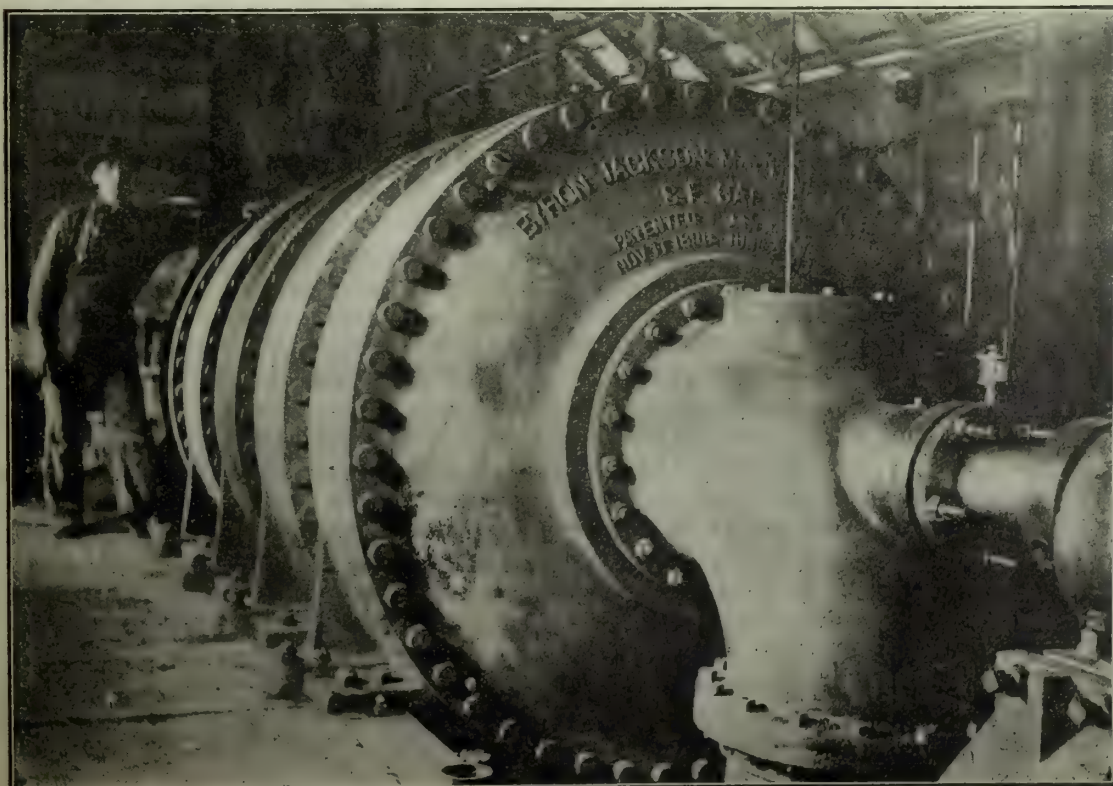
The pump, which is the heart of the plant, is of the five-step centrifugal type. It was built by the Byron Jackson Machine Works, of San Francisco, and is said to be the biggest high-head pump in the world. Its weight is 35 tons, and its tested maximum pressure is 250 lb.; the operating pressure being 185 lb. per sq. in. Its capacity is 13,000,000 gal. per 24 hr., or 9,000 gal. per



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The pumping battery is operated night and day with only a 20-min. stop each evening to oil up. When the big pump is closed down each evening, it releases the herculean force from behind 26,000 gal. of water, the volume required to fill the long pipe-line; to prevent the 170-ft. head from hurling this great weight of water back upon the pump, a check-valve is placed at the base of the pipe-line; and the work of starting the pump against this great volume of water is made simple by first releasing the water through a side-pipe into the race, and slowly closing it, thus switching the pump to the main line by degrees, until it attains its normal working pressure. Both the speed and the pressure of the pump are registered by gauge in the powerhouse.

COMBINED HARVESTERS IN HILLY COUNTRY.

At first the use of combined harvesters was restricted to the flat lands of our broad valleys and it is upon such especially favorable surfaces that they are still used in their largest sizes and with the greatest motive power either of animals or traction engines. As the cheap harvesting which they make possible attracted wider attention, forms suitable to rolling country were brought out by the manufacturers and one of the pictures on this page illustrates the use of such a harvesting plant on a hillside in San Luis Obispo county. The several agencies contributing to the handling of grain in this way are included in the picture, not omitting the proprietor in his open buggy and his lovely daughters in their canopy-covered rig. These features are just as essential to good farming as are the heavy grain wagons ready to start with the product to the station on the landing. We apprehend, however, that the completeness of the picture and the concentration of so many features at one point may be due to a previous knowledge of the approach of the camera angel. It is seldom that you can see so many fine things at one glance when operations are strictly normal.

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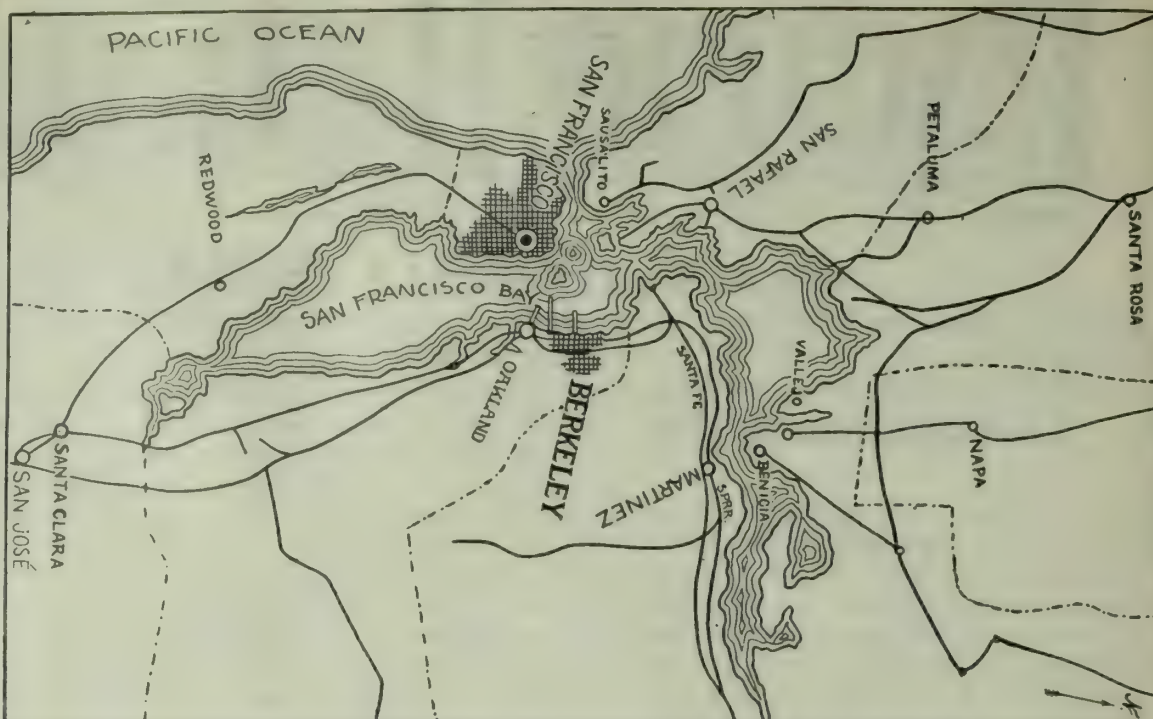
THE WEEK

We trust our readers are enjoying the spring styles in printing which we are presenting in current issues. There is a delightful variety for the journal has ranged over a hundred miles of distance and been hospitably entertained by various printers, each of whom has his own ideas of proper bibs and tuckers for foundlings and as each succeeding arrival has been brought up to kiss papa we have hardly been able to recognize our own offspring. It is, however, only a reversal of the old proverb about the wisdom of the wise son and we gather them all into the embrace of the current volume. Still we cannot help wondering what the antiquarian collector will think of the motley crew a hundred years hence.

The weather has been bad: The weather bureau says it is the worst ever for the month of May and the farmers second the motion. For there is mighty little that is helped by it and much that is hurt. Running quite a way into the interior grain districts on Saturday we saw more down grain and wet hay than ever distressed our agriculturists before. The rain was long and heavy and the wind was strong, and rank growth, encouraged by the abundant moisture of this spring, was just in shape to be seriously hurt. Fortunately the temperature which has followed has been rather low and the wind dry, so that much of the menace of rust and mildew has fortunately been escaped. Still the aggregate field losses must be considerable. The rain continued long enough to injure many cherries, for California cherries are not bred to resist rain at ripening, and the shipments of the later varieties will be less than expected. A number of other things are also hurt, and there will be a considerable amount of extra cultivation to do to kill weeds and restore surface tilth. The gain will be an invigoration of some late planted garden and field crops and a prolongation of verdure on the wild pastures. So far as feed goes the year bids fair to be one of the largest on record. The only question will be whether there is stock enough in the State to make full use of it before another rainy season begins.

In this connection we cannot refrain from our usual comment that when the elements strike the face of the earth harshly California gets the light end of the stroke. This storm for instance which brought us such undesirable May rains, was a general one and our afflictions are relatively small. At the end of last week freezing weather, with heavy frosts in Wisconsin, Iowa and other parts, that badly damaged corn, potatoes and other crops and probably ruined berries and fruits, was reported. Ice formed in some places half an inch thick. At Plainfield, Wis., it was reported that the blueberry crop had been ruined, and apples, currants and other fruits seriously hurt. Snow was reported at Appleton, Wis., and market gardeners and farmers suffered big losses at Eau Claire. Various points in Iowa gave reports of ice and killing frosts, with accompanying crop damage.

Earlier in the spring frosts did much injury to Europe of which reports are now arriving. Consul George H. Jackson, writing from La Rochelle, speaks of more or less severe frosts which covered the southern half of France and damaged in varying degrees the vineyards. Certain exposed sections of the Dordogne and



OUR NEW TEMPORARY LOCATION ITS RELATION TO SAN FRANCISCO

Bordeaux districts felt its severity, while in the regions of the Bouches du Rhone, Var, and Vaucluse no injury was done. The most harm was done in the Midi among the greatest wine-producing departments in France. A condition altogether abnormal presented itself, the vines on the slopes suffering more than those in the bottoms. In certain townships the estimated loss to the vintage of 1906 is 25, 30, or even 50 per cent. This injury on the slopes indicates a blizzard visitation or a sort of a "polar surge" and not from cold air settling in low places. Fortunately our grape crop has escaped such injuries this year and promises to be good and to be worth a lot of money.

How a difficulty may discourage some people and open new enterprise to others is seen in a speculation in pears which is reported from the Sacramento valley. The story is that Mr. Howard Reed, the well-known orchardist of Marysville, has rented the W. P. Harkey pear orchard north of that city for a term of five years. This orchard about two years ago was terribly affected with blight, but through the careful work of the local horticultural inspectors the trees are now about freed from blight. Mr. Reed has a number of large pear orchards in Butte, Yuba and Sutter counties, and is devoting his time to the growing of pears. Mr. Reed is apparently willing to stake his enterprise upon the conviction that pear blight can be held in check by staying with it on the cutting-out plan and he believes also that pears will be worth money because so many growers will give up the fight. The issue is a very interesting one and our sympathies are with Mr. Reed and his brave venture.

We hope no one will go in for plated medals. The report is that the Governor of the State has received between thirty and forty gold medals awarded to the State at the late Lewis and Clark Exposition at Portland, and more are to come soon. These medals, while called gold, are made of bronze, and the recipient is given the right to have them plated with gold and thus make them fill the call for gold medals—that being the custom, it is said, with all exposition authorities. Neither are the medals inscribed; that must also be done by the recipient. Mr. Filcher says that there is money enough left in the California Exposition fund to pay the cost of gold plating and inscribing, and that he will ask the Governor to permit that cost to be paid out of the commission fund. We hope the plating proposition will not prevail. It is better to take a solid bronze medal than one with a film of gold which is to pass as a gold medal. It has been the custom of expositions to make exhibitors pay for gold medals awarded

to them and this may be defensible when the exposition has no funds. In that case the exhibitor pays for a gold medal and he gets a gold medal. To issue sham medals is not worthy of the State nor is it any credit to the exhibitor to have one. Better take it in straight bronze and keep it that way.

The sudden death of M. Theodore Kearney of Fresno while on his way to his summer resort in Europe, removes a man of unique prominence and force from the agricultural circles of California. Mr. Kearney had an abiding faith in the San Joaquin valley and was a pioneer in its development. He was always a leader whenever new and strenuous things had to be done to protect local interests and he enjoyed largely the confidence of the community for his ability, energy and quality of success. Like all forceful leaders he antagonized many people and he was personally popular with very few, but his force and accomplishment were admired by all. His work several years ago certainly rescued the raisin industry from a very perilous position. In his later efforts for the industry, however, he seemed to be too far in advance of his constituency in some respects. Mr. Kearney was possessed of a splendid property near Fresno which he was developing with great enterprise. He was a strong friend of educational effort and especially of scientific research and experiment in the interest of agriculture, and it is reported that he has willed his estate to the University of California for the promotion of agricultural science. This is a purpose which he has long held in view. His name will endure in the history of California.

In our issue of last week we had an interesting account of the progress of the development of the International Institute of Agriculture originated by Mr. David Lubin of California. It is reported from Washington that Mr. Lubin was apparently successful in his efforts to obtain participation by the United States in the work of the institute. Secretary Wilson, who had, it is said, objected to the plan, was seen by Mr. Lubin and Wilson withdrew his objections when the matter was fully explained. A protocol committing the United States to the project was signed in Rome, April 14th, by Ambassador White, and is now in the hands of Secretary Root. It was not forwarded to the Senate for ratification on account of Secretary Wilson's objections, but now that this objection is removed, it is believed the President will transmit the protocol with the recommendation that it be ratified immediately. The institute will meet next September in Rome, and it is probable that Lubin will be appointed commissioner representing the United States. Such action will be noted with great satisfaction in California.

QUERIES AND REPLIES

RYE GRASS AND MORNING GLORY.

To the Editor: In reference to morning glory on pasture lands in your issue of the 12th, let the party making the inquiry plow up his land and sow to oats and Australian rye grass, and he will soon get rid of the morning glory, sure.—SUBSCRIBER, Sebastopol.

Yes; it will work if you have moisture enough in soil and air to keep the rye grass growing during the dry season. What you can do in western Sonoma county cannot always be done on slopes and plains farther away from the ocean. In such places rye grass will die outright without irrigation and morning glory will strew garlands upon its grave all summer.

PLANTING EUCALYPTUS.

To the Editor: I have 40 acres of land in Los Angeles county and I am figuring on putting it out to eucalyptus trees. Will you kindly tell me about how far apart they ought to be planted to get the best results and about what the growth would be in five or six years? Would the growth be greater if the land were well cultivated as for fruit trees?—READER, Santa Cruz.

The best way to plant eucalyptus for forest purposes is to set the plants rather near together, say eight feet apart each way, and cultivate during the first summer after planting. This will induce the trees to grow tall and straight and when they begin to crowd each other alternate trees should be removed for fuel or poles, which are generally in request. As the trees attain still greater size more thinning out should be done. The size at six years of age will depend upon the soil and the amount of moisture they get.

FRUITS FOR THE COLORADO REGION.

To the Editor: Would you give us your opinion as to what varieties of plums, peaches, almonds and apricots you would recommend for this part of the country? We notice that some European plums and prunes, some varieties of peaches leaf out very late. Apricots, Japanese plums and almonds leaf out normally. We have apricots, peach and almond seedlings, which we want to bud soon and wish to get some buds, etc.—PLANTER, Brawley.

Your conditions are so new that no one can tell you in advance of actual experiment exactly what varieties of fruits will succeed. Those most likely to do well are the Newcastle and Royal apricots, Burbank, Satsuma and Wickson Japanese plums, and Drake seedling almond. Peaches having some of the stock of the Peento, or flat peach of China, are more likely to succeed than the Persian varieties which are chiefly grown in other parts of the State. These Peento varieties seem to bear better and to be able to make good foliage where the other varieties fail. You will have to get trees and buds from Southern California nurserymen, as all those propagating deciduous fruits carry these varieties.

FERTILIZERS FOR FOOTHILL ORCHARDS.

To the Editor: Can you give me some information as to what would be the best fertilizers for foothill orchards?—GROWER, Colfax.

For the reinvigoration of foothill orchards you need fertilizers containing the three chief ingredients of plant growth, nitrogen, phosphoric acid and potash. For, although potash is generally pretty well supplied in California soils, some of the foothill soils soon become exhausted of it. It is also desirable that organic nitrogen such as you can secure from the use of barnyard manure or from the plowing in of winter grown legumes, such as peas, burr clover, etc., should be freely added to the soil, both for its enrichment in nitrogen and for its mechanical effect in rendering it more friable and less liable to lose moisture by evaporation. There is no "best" fertilizer, but all reputable dealers can readily supply you with materials to meet the suggestions which we have given.

RAMIE IN CALIFORNIA.

To the Editor: I have a letter from a friend desiring some information about ramie or a fiber resembling it. About what does it cost to produce it? About how much should be allowed for moisture and shrinkage from the green to processed state? Is there a machine on the market that would strip the stuff from the sticks?—ENQUIRER, San Francisco.

Ramie growing has been undertaken spasmodically in different parts of California for the last thirty years, and thus far no commercial product has been attained. The plant will grow both in coast and interior situations very freely, the length of stalk, being, however, conditioned upon the presence of moisture. On the rich, moist, low lands of Kern county ramie stalks have grown to a height of 15 ft., or more. The reason why, in spite of this splendid adaptation of California conditions to the growth of the plant, there is no commercial product is because no ramie machinery or processing has yet demonstrated capacity enough to allow successful competition with the cheap labor in Asiatic countries, whence the fiber is now derived. There is no difficulty about producing a fine sample of ramie fiber, but the economic question of producing it cheaply enough has not yet been solved, although scores of people have thrown away time and money in vain efforts to demonstrate profit in their appliances and processes.

WALNUTS ON ILL-DRAINED LAND.

To the Editor: I have English walnut trees that present a sickly appearance. They are eight years old, and I would be sorry to have them die. The water stood around them during that long rainy period. The soil is adobe.—GROWER, San Jose.

The English walnut, especially on the English walnut seedling root, is certainly very subject to injury from standing water, and such a soil as you describe is, for this reason, not well suited to the growth of walnut, unless it is deeply underdrained. If the trees are not too badly injured you can arrange for their future escape from future injury by putting in tiled drains at a depth of about four feet in the middle of the spaces between the rows of trees. Unless this is done it is likely that your trees will be subject to repeated injury in rainy winters, the amount of injury being directly due to the length of time during which their roots are subject to standing water.

SAND-BINDING PLANTS.

To the Editor: Has the California experiment station carried on any investigations along the line of sand-binding or embankment holding plants? Will you mention any available bulletins or information on results?—READER, Etiwanda.

Our California station has published nothing concerning sand-binding plants, but our investigators have been doing co-operative work with the Department of Agriculture at Washington. A preliminary publication has been made by the department, which you can get by application to the Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.

BURR CLOVER SEED.

To the Editor: Can you give me some information on the methods and machinery used in your State in saving burr clover seed, hulled and clean?—ENQUIRER, Mississippi.

The ordinary way of saving burr clover seed is to sweep up the burrs from the hard ground after the plant has dried and disappeared. On pasture land well set with burr clover one can gather a large quantity of the burrs in this way, having merely to separate them from the small chunks of dirt which are gathered also in the process. More recently a process for hulling the seed has been brought into use, and clean seed has been offered by Jessup & Whelan of San Francisco. Since the fire in San Francisco we have not heard of the whereabouts of this firm and just what machinery they use we do not know. We think it is a recent invention which they control. Possibly a letter addressed to them in San Francisco would be successfully delivered.

FLATTENING OF BRANCHES IN FRUIT TREES.

To the Editor: I am writing to you for some information regarding a disease of the limbs of the Gravenstein tree. I have heard it called flat limb. It is foreign to me, although I have a little on some trees. The limbs flatten as though there has been some pressure on them. On cutting the bark I find the wood porous and easy to break at the diseased part. Will you please inform me if there is anything that can be done for it. The tree appears to be in perfect health otherwise and bears good fruit.—ORCHARDIST, Sonoma.

The flattening of the limbs of fruit and other trees is not due to a disease, but to an abnormal manner of growth known as "fasciation." No one can account for this behavior and no treatment can be prescribed except to remove all such growths at the pruning.

PROBABLY DIABROTICAS.

To the Editor: Will you kindly let me know if there is any remedy to destroy what appears to be the yellow lady bug? They are very destructive on beans, squash, pumpkins and cucumbers. Last year they ate everything that I had. I have tried to smudge them with sulphur but to no avail. If there is a remedy please let me know.—GARDENER, Roseville.

You probably have the striped diabrotica—perhaps the spotted one also. They are not lady bugs though they are something of the same style of a bug. There is no satisfactory treatment for them unless you can drive them away with a smoke from damp straw kindled on the windward side of the patch. When this is done they usually fly to the lee side to get out of the smoke and are driven to other feeding grounds. So far as we know there is no direct application to the vine which is satisfactory.

SOIL COLORS AND THE ORANGE.

To the Editor: Does the color of the soil make any difference for oranges; if so, which is the better color, red or black?—PLANTER, Tulare.

The color of the soil does not in itself make any particular difference in the growth of oranges. It is a fact that most of the commercial plantations are upon a reddish soil, but there are also very satisfactory orchards on black soil. The orange does best in rather a heavy soil, and these are sometimes reddish and sometimes darker in color. It is more a matter of abundance of plant food and of behavior of the soil toward the reception and retention of water than it is of color. There are red and black soils which are suitable for orange culture and red and black soils which are not suitable.

ENGLISH PHEASANTS.

To the Editor: Can you inform me if there are any English game pheasants raised in California, and if so, where and from whom can they be obtained? I am anxious to secure a few pairs for experimental purposes.—READER, Berkeley.

We do not know of any. The pheasant interest on this coast runs to the Mongolian species. If any one has the English let him answer.

PEAR BLIGHT ON THE APPLE.

To the Editor: Can you tell us the cause and remedy for twig blight (I suppose it is) on apple trees? Dead leaves on the end of limbs surrounding a bunch of apples dead also. Is it pear blight? Please accept thanks for the article on "Shot Hole Fungus" and curl leaf by Ralph E. Smith. It is worth a year's subscription. Allow us to express our appreciation of your new issue of the Press from the bricks and ashes of disappointment.—READER, Merced county.

You have the regular pear blight which also affects the apple. What to do in the summer was fully discussed in the Pacific Rural Press of May 19. Thank you for your kind words. You must think of the paper for the present as a message from the green fields and suburban gardens of Berkeley, not from any kind of disappointment. We are rejoicing in the friends which the disaster rendered, not more true, but more expressive.

HORTICULTURE

STRAWBERRY GROWING IN SOUTHERN CALIFORNIA.

By D. Gervais at the University Farmers' Institute at Anaheim, Cal.

As growing strawberries for home and market is almost a new industry around Anaheim, I will try to explain for the information of beginners the usual methods followed, or which should be followed, if one desires to make a success of the berry business.

The failures in strawberry growing are almost without number, and if once we can understand some of them I think we stand a better chance for success.

The chief causes of discouragement and failure will be found, I think, first in poor plants and varieties; second, poor soil, and third, deep cultivation. By poor plants, I mean plants that have become exhausted by improper methods of propagation.

It has been and is now the almost universal practice to allow newly set plantations to bear without any restrictions all the fruit possible, and then to make plants at will. This is a great mistake and one of the most common. If young plants, which have been allowed to bear fruit and then a crop of runners, do not bear big berries or many of them the following season, it is not to be wondered at.

Plants, unless restrained, will fruit themselves into impotency. It is exhaustion, pure and simple. It is reasonable to suppose that plants propagated by these methods become weaker in their fruit bearing organism every year until we hear they are "run out."

To begin with, one should set out only the strongest plants, from mother plants which have never been allowed to exhaust themselves by excessive fruiting. It is a well-known fact that we cannot produce fruit and strong plants successfully on the same plantation. To get big berries and lots of them, all runners as well as fruit buds should be pinched off the first year. This will throw all the strength of the young plants into building up numerous fruit crowns for the following season's crop, and they will then repay with interest for the extra trouble and expense of the first season.

In setting out a propagating bed the plants should be set not less than two and a half or three feet apart each way; this will keep them from crowding and give them room to make large stocky plants with long clean roots.

In setting out a bed for fruit various methods are followed, the most common around Anaheim being to set so as to allow cultivation with a horse; but where land is high-priced and water expensive, I think setting the rows about 20 in. apart and cultivating by hand is the most economical, because giving greater returns from a smaller piece of ground.

The best soil is a rich sandy loam. Cultivation should be as frequent as possible and often enough to prevent ground from becoming too hard.

I believe deep cultivation injurious to the strawberry because if the roots are broken the plants immediately start to repair the damage by growing new roots and a corresponding growth of foliage.

If the rows are far apart and the horse used in cultivation, it may do to cultivate deeply if care is used not to go too deep next to the plants; but I think that land and water and fertilizers are too costly here to spread over the land to admit of such cultivation.

My idea of strawberry growing here is to plant close, in rich soil, cultivate lightly, keep out all weeds and in the fruiting season never allow the plants to suffer for water.

Experience alone can determine just how often the water should be used; scarcely any two soils require the same.

With most growers the variety is an important factor. Some varieties succeed better in some localities than in others under the same methods of cultivation, and one can only tell by experience which is best to plant on their own particular soil. It is well in starting to try several varieties and from among these to keep the best.

At present in this vicinity the Brandywine is giving the best satisfaction, principally on account of its firmness and good keeping qualities. The Arizona Ever-bearing is becoming quite popular for home market, but is too soft for distance shipping. The Excelsior is an early berry, but is inclined to be small after the first picking and is too sour for most people, its principal value being in maturing when the market is bare of other fruit, thus getting the high prices.

SPRAYING FOR PEAR SCAB.

To the Editor: About pear scab—It seems to me the bordeaux mixture, winter strength, is not altogether a success in checking this disease. Two years ago we had a fine crop of very clean pears. We attributed this to our spraying. Last season was a hard season to do spray work, on account of rains. Our pears were very scabby, but we accounted for this because of not being able to spray at the right time. This season has been a very good season for all kinds of spray work, and we determined to leave nothing undone to secure a clean crop of pears. The trees were thoroughly sprayed with lime, sulphur and salt the end of February. About four weeks later they were again sprayed with winter strength bordeaux mixture. At the time of this spraying many buds were ready to open petals, but the bulk of them were just ready to open into flower buds. Ten days later the orchard was in full bloom. While blooming, no scab was found on either such pears as had already formed, nor on the young leaves. Still it was decided to spray again as soon as most of the petals had fallen to make assurance doubly sure. While spraying this third time (also with winter strength bordeaux mixture) a good deal of scab was observed, and at present writing the scab could not be much worse had they not been sprayed at all. The sprays were well made, and thoroughly applied at 120 pounds pressure. Now I submit that some result should have obtained from all this spraying—at least the crop should be cleaner than if not sprayed at all. This is not the case, yet the same bordeaux mixture has controlled the peach curl leaf perfectly. It is very discouraging to try and raise pears under these conditions, and it seems to me we will have to quit, if steady spraying has no effect. Any suggestions will be greatly appreciated.—PEAR GROWER, Napa.

[We are very glad to have this frank description of experience. The writer is a man in whose observation we have great confidence. We do not at this moment undertake explanation. We desire to have free conference with other pear growers. Will such give us their experience for publication?—Ed.]

WHITE ROOT ROT OF FRUIT TREES.

A disease likely, if not checked, to prove destructive among fruit trees is found to be caused by a fungus belonging to the genus *Rosellinia*, the spawn or mycelium of which spreads below the surface of the soil, extending rapidly from the root of one tree to another. The following information concerning the features of this attack has been taken from an article in the bulletin of the Kew Gardens, London.

Amongst the numerous root diseases of various plants caused by parasitic fungi, none are better known, or extend over a greater area, than the Pourridie of the French, which occurs in France, Italy, Switzerland, Austria, Southwest Germany, and has recently been recorded from several widely separated localities in Britain. The fungus causing this disease is called *Rosellinia necatrix*. It frequently devastates vineyards and orchards; its attacks, however, are unfortunately not confined to vines and fruit trees; potatoes, beans, beets, etc., are also destroyed, and Hartig states that the mycelium soon kills young maples, oaks, beeches, pines, and spruces.

The mycelium first attacks and kills the youngest rootlet, and then enters into the larger branches of the root, in which it rapidly spreads and forms an irregular network of slender strands; finally bursting through the cortex and enveloping the roots in a snow-white, fluffy mycelium, here and there running into slender, cord-like strands, which traverse the soil, and by this means spread from one tree to another. At a later stage of development, numerous minute, black compact masses of mycelium or sclerotia are formed in the cortex of the roots, and from each of these spring slender spines, each of which bears an abundant crop of conidia or reproductive bodies at its tip. In addition to the white mycelium, a very characteristic pale brown or olive mycelium is also present on the surface of the roots, formed of septate or jointed threads of variable thickness, having pear-shaped swellings at intervals; these swollen portions finally become free by the disappearance of the intermediate portions of the mycelium, and form bodies capable of germinating and giving origin to a new crop of mycelium. Under certain conditions some of the sclerotia, instead of producing the spine-like bodies bearing conidia, become converted into hollow spheres or pycnidia, containing in their interior numerous minute reproductive bodies or stylospores, which germinate at once and produce new plants. Finally, the highest, or ascigerous form of fruit is rare, and only develops on old trunks that have been dead and decayed for a long time.

Rosellinia necatrix is almost entirely confined to heavy clay soils, where the water drains away with difficulty, whereas *Rosellinia glomerata*, an allied, but much rarer fungus, with a similar destructive habit, hitherto observed only in France, is met with attacking plants growing in loose sandy soil, where the subsoil is wet.

Preventive Measures.—Owing to the habit of the fungus in penetrating and spreading in the living tissues of the root of its victim, cure is practically impossible when a plant is once permeated with mycelium; and keeping in view the varied modes of reproduction, facilitating the rapid spread of the disease, no efforts should be spared for preventing this when the presence of the fungus is once detected.

Undoubtedly the most frequent and rapid mode of spreading is by means of the mycelium traveling in the soil, and a good method of isolating diseased patches is to cut a narrow trench, from nine inches to a foot deep, round each, care being taken to throw the excavated soil on the diseased portion, and not outside of it. This method, which was first suggested by Hartig for the purpose of preventing the spread of subterranean fungi in the German forests, cannot be too strongly commended, especially where the diseased patches are small in area. The amount of success depends entirely on the thoroughness, combined with an intelligent method of carrying out the work. Half attempts invariably result in a loss of time and labor without benefit. It may be enough to point out that the disease may be spread by the spores of the fungus, by infected soil carried on the shoes of laborers, by dirty tools, wheels of carts, animals, etc., from diseased centers. Diseased and fallen trees, and especially stumps and roots, should be at once destroyed by burning. The soil surrounding diseased stumps should be burned after the stumps have been removed, so as to destroy the smaller diseased portions of the root that remained behind. Quicklime should be mixed with the soil in places from which diseased plants have been removed.

A second preventive method, which has proved of service in France, is to lay bare the trunk as far below the surface of the soil as can be done without injury to the tree, and to densely coat the exposed trunk and adjoining soil with powdered sulphur.

Stagnant water should not be allowed to remain in the soil, as this favors the spread of the fungus.

NATIVE WALNUTS FOR STOCK.

To the Editor: There are hybrid walnuts all over the State; it is simply a matter of selection, requiring but a little horticultural knowledge and observation. In Stanislaus county, for instance, about Crow's Landing and Newman, are many walnut trees of gigantic proportions, with nuts of all sizes and types from the true native black to fair samples of the Eastern black, and leaves varying from the glossy, finely pinnate of the former to the coarser foliage of the latter. Nuts of both were planted in small numbers many years ago by some of the pioneer settlers; nature hybridized the two species, and the nuts have been indiscriminately gathered and planted with the results shown. In the nursery row from nuts planted this spring the hybrids may readily be detected even now. Photographs that might be taken of some of these grand trees in Stanislaus would make finer pictures than any that have yet been shown. The rapid growth of these hybrids is a well established fact; their comparative value as a stock for the French varieties is, as the Editor has explained, as yet undetermined. Growers should remember that it is not always the most rapid growing tree which makes the hardest and most enduring root. The greatest obstacle to real horticultural development and advance is the enthusiasm—ofttimes misplaced—of the amateur, the man who, with some other calling or profession, follows horticultural pursuits as a fad or recreation.

LEONARD COATES.

Morgan Hill.

That is certainly true, and yet we have to credit the faddist with making breaks which have a tendency to prevent too dense conservatism.

THE GARDEN

TOMATO DISEASES.

The University of California Experiment Station is very busy along plant disease lines trying to catch up with the many maladies of fungus and bacterial origin which are making growers of plants much trouble. We are, in fact, in this State much farther behind in the understanding of our plant diseases than of our insect depredators, because more men and more public money have been used in coping with insects. Attention has, however, been continuously paid to plant diseases for the last score of years, and Mr. Newton B. Pierce, of Santa Ana, from whom we had an interesting letter in our last issue, has labored diligently and self-sacrificingly for many years and accomplished very much in exploiting the specific causes of these diseases and in the ways to overcome them. His work is now proceeding along broader lines than ever, as we hope to find space to explain in the near future. There is, however, room in California for a host of well-trained plant doctors, as our recent experience with a dozen men fighting the pear blight clearly shows. But in spite of all that has been done, some recent undertakings are very significant, like that with the asparagus rust which we recently described. Prof. R. E. Smith, who did that work so well, has also found time to take a shot at our tomato troubles, and has also taken up work with the peach trouble while still continuing his work with the blights of the pear, the walnut, the lemon and the beet.

We give in this issue some news of one of the tomato troubles—the one which has, perhaps, attracted most wide attention because it causes the plant to collapse in the summer, when everything seems best to favor its growth. This is the trouble which we, in our amateur comments on the subject, have attributed to bacterial agency, but Professor Smith shows that the cause is a fungus which he fully discusses in an extract which we make from his publication as follows:

Under the term "blight" is commonly designated in California a tomato disease which is known everywhere in the State in greater or less abundance, and occurs not infrequently as the cause of losses up to 100 per cent of plants between half-grown and maturity. This is here termed the "summer blight," to distinguish it from another disease to be described later. The disease seems to have been known longest in its severe form in the San Joaquin valley. Losses of entire fields of good-sized plants have been known there for several years, and in fact this has come to be almost the rule in that section. In Alameda and Santa Clara counties the disease has frequently been seen on occasional plants, but has not been considered as of any serious importance. In Southern California this blight has been the cause of considerable loss in recent years. In 1905 the disease was probably more general than ever before, completely ruining many fields in Southern California, almost all in the San Joaquin, and causing a loss of from 1 to 50 per cent of the plants in fields all over the State.

The principal effects of this disease are seen in the main or canning crop of tomatoes grown in summer, and in the last of the early crop. The plants, after being set out, usually reach considerable size, blossoming and setting fruit before showing the disease. It first appears here and there in the field on single plants, which begin to fall behind the others in growth, grow somewhat spindling and generally sickly looking, and gradually turn to a dull, unhealthy color and begin to wilt. The leaves do not blacken or suddenly die, but the whole plant gradually sickens, wilts, fades away, and finally collapses upon the ground and becomes entirely dead. The disease comes on gradually in the field, affecting plants here and there in a very scattering manner. In the worst cases they all die before the summer is over, and sometimes all quite suddenly at the last; again, the field goes through in a spotted condition, with plants missing more or less extensively. If a badly affected or dead plant be pulled up, the roots are found to be decayed or destroyed. When first affected this is not the case; if a plant is pulled up as soon as it begins to show wilting and fading, the roots look healthy and sound. But if such plants be carefully dug, to avoid breaking off the smaller roots, it will be seen that many of the larger laterals are decayed at the ends and in bad condition. These parts are broken off, and very likely are not noticed if the plant is pulled out of the ground by force. By careful digging any plant which shows the symptoms of the disease at all can be seen to be affected in the manner of a dry rot of the roots, commencing at the ends and working up.

Cause.—This trouble has been commonly referred to as the bacterial blight, an Eastern tomato disease. It is not that disease, however, nor has the latter, so far as the writer is aware, ever been found in this State. The effect is somewhat similar, though not decidedly so.

In the California disease the decayed roots show at all times a typical root-rot fungus of the *Fusarium* type. Fungi of this sort live in the soil and cause root or stem rot diseases of a great variety of plants. The fungus grows into the roots and flourishes particularly in the large water-conveying ducts of the central portion. These become filled with the fungous growth and the supply of water is cut off from the plant above. The present disease is now under investigation by this department, particularly as to the identity of the *Fusarium*, and the manner of infection of the plant. Affected plants obtained last season from Yuba City, Fresno, Merced, Niles, Milpitas, Los Angeles, and Whittier showed in all cases a disease apparently the same. The root decay seemed always to begin at the ends of the smaller roots, at a considerable depth in the soil, gradually working up into the tap-root. The plant above ground remains free from the fungus, simply wilting and dying from starvation and lack of water. How the fungus spreads and in what manner plants first become infected are questions which must be determined before any definite method of prevention can be suggested. Growers state that the disease occurs abundantly in plants started in new soil and planted in new land. It is hoped to determine this and other important points during the coming season.

A *Fusarium* disease of watermelon is very prevalent in some localities where the tomato trouble occurs, but whether the two have any connection has not yet been determined. There also appears to be at least one very common species of *Fusarium* indigenous to our soil. Mr. C. O. Smith, a graduate student of the College of Agriculture of the University, is at present engaged in a study of all the *Fusaria* occurring in the State. In the *Fusarium* disease of the garden aster described by the writer in 1901 (Bulletin No. 79, Massachusetts Experiment Station) it was found that plants which died in the field were only those which had become infected in the seed-bed, while healthy plants did not get the disease after being set out in the field. In this case the *Fusarium* caused a damping-off of the seedlings. The latter is also apparently true with tomatoes, though the matter has not yet been thoroughly investigated. The California tomato disease appears somewhat different from the "Sleeping Disease" or wilt, described as being caused by *Fusarium lycopersici* Sacc., being strictly a root rot, confined to the soil.

Control.—Pending further investigation of this disease, little can be said concerning methods for its control. Great care should be taken to make the seed-bed of absolutely new material, and to plant the field where the disease has not occurred. Spraying the tops is perfectly useless, since the trouble is entirely below ground. Experimental plantings are planned for this year, on infected and new soil, both in the seed-bed and field, and on sterilized soil. Methods of soil treatment will also be considered. The matter of resistant varieties is also worthy of some attention, particularly in selecting seed from resistant plants in fields where the disease is abundant.

THE FIELD

POTATO GROWING.

By Mr. George L. Wagner at the University Farmers' Institute at Anaheim.

Perhaps no plant needs a good, rich soil, or pays for it better than the Irish potato, and yet how many are there who are negligent in the selection and preparation of their potato ground.

Soil of a sandy loam nature is the best adapted for the growing of potatoes. The ground should contain an abundance of humus so that it will remain loose and mellow, thus giving the tubers a chance to grow. Virgin soil, old alfalfa patches or land on which an abundance of green vegetation has been plowed under, will make good potato ground. Plow deep at least two times, the last time just before planting, and then thoroughly pulverize. Do not crop too often or use scabby seed, as the ground will become infected with the scab germ and potatoes produced will be unmarketable. Dipping seed potatoes in a solution of corrosive sublimate, two ounces to 15 gal. of water, for one hour and 15 min. will destroy any germs that may be on the potato.

Select seed of medium size, smooth and well formed. Letting seed remain in the sun for from four to six weeks will better mature eyes.

Cutting of potatoes is a subject on which a great many have different opinions. Some claim they have better success when seed is quartered, others when cut in halves; some plant large pieces and some plant small ones, while still others tell of mammoth crops having been grown by peeling the potatoes thickly and planting the peeling. Although we have tried several methods our best success has been obtained by clipping off the seed end and cutting one eye to a piece.

Varieties.—The variety to plant depends largely on the market for which potatoes are to be used. For early market Early Rose and Early Clark are generally planted. For summer shipment to Colorado, Arizona, Texas and New Mexico, it is necessary to have a potato that is a good shipper, tough and firm, namely the Snowflake and Pearls. For a fancy potato, one that will take the place of the fancy northern Salinas in quality and appearance, the Burbank has proved itself to be the best.

Planting.—In the spring plant at a depth of from three to four inches, and from five to six inches in the fall to keep seed from rotting. The rows should be at least three feet apart and potatoes planted from 15 to 17 in. in the row. Before potatoes are up harrow thoroughly to destroy small weeds and loosen the surface of the ground. When about three inches high cultivate close and deep, as it is injurious to the plant to cultivate close after plant is large.

Spraying for Blight.—As the bordeaux mixture is a preventative, not a cure, potatoes should be sprayed before blight appears. It is best to spray when plants are about five or six inches high and at intervals of 15 days until the vines have received their growth. Five pounds bluestone and five pounds fresh unslacked lime to 50 gal. of water is the formula generally used.

Irrigation becomes a necessity when the natural moisture is insufficient to properly nourish the plant; but persistent cultivation will do away with a great deal of irrigating and thereby produce a better quality of potato.

Marketing.—Los Angeles almost always furnishes a good market for our fall grown potatoes, while Arizona, Texas, New Mexico and Colorado generally take the surplus in the summer time.

It is very essential that we grow a fancy potato for our home market as the north can produce immense crops of poorer quality potatoes at a great deal less expense than we can, and it is only by growing fancy potatoes, which are always in demand at good prices, that we can compete with the north. We must put up an article on which we are not afraid to put our name or brand. It is only the product that is put up right that we can recommend to the wholesaler, and he to his customers, to be as represented, that commands the best market; and many farmers make a great mistake in trying to run in a few inferior potatoes or chills or whatever it may be, and thereby spoil the appearance of the balance.

MORE ABOUT GROWING CHILI PEPPERS.

In our issue of May 19 we gave some advice about growing chili peppers in Southern California from an essay read by Mr. Allan Knapp at the University Farmers' Institute at Anaheim. The following concludes Mr. Knapp's suggestions:

Preparation for Field Planting.—To prepare a field for chilis it should be plowed deeply. Then shallow cultivation is all that is necessary until planting time, which may commence when danger of frost is passed. The chili plant is very sensitive to cold. May 1 is a good time for planting. Mark fields off in rows four and a half feet apart and set plants two and a half feet apart in rows. Should the weather be dry and irrigation necessary plow a furrow beside each mark and run water in these furrows before and after planting, and if weather be very hot two or three irrigations may be necessary to start plants. Always allow 24 hours after irrigating before plants are set, unless soil is very sandy. Then work may commence sooner.

When through with furrows, plow back in its old bed and cultivate land and you will have it level as before. Keep soil in good growing condition always. When plants are 12 to 15 in. high use a ridger, with plenty of space open behind and straddle each row, thus drawing the earth to each side of plant and giving it support. Water may be run down these rows at this time. As plants grow make the ridge wider with a crowder run in between each row. This ridge will keep plants from breaking down so readily when laden with fruit and when fruit strikes the ground it will not decay so readily because ridge will be dry. Do not make your first ridging too high, and do not do the work too late; if so, the first setting will be greatly injured by pushing the earth against the fruit, thus leaving no room for it to grow, and many pods will be curly and eaten by bugs.

Gathering and Curing.—From September 1 to October 1 the fruit will begin to ripen, the time of ripening depending upon the soil and the care of the crop. In sandy soil the fruit will ripen quicker than in deep sediment. If you allow the crop to want for moisture very much they will ripen faster. It looks good to see them ripen, but keep them green as long as possible. Some growers have their crops half harvested before I commence, but in the round-up I know I am ahead.

The crop should be picked as each setting ripens; go over the field three or four times. A pod should be

left on the vine until of a dark red and it has lost its hardness, it being somewhat pliable. Have the crop gathered in large baskets. I prefer to have them hauled in boxes rather than sacks, as they are less liable to be bruised, and a bruised pod is liable to decay unless dried at once. If chilis are to be dried on strings have them dumped on a table or on the ground, as you prefer. Allow 24 to 48 hours for stems to wilt after gathering before they are put on the string. This work is done by running a twine through the stem of each chili, the twine to be 10½ to 11 ft. and same may be hung on a scaffold to dry or put into especially made evaporators. Some growers report favorably on drying their crop on trays instead of on twine.

Now that the product is dried all that remains to do is to prepare it for the market, and market it. But these are important points. Before sacking see that every spoiled pod is taken out; put up every sack in such a manner that you are not ashamed to put your name upon it; and do more than that; guarantee the goods. And if it happens to be not as you represent it, take it back or make it right with the buyer. If a man intends to stay in any business he must deal fair and square or he may be crowded out. I say this because poor chilis put on the market are as bad as frozen oranges or a poor grade of walnuts. In short, it hurts the trade.

ALFALFA GROWING IN SOUTHERN CALIFORNIA.

An alfalfa grower gives the Rural Californian his experience in this way: In Southern California alfalfa will do fairly well on almost any land suitable for grain-growing or orchard purposes where water can be secured in abundance for irrigation. As a rule every farmer and orchardist who has such land will find it to his interest to at least grow a sufficient quantity for home needs.

There is, however, a difference in the adaptability of soils to alfalfa growing; hence one who has chosen this industry as a part of his business should carefully select his location, as success or failure depends on the choice made. A porous subsoil which will take in water freely, can scarcely fail to give large crops if properly irrigated. There is ample fertility in almost any of our mesa lands to produce well, provided the roots can freely penetrate the subsoil; but there are tracts of land with fine surface soil which cannot be made to produce heavy crops, simply because neither the water nor the roots can penetrate the underlying hard pan or tough subsoil. I have had some unpleasant experiences in this direction, against which I would warn the inexperienced. In selecting land for this purpose, one should not be guided by surface appearances; he should dig down and find what is under the surface, or else he may be greatly deceived.

Preparing the Land.—Burn or remove all weeds and rubbish from the surface before plowing. Carefully gather the old tin cans and remnants of barbed wire fences or other debris, which some enterprising neighbor may have dumped on your land, dig a hole sufficiently large and deep to bury them way beyond the reach of the plow. Then if there are small mounds or hillocks which need to be removed with the scraper, it is much easier to do it before plowing the whole surface, as the low places where the dirt should be dumped may then be readily seen. Whatever leveling is needed should be done with reference to the location of the irrigation ditches. It is important that the general lay of the land be accurately ascertained, either by employing a competent engineer, or by the actual running of water. After the ground has been leveled as thoroughly as possible with the scraper, it should be plowed and the surface carefully pulverized. All dead furrows should be filled, and some suitable instrument used to make the surface level and smooth. A piece of square timber, 25 or 30 feet long, weighted down so as to make a load for two teams—one hitched at each end—and drawing it sideways over the land, will level the surface as well or better than any other contrivance that I am acquainted with. As this is done rapidly, it is well to go over the land two or three times, changing the direction each time. This will put the ground in fine shape for irrigating, provided the general level has been secured; in addition it will somewhat pack the loose ground, and thus prevent the young alfalfa plants from drying out if the north wind should blow, and enable the roots more readily to fasten in the soil.

For convenience and economy in irrigating, a ten-acre plot should be divided into three or four equal blocks. I have had considerable experience with five-acre blocks, 20 by 40 rods; but I have always found them too wide for the easy and equal distribution of water. The water would stand over parts longer than necessary, other parts not receiving enough.

Seed Required.—The amount of seed sown is not a matter of half so great an importance as the manner

of sowing and covering. Nothing heavier than a horse-rake lightly run over the ground should ever be used. A brush or a considerable bunch of brush fastened together answers the purpose well. All that is wanted is to imbed the seed somewhat with the fine dirt on the very surface. It does not matter if much of the seed appears in sight. Indeed, if the sowing is followed by a heavy rain, or by flooding the ground so as to insure a moist surface for four or five days, it is all right without any covering at all. Two years ago I sowed a block, and when about half of it was lightly covered, a heavy rain drove us in. I never had a finer stand, the uncovered part being just as good as that which was covered.

Thus treated, 10 lb. of seed to the acre will grow a very thick stand, even more than is needed. I once sowed 10 lb. per acre on one-half of a 10-acre plot, and 7 lb. per acre on the remaining half; after it came up no one could have told the difference—it was all abundantly thick. If you cover lightly and see that the ground is wet by rain, or by flooding, 10 lb. of seed per acre is plenty; but if one insists on covering with a heavy harrow or an orchard cultivator, as grain is covered, an investment in seed will be required, as a very small portion of the seed so sown will germinate.

After sowing and seeing that the ground is properly wet, nothing further will be required till the ground needs irrigating. When the young alfalfa is six or eight inches high it should be mowed. This will check the weeds, and cause the alfalfa to branch and to grow with much greater vigor than if left uncut. Through the first season the ground should have a good flooding after each cutting, and oftener if needed. It will grow all the faster if flooded once in every three or four weeks. If sown in the winter or early spring, the first season ought to make three or four tons per acre if properly cared for. However, the first season's crop will vary greatly on different soils—much more than in succeeding years.

Making Hay.—It is well to begin cutting quite early in the spring, especially if one has a good deal to cut; but no definite date can be given, as the seasons differ greatly. It is a mistake to wait for the alfalfa to become large and show signs of blossoming. But cutting the early growth at about the time the warm spring days begin to come, though it may make only a light crop, the new growth will start with vigor, and at the end of the month—when ready to cut again—you will probably have a ton per acre more than if two cuttings had been thrown into one, while the hay will be of better quality.

Fox-tail grass often spoils first cutting hay for horses, but if cut before the grass head begins to harden it is harmless.

Throughout the season care should be taken to cut promptly when the alfalfa has reached a proper growth for making first-class hay. Of course there are different opinions as to what the "proper growth" is. I can only give my own and the reason for it, viz.: it should be cut before the stalk begins to harden, as it does when the buds mature and the blossoms begin to open. If it stands longer the quality of the hay deteriorates much more than the additional growth can compensate for; nevertheless there are those who prefer it to stand longer, claiming that it makes better feed and possesses more substance.

Another point in favor of early cutting is that cows will then eat the stalks clean, while if allowed to stand till in bloom and the stalks become woody, they cannot be induced to eat them, at times wasting one-fourth.

GOOD ROADS

CALIFORNIA ROAD MAKING.

By Col. J. J. Steadman of Los Angeles at the University Farmers' Institute at Anaheim.

The good roads problem in California is much more easily solved than in most of the States of the Middle West. Our soil is largely composed of decomposed granite; it is easy to work at certain seasons of the year, and exceedingly difficult to handle at others. Until within the past few years we have depended for our thoroughfares upon the old State roads made by the early padres; we have, therefore, not given the attention we should to the character of our soils which enter into the manufacture of good roads.

Today the question which appeals to us is, how can we adapt our soil to our roads to best advantage at the least cost to us.

Heretofore our supervisors seemed to hold only one thought in mind: to do the work required for the present without regard to future results. This is false economy and a waste of the people's money. It has left us a system, or lack of system, of the worst kind, one which has given California the most abominable thoroughfares, as a general proposition, to be found

north of Mason and Dixon's line. But public sentiment is being awakened on this subject and the dawn of a better day is coming for our public roads in this State.

At a most interesting session of a farmers' institute held at Covina, recently, J. H. Reed of Riverside made the statement, in effect, that that city had expended \$60,000 on its roads. That seems a large sum, but when you travel over the Riverside roads you readily see where the money has gone and you appreciate its value in price at which real estate is held on lands adjacent to these roads. Other communities are expending large sums on their highways and the interest is growing.

One of the first things to consider in road building is expense. Under the old way of making and repairing our roads we paid enormous sums and yet got very little; under the modern system we pay out little and get a great deal. That's the difference.

The Road Drag.—The split log drag is the modern farmer's road grader, road evener, and road smoother, and the simplicity of the invention is what makes it so valuable. Now as to its simplicity. Generally it is constructed of a log, or telephone pole, 8 to 12 in. through, sawed in the middle, and from 7 to 10 ft. in length, according to the strength of the team to be used in handling it. Bore three two-inch holes through each half in such a manner that the rear half, when set on edge, will stand 16 in. to the left of the front half. Bore three two-inch holes in each slab; connect the slabs, facing the same direction, with three stakes or rounded 3 by 3's long enough to leave three feet space between the slabs after the connecting pieces have been driven into the holes and the edges wedged. Two or three planks can be nailed to these cross pieces, affording a place for the driver to stand, and, at the same time, strengthening the drag. Use a chain or small rope for attachment to the doubletree. Supposing the drag to face west, and assuming that a chain is used, fasten one end of the chain to or around the left-hand outside connecting brace, letting the chain pass over the top of the slab. If attached to the face of the slab near the left hand end, the chain would interfere with the movement of the dirt toward the end of the drag. The drag is run on an angle of about 45° so that dirt can be thrown towards one side. The other end of the chain must be fastened to the face of the front slab near where the righthand connecting piece comes through. Shoe about three feet of the bottom edge (righthand side) of the front slab with a piece of iron or steel of the right length, about three inches wide and a half inch thick, with one edge sharp or beveled. Put it on securely letting the sharp edge project about half an inch below the edge of the slab. This shoe will enable the drag better to shave the surface and cut down hard ridges.

The drag is now complete and does not have a nail or bolt in it except to hold the shoe on, and will cost from \$3.50 to \$5 and will last from five to seven years, depending on the frequency of use. A very satisfactory addition to the drag as described is made by taking a large iron ring made of three-eighths-inch iron and have a blacksmith heat and draw one side of it into an extension which will fit over the links of the chain so as to hold position without slipping.

Uses of the Drag.—The split log drag possesses one important advantage. It kills the weeds on the side of the road. Used after rains—not when the roads are muddy—it will break down the weeds and so change the face of the road that it will not permit seeds to germinate.

The split log drag, if worked towards the center of the street, will produce a convex surface and by using it once a month during both wet and dry seasons, will give a smooth, hard surface, although not free from dust, of course.

It should be remembered that the split log drag should be used after rains, when the ground is soft, but not sticky, for then it will add an additional layer of earth to the surface and at the same time fill any chuck holes which appear.

Mr. King, the ardent advocate of the split log drag dissuades the use of the road grader preceding the drag, but this depends upon conditions. If the roads are to be made up, after being allowed to go to pieces, a road grader is just the thing to do the preliminary work, for it leaves the dirt where the grader can catch it and render valuable assistance in depositing it in chuck holes—which the grader then makes smooth. But as a general proposition we believe that with the split log drag better work can be done on the dirt roads than is possible with a grader. The grader itself requires the strength of at least one team to pull it on good roads when it is running empty. The grader will deposit a large mass of soft earth in the middle of the road just where it is not wanted and just where it will collect a large amount of moisture with each succeeding rain. The purpose of the split log drag is to maintain the hardness of the surface under all conditions of weather.

FRUIT PRESERVATION

DYEING CHERRIES.

Consul-General Robert P. Skinner, of Marseilles, was asked by a California correspondent to ascertain by what method French glaze or preserved cherries are dyed, as they command a higher price than California cherries in the American market "solely on account of color." The inquirer adds that French cherries possess "a beautiful deep-red color that is bright and clear, although they lack the flavor of the home-grown fruit. We could increase our sales many fold if we could color our cherries artificially as they do in France." Mr. Skinner replies:

French candied cherries are first bleached with sulphurous acid and then dyed in the course of manufacture with an aniline preparation known commercially as "rose nouveau." In former times carmine powders made of cochineal were used, and are still in use in a limited way for very superior products, but the aniline color is cheaper, and I am notified by four of the leading houses exporting to the United States that they use the cheaper material. One of these four houses writes as follows:

"The fruits invoiced by us are colored with 'rose nouveau,' a dye authorized in France after analysis by the Municipal Laboratory of Paris. All our labels bear the mention 'artificially colored,' to conform to the American custom-house regulation. The boxes of 'chinois verts,' plums, and angelicas, although containing no coloring matter, bear the mention 'colored with sulphate of copper,' in order to prevent any possible difficulty with the customs."

The "rose nouveau" is a methylated and ethylated derivative of coal tar, and may be purchased of Jacques Sauce & Cie., Les Mureaux, Seine et Oise; L. Legludic & Cie., 20 Rue des Francs-Bourgeois, Paris (3); and Perigne, Lesault & Cie., 6 Rue de Thorigny, 3e, Paris. The price per kilogram (2.20 lb.) is from \$4.82 to \$11.58, according to the quantity taken, mark, etc.

Jacques Sauce & Cie. advise me that their "rose nouveau" is likewise utilized in the manufacture of colored biscuits, sometimes alone and sometimes mixed with dry carmine, which they also sell. Carmine may be obtained in liquid form of L. Fichot-Landrin, 15 Rue Montorgueil, Paris; Perigne, Lesault & Cie. (address above), and A. Durban, 35 Rue des Francs-Bourgeois, Paris. (This cochineal color is more expensive of course than the other.)

Changing Fruit Color Does not Improve Value.—Although I am not asked to moralize, but to furnish facts, I venture to suggest that the future of California preserved fruit and every other natural product may be improved in the long run, if the packers will carefully refrain from the exercise of those merely decorative arts presumed to appeal to the public taste. It may be doubted if any great portion of the consuming public is either deceived or flattered by the artificial gorgeousness of fruits which have been boiled until their natural color has departed and then dipped in aniline dye. Though the preparation may be perfectly harmless, it certainly contributes nothing to the excellence of the finished article, and the knowledge of these facts tends to hold in check the public demand.

The use of sulphur bleach upon thin-shelled almonds has actually diminished the demand for these nuts in this country, I am told, for the reason that the kernels are sooner or later affected, acquiring an acrid taste which nobody likes. As applied both to almonds and walnuts the sulphur bleaching process is, furthermore, frequently a species of mild fraud, as it enables the dealer to mix nuts of old and new crops and different countries, give them the same shade, and get the same price. It is presumed that public taste requires a nicely bleached nut although I know of no intelligent individual who really objects to the honest color of a walnut or almond shell, especially when that color is a guarantee of the quality of the kernels.

Process of Coloring.—Vice-Consul Brown sends from Lyons the following directions for coloring cherries:

The fruit is selected, washed, stemmed, and spread upon slat frames of wood underneath which at intervals basins of sulphur are placed; the cherries are subjected to the fumes of the ignited sulphur until they are of a uniform color, which is usually yellow. A quantity of the coloring matter (rose nouveau) is dissolved in a liter of cold water. Then the cherries are placed in an earthen pot with a little of the coloring liquid, dissolved sugar, and glucose, glucose being used only in sufficient quantity to prevent crystallization and souring and to keep the fruit soft. The mass, after mixing, is turned into copper kettles and boiled slowly for about ten minutes. It is then all turned back into the earthen vessel and allowed to cool for two or three days to permit the coloring matter to permeate the fruit. If the color is not as desired a very little more coloring matter is

added and the above process is repeated sometimes fifteen or twenty times, or until the desired color is obtained and the glaze process finished.

My informant tells me that one and a half kilos (kilo, 2.20 lb.) of this coloring matter is sufficient to treat 10,000 kilos of cherries. The fresh cherries cost about 6 to 7 c. a kilo and after being treated by this process they are sold at 36 to 42 c. per kilo.

THE POULTRY YARD

THE POULTRY BUSINESS IN CALIFORNIA.

To the Editor:—The State Agricultural Society has made some investigation of the chicken industry as conducted in California, and finds that while failures occur, as in all lines of industry, they are less frequent than in most other callings. On the whole, the chicken business in this State is growing and prosperous, and the communities where it is obtaining a foothold find their business being converted from a credit to a cash basis. Less capital is required to begin with in proportion to income than in most other lines of industry, and the returns are surer. Floods or drouths or unseasonable frosts do not materially affect the output. The market is close at hand, the pay is always cash, and the prices are generally satisfactory. Big farmers in California have been disposed to regard it as a little business, but its profits have begun to attract big men and superior talent.

On the question of capital required to start a poultry farm large enough to comfortably support a family of say five persons (man, wife, and three children), we have some figures from Colonel L. C. Byce, of Petaluma, who has been identified with the business in that great poultry center almost from its infancy, who has had great opportunities for a study of the industry, and who may be regarded as an authority.

Land required, from three to five acres, five preferable; cost, approximately \$500. Character of land, sandy or gravelly soil preferred, next best sandy loam, adobe least desirable. Land should have natural drainage, and if the slope is toward the east so as to have the benefit of the early morning sun, so much the better. Cost of five-room cottage, \$1,200 to \$1,500, according to finish; barn suitable for horse and cow, \$150; poultry houses, \$20 per 100 fowls, or \$240 for 1,200; a six-foot, two-inch mesh wire fence, about 15 cents per running foot, or for five acres \$280; horse, \$150; cow, \$50; wagon, \$100; well, pump, pipe, and household furniture, \$250; poultry stock, \$500; incidentals, \$30.

These figures, which are based on the cost of buying all material and hiring all help, counting the house \$1,350, aggregate \$3,600. They mean good land, a good house, a good horse, good wagon, good cow, good stock, good fence, and fairly good outbuildings. A family can start with a much cheaper house, with a poorer horse and poorer wagon, and other articles of less cost, and thus cut the total very materially; or by the man and his boy giving a hand in helping to build the house, the fences, the barn, and the chicken houses, the quality of the articles in the first estimate can be had at a very much less cash outlay.

On this place one acre can be devoted to family orchard, garden, stable yard, and house yard, and four acres to poultry. Colonel Byce says, "This will suffice to keep from 1,000 to 1,500 laying hens. Usually, one can keep 300 to 400 laying hens to the acre of land. Of course, where it is desired to raise a number of small chicks calculation must be made for them. One-half acre of ground is enough land on which to raise chicks to replace the old fowls." It must be borne in mind that the business requires diligent and intelligent care, and the more chickens one undertakes to maintain on any given sized piece of ground the more vigilance is required in keeping the place clean.

It is safe to estimate that the cost of feed will average \$1 for each hen per year. The more green feed the garden produces the more this figure can be reduced.

"The profits," Colonel Byce says, "depend much on the man—the care, attention, and intelligence he puts into the business." Some are making as high as \$2.25 per hen per annum, but \$1.50 per hen is a good average. Some, from lack of attention and careless habits, struggle to get along; others, more shiftless, fail entirely. In this it is like all other business. Most men, however, do well and many make money. On the whole the business is profitable, and for the frugal and intelligent man with limited capital, affords a better income in California, along with a more agreeable occupation, than any other industry.

In this connection it may be mentioned that notwithstanding the improved methods adopted and other stimulus to the business in late years, the average price of eggs in the United States for 1904 and 1905, about 25 cents, is higher than since the war period, when the

average jumped from 15 c. in 1862, to 20 c. in 1863, to 28 c. in 1864, and to 35 c. in 1865, the highest ever recorded. After that the price gradually lowered to an average for the period from 1860 to 1900 of about 20 c. per doz. Since 1900 the prices have gradually and uniformly tended upward.

THE RANGE

CONTROL OF GRAZING ON THE PUBLIC LANDS.

Now that the government grazing policy is in successful operation on the national forest reserves, the question has arisen whether the same or some similar policy might not be applied to the open public range.

The policy of the forest service is not to hold the reserves out of use, but to secure their fullest and most permanent use. To this end, grazing under proper restrictions is permitted. Happily, these restrictions have thus far met with general approval.

From the first, the importance of fitting the regulations to local conditions has been recognized. Rules occasioning needless hardship to stockmen have been modified, and emergencies demanding instant action have been promptly met.

When a new reserve has been proclaimed all stock grazing upon it is allowed to remain during the first year; if, afterwards, this number is found to be too great for the resources of the range, it is gradually reduced. Stockmen are aided in effecting a satisfactory distribution of their stock upon the range and in securing from it the most profitable and permanent use. Small stock owners living in the vicinity of the reserves are given such preference in the allotment of grazing privileges as will protect their interests. First occupants of the range and farmers owning improved lands adjacent are also preferred. The rights of large owners based upon the range custom of the past are recognized, and reductions in the number of their stock are required only when necessary to protect the range or the grazing rights of bona fide settlers.

Necessary range divisions between owners of different kinds of stock are made, and controversy between sheepmen and cattlemen is promptly ended. Where necessary, the construction of drift or division fences is also allowed, provided the area fenced is not greater than the needs of the stock owner.

Outside the forest reserves, however, is an area of public land, estimated at 400,000,000 acres, which has no present value except for grazing purposes. On this land grazing is wholly unrestrained by law. Commercial interests, great and small, have competed for its use, and the result has been abuse of the range. Millions of acres have been recklessly overgrazed and practically ruined. In his last annual message the President says: "It is probable that the present grazing value of the open public range is scarcely more than half what it once was or what it might easily be again under careful regulation." Some stockmen have, to the exclusion of others, possessed themselves of the strategic positions—that is, the lands controlling the streams, springs and other watering places, and by this means have secured temporary control of the adjoining grazing lands. Charges of fraudulent entry have led to litigation. Great areas have been illegally fenced. Again, stock owners, notably sheep and cattle men, have defended their conflicting claims by force of arms, causing serious loss of property and even of life.

Obviously such conditions should be corrected by law. The remedy would seem to be to apply to the open public range the regulations already governing the forest reserves. This conclusion is strengthened not only by the success attending the forest-reserve policy, but also by the effect of fencing the public grazing lands. Though illegal, this fencing has in most cases greatly improved the condition of the area inclosed. Care, however, must be taken to avoid the application of sweeping and ironclad regulations to an area so vast and to conditions so different. The investigations of the Public Land Commission show that immediate application of any inflexible rule to all grazing lands alike, regardless of local conditions or grazing values, would be disastrous, and that improvement must be sought through the gradual introduction into each locality of such form of control as is specifically suited to it.

In his message, already referred to, the President says:

"The best use of the public grazing lands requires the careful examination and classification of these lands in order to give each settler land enough to support his family and no more. While this work is being done, and until the lands are settled, the Government should take control of the open range, under reasonable regulations suited to local needs, following the general policy already in successful operation on the forest reserves."

Should the policy thus suggested be established by law great good would undoubtedly result.

THE IRRIGATOR

THE WILLOWS DISTRICT OF GLENN COUNTY.

Everything is moving toward the beginning of irrigation on the national plan in the Willows district of Glenn county. The district has recently been mapped by members of the United States Geological Survey. It comprises the better part of Glenn county.

The area as a whole—embracing 230 square miles—is level and most of it is well adapted to farming. Running southeast from the northwest corner is an old wash—evidently from Stony creek, which lies just to the north—that leaves numerous gravel pits. As agricultural lands these areas are impossible, but they afford gravel for the best roads in the valley.

Sacramento river winds along the eastern edge of the quadrangle and the Southern Pacific railroad traverses it from north to south near its western boundary. Transportation of the grain crop is thus assured. The protect them in their relations with the railroad and ranchers have a co-operative boat line which serves to the other steamship lines.

There is a narrow, irregular strip of overflow land along the river. Where this has been cleared, remarkable garden plots are found in which corn grows to a height of 14 ft. and muskmelons of delicious flavor approach in girth the size of an ordinary watermelon.

In the early days of settlement a strip of land, five miles wide, that followed the river, was granted by Spain to private parties. This strip and much of the country even farther from the river is still held in large tracts. It is cultivated in a most progressive manner. Not infrequently from 12 to 28 mule teams may be seen on gang plows in the same field. A large traction engine is sometimes used for hauling the plow or the harvesting machine, which is a composite harvester, including mower, thrasher, and farming mill. Sacks filled with grain and sewed up ready to market are dumped regularly from its side as it moves back and forth across the field. To avoid the danger of fire from sparks crude petroleum is used for fuel in the engine.

During the winter, when the grain is growing, the outlying plow camps are deserted except for the goose herder who patrols his regular beat through the fields all day long and on moonlight nights. He has a good rifle and uses it to disperse the enormous flocks of wild geese that leave the ground bare where they alight. This pest is naturally attractive to city sportsmen, who often visit the fields.

The central irrigation canal, which is nearly completed, will irrigate the southeast third of the quadrangle. The land is being subdivided into smaller tracts and the future looks bright to the purchasers.

The quadrangle is named for Willow, an enterprising town of 1000 inhabitants, which is in the southwest corner and on the railroad line. Germantown lies seven miles to the north, and in the northwest corner is Orland, another village. The survey of the quadrangle was made in co-operation with the State of California.

THE SALTON SINK SPECIAL.

A map representing parts of California and Mexico has recently been published by the United States Geological Survey which is of unusual interest at this time. The area covered is widely known as the Salton Sink, a great depression in the Colorado desert which has been much discussed lately, owing to the threatened formation of a large inland sea where there is now a thriving community.

About 8000 people have settled in that part of the basin known as the Imperial valley and are raising excellent crops of barley and alfalfa. Stock farms are numerous and experiments in raising the date palm are in progress. The freight shipments from Imperial, a town only four years old, rival those of Los Angeles in value, and are said to exceed those of any other town in Southern California.

The existence of this peaceful community is, however, seriously endangered by Colorado river, which strangely enough is also the source of all its prosperity, as it is this stream which furnishes water for the irrigation system. The absence of any controlling works at the head of the main canal has resulted in diverting the river from its old channel and permitting the entire flood-flow to enter the irrigation system. This is causing great damage to the ditches and crops, and is forming a large lake, which now covers about 250 square miles, at the lowest part of the sink. The Southern Pacific railroad has been obliged to rebuild many miles of tracks.

The map of this region, which is called the Salton Sink Special, shows on a scale of about eight miles to an inch, all the principal towns, roads, canals, and drainage lines. Contour lines also indicate what the future sea may cover at different altitudes.

THE MARKETS

San Francisco, May 29.

The San Francisco markets do not show any great improvement this week over last as far as an increased demand is concerned. Nevertheless produce and commission houses are getting into better shape and are confident of an improvement in the situation from week to week. The demand, however, has unquestionably been considerably reduced and it will be some time before the city can absorb the same supplies as formerly.

WHEAT.

For the first time since the fire there was an informal meeting of the Merchants' Exchange on May 23. Since then there have been daily gatherings, though little or nothing is done. Some samples are exhibited on different tables, but there is very little inclination to transact cash business. A little speculative dealing has developed, though there have been few actual sales. As a result prices in the local market are more or less uncertain. Last Friday \$1.27½ was paid for a small lot of May wheat and \$1.30 for December, but so far very little actual business is being done at these figures. The feeling, however, is that wheat is a little stronger than it was a week ago. Reports of poor crops have been coming in from all over the world and these have tended to bolster up the market along the coast. From now on the situation depends entirely on weather conditions in countries where the crop has not yet matured. Advices from Europe are that cargoes are arriving freely and that there is now on hand an abundance of wheat to meet present needs and enough on passage to supply requirements for the immediate future. In Oregon and Washington there is very little movement and the situation there does not show much more life than in California. Holders of wheat all along the coast seem agreed that higher prices are justified and they are holding firmly for a raise. The crop situation in the Pacific Northwest has been improved by light rains. In California crop prospects have not changed materially during the week. The general idea is that the crop, while fair, will not be up to the expectations of a couple of months ago.

FLOUR.

There is practically no change in the flour market since last week. The local demand caused by the destruction of stocks in the fire continues and millers are fairly busy in consequence. Altogether about 1,700 tons of flour reached San Francisco from the north during the two weeks preceding May 8. Since then, no considerable receipts have arrived from that direction. Shipping is being generally resumed and it is expected that exporting in small lots to South America and Asia will be resumed. Japan has announced an additional 10 c. per barrel duty on flour to go into effect on October 1, and millers are anticipating some little increase in the demand from that country between now and that date. Chinese importers do not seem to be interested in flour at present, though it seems that the boycott is gradually wearing off.

BARLEY.

Not a great deal of movement is expected in the barley market from now on until the new crop begins to make its appearance, which should be by the middle of next month. Present holdings are very light and, notwithstanding a rather slow demand, buyers are having considerable difficulty in securing either feed or brewing grades. Some stocks are held in Oregon and Washington, but these are in strong hands and can only be had at high figures. The crop outlook in California is good, and with the near approach of harvest, California buyers are anxious to buy only for immediate needs. Spot barley is being held at from \$1.15 to \$1.17 with the bulk of the business done at the latter figure. The general idea is that December barley is worth about 97 c. but in the absence of official quotations from the Merchants' Exchange prices for future barley are hard to fix.

OATS.

With the gradual setting of conditions the oat market is developing strength, particularly in the higher grades. The demand for oats, and especially for those suitable for cereal purposes seems to be general all over the coast. Cereal millers have already laid in a large supply and are not lacking for stock, though they still continue in the market. Oats for feed purposes are not being bought largely here on account of the scarcity, but in the north considerable buying of feed oats is reported at prices far above the average. No. 1 white was sold in Portland a few days ago at \$32. Eastern oats are being shipped into Oregon and Washington from Dakota and Minnesota, having been attracted by the high prices. These eastern oats in bulk are selling at \$27 per ton.

HAY.

The hay crop of California is being rapidly harvested and receipts at San Francisco are on the increase. There is still, however, a shortage at this point. The total receipts for the week were 2,585 tons in comparison with 1,970 tons for the week preceding. The railroad companies are still unable to care for all the hay offered as they are giving most of their attention to perishable freight. There has been no material change in prices, though it is expected that when shipments come in more freely prices may ease off to a certain extent. Some hay is now arriving at Oakland, one or two cargoes having come in during the last few days. It is not expected, however, that the shipment of hay to Oakland by water will reach very large proportions. Twenty carloads of timothy hay from the Blue Mountain district of Oregon have been bought for export to the Philippine Islands.

MILL STUFFS.

There has lately been a fair amount of business in progress in all lines of feed stuffs and as arrivals continue light prices are ruling firmer. The greater activity of the flour mills is expected to have some effect and an increase of receipts of wheat products may be expected. A large number of inquiries are coming in for August and September deliveries, though millers are reluctant to book too much future business until they can more definitely figure out the flour trade. In the north, mill stuffs are in good demand with nearly all varieties being held more firmly. In San Francisco bran is held at from \$19.50 to \$21 per ton, middlings at from \$27 to \$30 per ton, shorts at from \$21 to \$23 per ton and rolled barley at from \$26 to \$26.50.

WOOL.

Some little interest has been manifested this week in the wool sales at Red Bluff. The opinion prevails here that the prices paid were high and that the growers may consider themselves lucky. So far the sales have ranged from 21 to 24½ c. with very little going at the top figure, although considerable was sold above 23 c. Considerable wool also changed hands at Corning, though the bulk of the holdings at that place are still unsold, owing to the divergence in views of values as between growers and the buyers. Practically nothing is being done in San Francisco in the wool market, though there is some little activity at Stockton.

BAGS AND BAGGING.

The State Board of Prison Directors has concluded the purchase of more than a million and a half pounds of jute to be worked up into grain bags at the San Quentin prison. The bag situation is still in a very unsatisfactory condition from the grain growers' standpoint, and prices are about as high as they were last week. Some grain growers declare that they will build granaries and store their wheat in bulk rather than pay the present high price for bags. There is some talk of arrival of bags by steamers in time to supply the need of the California wheat crop, and it is possible that prices may ease off in a few weeks.

WINE.

For the time being the wine market is considerably demoralized as a result of the recent fire. According to some reports the total loss of wine during the fire amounted to about 40,000,000 gallons or an amount about equal to the annual output of the State. Probably as much more remains in wine cellars outside of San Francisco. Some portion of the wine from the burned wineries which collected in cellars will be pumped out and distilled to make brandy. Other reports claim that the total of the wine lost in San Francisco will not aggregate over 15,000,000 gallons, and it is probable that the true figures are somewhere between the two reports. The outlook for the coming season is still a matter of conjecture, although the vines so far are in good condition and the present weather is favorable to the growing crop.

DRIED FRUITS.

But little interest is taken in the dried fruit market as far as present supplies are concerned. Practically all supplies were wiped out by the fire and most of the dried fruit now in the city is in the hands of the retailers. In the East some interest is being manifested in spot prunes and apricots. The New York supply of apricots is very small and fancy grades are now quoted as high as 14½ c. There is considerable room for speculation in the coming pack of dried fruits. With an average crop the presumption is in favor of a large pack. Owing to the destruction of the fruit canning establishments in San Francisco, the competition of the canners for choice fruit will not be so keen as usual. The shipment of fruit east must, however, be counted on, and as this is assuming larger proportions every

year, it is fair to assume that the driers will be compelled to pay pretty fair prices for all grades of fruit suitable for shipping in the fresh state.

FRESH FRUITS.

The fresh fruit market in San Francisco has been fairly active during the past week. Early apricots have sold at \$2 per small box and the first Royal Ann cherries have been bringing from 6 to 7 c. per lb. loose. During the last few days, however, cherries moved rather slowly and canners did not seem to be interested at the present figures. The rains have, it is thought, practically ruined the early cherry crop and much damaged fruit will probably be thrown on the market within the next few days. Strawberries have been in fairly liberal supply during the past week and with lower prices there has been a good demand. The outlook was for a material improvement in the strawberry trade up to the coming of the rain, but present reports indicate that much damage has been done to the berries and that first-class stock will not be ready for the market again for several days. Loganberries are beginning to ripen and some raspberries are expected within a few days. Currants are in good supply and prices are lower. Gooseberries are plentiful, but the demand is poor. The outlook is for continued light supplies of apricots as the rainy weather has prevented ripening.

VEGETABLES.

The vegetable market has been rather dull this week owing to larger supplies. The quality as well as the quantity has shown an improvement, but buying continues to be very limited. The fact that the population of San Francisco is still cooking largely in the streets and with very poor facilities contributes to the general slack demand. New potatoes have, however, been in good request and are a trifle firmer, old potatoes are in excessive supply and are being sold at a wide range of prices. Fancy asparagus is being held at \$3.50 per box with very few buyers. Rhubarb, cucumbers and string beans are in good supply, but the market does not clean up very readily. The San Francisco trade continues to hope for better things. In Oakland, while the demand is more regular, it is easily satisfied and quickly reflects any over-supply. Rhubarb and peas, and in fact most lines of vegetables, are rather weak in the Oakland markets just now.

DAIRY PRODUCE.

The butter market continues fairly steady although the volume of business is so far inconsiderable as compared with the volume done before the fire. The demand is, however, fairly steady and at present prices about equal to the supply. The dairy exchange is now quoting butter in extras, firsts, seconds, packing stock No. 1 and packing stock No. 2. Extras are bringing 18 c. per lb. Receipts of eggs are not very heavy and the market is usually well cleaned up. In Oakland, prices for eggs show increased firmness and butter remains about as last week. Cheese is weak and even with the present limited receipts is in over-supply. This applies to both San Francisco and Oakland.

POULTRY.

The poultry market is about the same as last week with a good demand for good fat hens as well as for full grown young roosters. Heavy stock throughout is selling quite well, but there is practically no demand for light stock of any kind. At the present time there is only a nominal market in San Francisco for turkeys, ducks, geese and pigeons, except that a few young pigeons have been sold at \$1.50. In Oakland the market is characterized by an over-supply of small stock, some small broilers being marketed at as low as \$1 per doz.

LIVE STOCK AND MEATS.

The live stock market is getting in better shape and receipts are now being disposed of readily. No. 1 steers are quoted at 7½ c., sheep at 4½ to 5 c. gross weight, and hogs, rangings from 140 to 250 lb., at 6 to 6½ c. The other varieties are selling at proportionate prices.

PATRONS OF HUSBANDRY

TULARE GRANGE MEETING.

To the Editor: Tulare Grange convened in regular session on Saturday the 19th. The committee on county mutual insurance for Tulare county reported that a letter had been received from State Insurance Commissioner Wolf, saying he had received from C. L. Russell Esq. the application for his, the commissioner's approval, and that he had written to him, Mr. Russell, that the application was informal. Mr. Russell has not received such a letter, although the application was sent to the commissioner on March 20, nor can he imagine in what way the application is informal, in as much as it was

copied from the form of applications used by other county mutual fire insurance companies which were approved by Commissioner Wolf.

The National Grange bill now before the Senate of the United States, exempting denaturalized alcohol from internal revenue tax, it having passed the House of Representatives, was considered and a committee appointed consisting of Brothers Styles, Jacob and Fowler, who formulated resolutions favoring the enactment of the bill. The report of the committee was adopted and the secretary directed to send copies of the report to United States Senators Flint and Perkins.

The payment, by the county, of premiums on county officials' bonds, given by security companies, was discussed and by resolution condemned as an unjust graft on the taxpayers of the county. The salaries of county officials is ample for all services required, including the cost of official bonds. Its payment by the county is uncalled for, is unjust, and no official should be allowed it by the auditor. Nor should any county treasurer pay it. That the further payment of such premiums may be stopped the secretary was requested to send copies of the resolutions condemning them to the different county conventions or where the county conventions have been held, to the county committees of the respective political parties, requesting their condemnation of the graft. The Grange, however, approves of security companies' bonds. It thinks, too, that if any act of the Legislature says that such premiums may be paid by the counties, it is a sneak enactment which our representatives in the Legislature should not have permitted to go on the statute books. Its existence therein is an object lesson in the necessity of the recall.

Bro. P. D. Fowler, horticultural commissioner for Tulare district, spoke on the subject of the day, "For Income Purposes, What Fruits Should We Raise on Our Tulare Farms?" Bro. Fowler has had long experience and much opportunity of observation on this subject. His conclusions are that for the foothills and adjacent country navels and Valencia late oranges are the most profitable, owing to soil and climatic conditions, but that grapes and deciduous fruits of a superior quality can be raised there; also, that for the vicinity of Tulare, grapes first, prunes, peaches both drying and canning, apricots and early plums, where the orchards receive proper care, will always pay, but dairying and stock raising will always be profitable industries owing to great abundance of forage plants and salubrity of climate.

Next meeting will be June 2, "Children's Day."

J. T.

Tulare.

POMONA GRANGE IN ALL DAY SESSION.

Pomona Grange met at Campbell recently in an all day session. Orchard City Grange had made ample provision for a large attendance and the local grange was not disappointed, there being a very representative gathering from all over the county, and Grand Master W. V. Griffith, of Geyserville, was also present.

The morning session was taken up largely with routine matters appertaining to the grange. In addition to this some resolutions were adopted, one endorsing the proposal for the immediate appointment of a County Entomologist, recommending that the Supervisors use their best judgment as to a reduced salary for a few months to help tide over the effects of a shortage of county money. Another resolution was passed endorsing the project of the State Grange receiving reports from all local granges as to crop statistics throughout the state and in turn keeping the different granges posted as to crops, prices, etc., that the interests of the growers might be better served.

The grand master installed Mrs. Frank Mitchell into the office of Goddess Pomona of the state grange, she being elected at the last state grange meeting.

The grand master also made an interesting address to the members.

At 12 o'clock the visitors and local members adjourned to the banquet hall, where well filled tables were prepared under the able management of Mr. and Mrs. Parker Keith, Mr. and Mrs. Parso and Mr. and Mrs. Disque.

The afternoon session was an open one and the program was in charge of the worthy lecturer of Pomona Grange, Mrs. Gordon, assisted by Mrs. Laura Foster of Orchard City Grange. A duet by Mrs. Mildred Spencer-Hartman and Mrs. M. E. Luther was much appreciated; they were accompanied by Mrs. David Schuyler. A reading by Mrs. Gordon called forth an encore, both selections being well received.

The remainder of the afternoon was taken up by the address of J. Luther Bowers on his new idea of preserving prunes in their natural state. Much attention was given the speaker as he outlined the feasibility of the plan in its various aspects. He presented letters and

recommendations from many prominent wholesalers and others after having examined the fruit as canned by Mr. Bowers. Many of these claimed that the market could not be supplied if the product shown was a fair sample of what could be depended upon in the future.

STOCKMEN HOLD ANNUAL MEETING.

The annual meeting of the Stockmen's Protective Association was held last Sunday forenoon. The annual assessment of \$1 was levied to cover the expenses of the association for the ensuing year and Treasurer Schluter was instructed to send out notices stating that the assessment was now due and payable and would be delinquent on July 2. The secretary has instructed to notify all contracting firms working in this section to caution their employees about setting out fires. The secretary was also instructed to communicate with County Fire Warden Chas. Schween of Pleasanton and request him to attend a special meeting of the association Sunday for the purpose of conferring over the appointment of a deputy and to discuss measures for co-operation in the prevention of range fires. Officers were elected for the ensuing year as follows: President, John McGlinchy; treasurer, Wm. Schluter; secretary, J. J. Callaghan; executive committee, Peter Moy, Michael Mulqueeney, H. M. Christensen, Thos. Holley and P. Connolly.

CORRESPONDENCE

CROPS AND SACKS.

To the Editor: We add our felicitations to your renewed issues of the Rural Press, even at this late date.

It is some time since we talked weather. No one would have predicted two inches of rain and upwards for the last week in May. Since 1884, when heavy rains fell as late as June 14, no such rains have occurred. In fact for three years in succession we are having late spring rains. The two last years have been wet seasons in Southern California, with hardly the average in Central or Northern California.

This last two inches of rain the farmers consider uncalled for. It beat down the grain so that it will not only be difficult to harvest, but will be darkened and a good deal lost. Fields have shown a 20 to 25 sack to the acre growth. This yield and others will probably be reduced 25%. The damage to the hay will also be considerable, but that is not with us a commercial crop—only enough being grown for local use, none exported. As regards the bean crop, one of our staples, the general opinion is that it will benefit them, only causing more expense to weed out. Apricots are a remarkable failure, worse than in any frosty season. Seven inches rain in March damaged the blossoms. Sugar beets are on top this season; they rejoice in the late rains.

Now a word about sacks. Sacks have advanced under a trust combine 2 c. since the fire and then they were already 1 to 1½ c. above the San Quentin sack price.

That San Quentin sack making is a farce. They always manage to play into the hands of the combine by a peculiar method of their own, by shortening up the supply. The average amount of sacks used in the State is well known. Instead of manufacturing anything like a reasonable proportion of the demand they put out only a very small part of it, perhaps 25 or 30%. Now why do the representatives of our farmers not look into this matter. If the State can manufacture say 5,000,000 sacks, why can't they double or treble it? Every single year there seems a studied shortage in the output, which has the result of forcing up prices, so that this year, for instance, Calcutta sacks are held up for 9½ c. in San Francisco. The amount burned in the city was not enough by itself to cause this rise; shortage in the State's supply, with good crop prospects, has done it. The crops may not be as large as anticipated earlier.

L. E. BLOCHMAN.

Santa Maria, Cal.

THAT PARCEL POST BILL.

To the Editor: With all sympathy to you on account of your great losses in the recent calamity we congratulate you on your ability to keep up the paper as well as you do. The friends of your Rural Press would not find fault if you could not do so for a time. Such times as this all have their hands to lend and we trust you received ample help in different ways. Such are my best wishes to you; I wish I could do more.

I also wish to mention that there is too much expected in my opinion in Bill H. R. 4428 in Rural Press, May 19. The weights of parcels should be reduced one-half, at same rates quoted; but I hope the bill may pass now, as it is.

M. J. PETRAN.

1178 Park St., Alameda.

HOME CIRCLE

AS THE HEART OF SPRING.

Billows of tender green
Toss where the south winds pass,
Flooding the fields with emerald sheen,
Sheen of the growing grass.

Little soft leaves that flush
The hills with a thousand shades,
Born of the sun-drawn sap's mad rush,
Mantle the slopes and glades.

And many a song-bird sings,
Winging its homeward way,
And many a fragrant wild flower flings
Its breath to the breeze to-day.

Ever as fresh and fair,
Seasons may pass untold,
Yet never a spring and they not there,
Beautiful as of old.

All that the eye may see—
The hills, with their golden lights—
The depths of their purple mystery—
The sheen of their sun-kissed heights.

The glamor of sunlit ways,
Fragrant with blossoming—
These are as old as ancient days,
Yet young as the heart of spring.
—Julia E. Goodwin.

RUTH.

She stood breast high amid the corn,
Clasped by the golden light of morn,
Like the sweetheart of the sun,
Who many a glowing kiss had won.

On her cheek an autumn flush
Deeply ripened—such a blush
In the midst of brown was born,
Like red poppies grown with corn.

Round her eyes her tresses fell;
Which were blackest none could tell,
But long lashes veiled a light
That had else been all too bright.

And her hat, with shady brim,
Made her tressy forehead dim.
Thus she stood among the stooks,
Praising God with sweetest looks.

Sure, I said, heaven did not mean
Where I reap thou shouldst but glean.
Lay thy sheaf adown and come,
Share my harvest and my home.
—Thomas Hood.

HOME AGAIN.

Babe, be good to daddy,
Mother isn't here;
Babe, be good to daddy,
Lie still, that's a dear;
That's right, chew your thumb and coo,
Daddy's all alone with you,
If you yell what will he do?
Daddy's full of fear.

Babe, be good to daddy—
Yes, indeed, you can
Have whate'er you long for.
Here's a painted fan
That your mother prizes high,
Here's your mother's beads and, why!
Here's dad's watch! Now by-o-bye,
Be a little man.

Babe, be good to daddy,
You're a lump of bliss!
Babe, be good to daddy—
What? You want a kiss?
Mother's upped and gone away
To the neighbor's—upseaday!—
Guess her mind's made up to stay,
Stay all day, you wis.

Babe, be good to daddy—
Now I hear her call!
Babe, your mother's home again!

Hear her in the hall?
Swing her beads around with glee,
And her fan—Here! Let that be!
Give that watch back here to me.
Squalling! Well, then, squall!
—Houston Post.

HOUSEHOLD HINTS.

Sweetbreads With Scrambled Eggs.—Parboil and cut up one sweetbread. Beat four eggs, add one-fourth teaspoonful salt, dash of pepper, half a cupful of milk and the sweetbread. Put two tablespoonfuls butter in a hot chafing dish and add the mixture, stirring until it is of a creamy consistency.

Egg Salad.—Slice one dozen hard boiled eggs, add one dozen small onions chopped fine, season with salt and pepper and cover with salad dressing.

Oranges in Syrup.—Score the oranges all over in imitation of some ornamental design, representing basket work or trellis work, and then simmer in water until nearly done through. They must next be put into cold water for twenty-four hours, changing the water every three hours. At the end of this time they should be drained in a sieve for several hours, then placed in an earthen pan and covered with a hot syrup made by boiling three pounds of sugar and one quart of water for five minutes. For three successive days let the syrup be boiled up and skimmed, and when nearly cold pour back upon the oranges; after the last time the oranges may be put away in jars, and used for dessert when required.

Cocoa Pudding.—Make a custard with three eggs, two cups of milk, three rounding tablespoonfuls sugar, three level tablespoonfuls of cocoa, one-half teaspoonful vanilla. Butter small moulds or cups and fill two-thirds with fine breadcrumbs, then pour in enough of the custard to fill the cups. Set in a pan of hot water and bake in a moderate oven until firm.

May Blossom Cake.—Beat to a cream three-quarters of a cup of butter, with one of sugar, add one-half cupful of sweet milk and two cupfuls of flour; then beat separately the yolks and whites of ten eggs, and after beating thoroughly together add to the cake mixture; stir in two teaspoonfuls of baking powder and lastly a cupful of blanched almonds. Cover with a white icing and place almond meats on top to suggest blossoms.

Mutton Mince.—Fry one onion sliced thin in a rounding tablespoon of butter, add two tablespoons of canned tomato and a pinch of finely minced parsley. Add one cup of rich stock or gravy and when it boils up add the minced mutton, heat and serve.

Green Peppers and Rice.—Wash the green peppers and cut a slice from the top of each. Take out the seeds, leaving not even one. Cook in boiling water for ten minutes, fill with hot boiled rice, lay a rounding teaspoon of butter on each, put on the cover which was cooked with the other part. Set in a buttered baking pan for about ten minutes. Serve hot.

Molasses Puffs.—Beat together one-half cup of sugar and one-half cup of butter, add one cup of molasses, one beaten egg, one level tablespoon of ginger, one level teaspoon of soda, one cup of hot water, a pinch of salt and four cups of flour. Beat and bake in buttered gem pans.

HINTS TO HOUSEKEEPERS.

To keep the mouth healthy, the teeth should be brushed every morning with warm water and the mouth rinsed out after each meal. It is a good plan to use borax or bicarbonate of soda in the water for cleansing the mouth, as this tends to counteract the acidity of the saliva which is often injurious to the teeth.

For wagon grease or tar spots rub well with kerosene while the grease is

fresh; then wash out in cold soft water, using no soap. Kerosene will remove ink stains and fresh paint, while nothing takes out blood stains better than cold soapsuds to which kerosene has been added.

Irons that have been put away sticky should be well scraped with a thin knife, then rubbed with a rough cloth moistened in kerosene.

To clean a kitchen range, after using, rub well with an old newspaper, which removes the grease, and then black it when cool.

Blankets washed in the following way are soft and light as new: Mix a tablespoonful of pulverized borax in a pint of soft soap, make strong suds in cold water, put in the blankets and let them remain all night. In the morning work them up and down with the hands, and put them into another tub of cold water; rinse them through three waters, and hang them up without wringing. When they have hung a little while turn them half round. Choose sunny day with some breeze.

White paint may be cleaned by rubbing it gently with a soft flannel dipped in a paste of whiting and water, and adding a little soap powder.

After each brushing the comb should be run through the brush and then carefully wiped off.

Paint that has dried on window glass may be removed with hot vinegar.

Silk that has been stained with mud may usually be cleaned by rubbing well with a piece of flannel. If the stain will not come out try rubbing with a piece of linen that has been dipped in alcohol.

THE BLACK SHEEP.

"I always said he'd never come to any good. Nothing more can be done. He's had his last chance, and now he must just go down—down to his natural element."

It seemed a harsh judgment, and it was delivered without any apparent sign of sympathy or sorrow, albeit the man who uttered it was father to the reprobate under discussion, and the man who heard it was his cousin and partner, James Pritchard. Pritchard was Garvice's junior by about ten years, and a more human, kindly man. He had often been angry and indignant at the doings of the ne'er-do-well, but he did not like Garvice's speech; moreover he was not sure but that his son had heard it. For it had been made quickly, and of a set purpose as the door was shutting, after Charles Garvice, the younger, had heard his sentence, which was banishment from the office he had dishonored and the home he had broken up by his misdeeds.

"Softly, softly," murmured Pritchard, rising quickly. "I guess he's had just about as much as he can stand for one day."

He slipped out and closed the door. Left alone, Garvice leaned his arms across the desk, and groaned heavily. The worst was not over yet; his mother had to be told.

Pritchard ran lightly down the stairs, and just caught the young man at the outer door.

"Charlie, come back a moment; I have something to say to you."

The young man looked around with the air of one who expected another blow. He had a good-looking face, albeit its features were marred by the traces of the fast life he had been living.

"Let me off, down to my natural element," he said, with a ghastly, mocking laugh. But Pritchard held him firm.

"No, I won't let you go. I like you, Charlie; you and I always have been pals."

It was a curious speech, but it had its effect. Garvice halted a moment, and

there being no one in the narrow alley leading to the warehouse, he leaned up against the door.

"You heard him?" he said thickly. "Of course, I know I've been a rotter, but I might have been allowed to explain something."

"It was hard to explain a forged check, Charlie; many a man has been sent to the galleys for less."

"Well, let him send me. I dare say he'd like nothing better," said the lad, bitterly. "Tell you what, if you'd been my governor, if things had been different at home, I might have done better. And he needn't be so hard on me. I happen to know that he went the pace considerable when he was my age."

Pritchard made no reply to this, happening to know it was a true statement. A man of the largest possible charity and insight, he understood that Garvice's own past partly explained his harshness to his boy. His parents had erred on the indulgent side, and it was only experience of life that had taught him how severely he had tried them.

"Charlie, we are not going to say any more about it now; neither of us is fit. What I've come after you for is to know where you are going now."

"I don't know, and I don't care. I've been consigned, you see, to my proper element," he said again. Pritchard did not altogether dislike his iteration of the words, showing that his heart and pride were still assailable. With one entirely callous little can be done.

"I can't stay long with you now, Charlie, but I've a plan. Will you promise to meet me this evening at 7 o'clock at Simpson's? We can have a bite of dinner together, and talk things over. If you'll promise I'll wire my wife not to expect me till late."

"All right," said Charlie gruffly, "I'll be there."

Pritchard held out his hand, and after a moment's shame-faced hesitation, the lad placed his in it.

"You are a good sort and no mistake," he muttered, and slouched away.

"He's got to be lifted. I wish I could have seen Lucy first," mused Pritchard as he reascended the stairs. "It would be a work after her own heart."

From that day Charlie Garvice disappeared from the office of Garvice, Garvice & Pritchard in little Britain, and was heard of no more. It was generally supposed he had gone abroad. Garvice never spoke of him even to his partner, and it was as though an austere pall of silence had descended between them. But Pritchard, watching closely, did not fail to detect his partner as an aging man. Also he knew that his wife had scarcely lifted her head since the boy went away.

Seven long years passed before anything further was heard of Charles Garvice; and then the revelation came about in an untoward way.

Pritchard was confined to his own house with a slight attack of illness, and in his absence some misunderstanding arose regarding a bit of business which had been under his department. Garvice through the telephone was unable to come to a full understanding of it, and was invited to come at a fixed hour and interview the manager.

He had a busy morning, however, and was detained till the lunch hour, when he took a walk along Cheapside to Finsbury Circus, where was the habitation of the firm in question. They were relatives of Pritchard's, substantial people, and Garvice had been pleased when they began to do business with them.

"Mr. Linskill is out, sir, at lunch," said the office boy, "but Mr. Girard is in."

"Who is Mr. Girard?" he asked, struck by the name, which had been his wife's before her marriage.

"Our confidential clerk, sir, always sees

gentlemen when Mr. Linskill is out."

"All right, I'll see him," said Garvice, with a nod, and followed the youngster up the stairs. The place was almost empty for the lunch hour; he passed through a long counting-house in charge of one solitary scribbler, and so on to an inner room, where one man sat at a long table betwixt two windows looking out upon the green tree-tops of the Circus gardens.

He rose and they faced each other, father and son, in a moment of surprise. Then Garvice the elder staggered a little, while his son grew extremely pale. "What is the meaning of this?" asked the old man at last, and his voice had a quick, stern ring in it. "Why are you masquerading here?"

"I am not masquerading, sir, I am attending to my legitimate duties."

"But how are you here; who are you? Where is the man they called Girard?"

"I am the man called Girard," replied the young man, and if there was a faint touch of pride in the accent, who could blame him. Garvice, the elder, looked around with a vague trembling.

"Who did it? Who gave you the chance? When I've thought of you, which has been pretty constantly during the last seven years, I have imagined something very different."

"Pritchard put me here, father, Pritchard and Linskill between them. They—they saved me from going down to the pit."

"I don't understand it. Why have we never been told?"

"The compact was silence and honest work and hidden identity for ten years. I had to keep to my part of the bargain. But just recently my mother has been told something. Have you noticed it?"

"She has seemed brighter—but Pritchard and Linskill, the latter I don't even know. What was the meaning of it?"

Garvice the younger shook his head.

"I have often asked myself. It's their religion, I suppose. I am not the only one. If ever the annals of city life come to be laid bare, among the wonders will be found the silent ministry of these men."

"And you are confidential clerk here," he said, vaguely again. "I—I don't understand it."

He sat down as though feeling feeble on his feet. When he spoke again his tone was broken, and great tears rose thereat in Charlie Garvice's eye. For he knew that another of these bitter mistakes had been made, and that he had all these years misjudged his father. The next words broke down the barrier completely.

"Don't you think they would make a break, Charlie, to—to let you—home for an hour to see your mother?"—British Weekly.

FASHION NOTES.

Russian blouse suits for small boys and girls are always in vogue and certainly in most excellent taste. They are simple and rich in design. Some of them have the hand embroidery in a mild form. Tastefully put on it is very effective.

For children from four to ten the red chinchilla box coats are very popular. Fur cloths also are in evidence everywhere.

Trimmings for little people's dresses are the inevitable embroidery and sometimes braids on the linens and piques. On nainsook dresses there is much lace and fine tucks.

The waist worn with the tailored gown may be of delicate lingerie, but usually another is provided of chiffon cloth of the exact shade as the gown itself. It has fancy shirring and lines of silken hand embroidery, and it must somewhere show touches of the gown material. This is usually of

cutwork if the gown be of cloth. For silk and velvet gowns pieces of the material are used embroidered and applied as a bolero, a bertha, deep girdle, etc.

Elbow sleeves are almost inevitable upon gowns of ceremony, and a woman's glove bill is a more formidable thing than it has been in years past. Long suede gloves in natural color are the correct street glove in Paris, but long gloves of white glace kid or suede are the usual thing for dress unless the gown is of a pale tint easily matched in gloves.

A new thing in petticoats is the article having a closely fitting hip yoke of jersey silk. The object of this is to prevent the formation of any bulkiness over the hips, where, notwithstanding the vogue of full skirts, the shirrings and gatherings of fashion, most women still strive for the effect of slenderness.

CHAFF.

"Are you ready, dear?" "In one minute, darling." "Matrimony does not dispel our illusions," he muttered as he lit a cigar. "Before we were married I thought every moment I had to wait for her was an eternity, and so it's turned out to be."

"I want to get some bird seed," said the customer. "Don't try to plague me, smarty!" cried the new clerk from the country. "Birds grow from eggs, not seeds."

Mrs. Kindheart—Did you ever try to get work? Lazy Bill—Yes, mum. Why, onct I got er fine job fer me big brudder!

Tommy Twaddles—Oh, I don't want to get to school! Pa Twaddles—But don't you want a decent education? Tommy T. (ingratiatingly)—No, Pa. I'd rather grow up to be just like you.

Daughter—Why, he actually dared to kiss me on the nose! Mother—I hope you made him feel how entirely out of place it was.

George—Rather than remain single, would you marry the biggest fool on earth if he asked you? Clara—Oh, George, this is so sudden.

"Claude and Clarice are in a terrible predicament." "How is that?" "They paid so much for their going-away outfit that they can't go away."

Family Cat—I'm not going to eat out of the same dish with you. Dog—Why not! Lots of people that scrap worse than we do eat at the same table!

Mrs. Oldman—How was the weather the day we were married? Oldman—I don't remember, but I know it has been stormy ever since.

She—What profession do you follow? He—The medical profession. She—Ah, then, you're a doctor? He—No, no; I'm an undertaker.

"So sorry not to have heard your lecture last night," said the loquacious lady. "I know I missed a treat; everybody says it was good." "How did they find out?" asked Mr. Froccoat. "The lecture, you know, was postponed."

AGRICULTURAL REVIEW

Alameda.

ANNUAL RODEO.—Livermore Herald, May 26: The Hyde ranch people are this week making a final round-up of the remaining cattle in the Livermore mountains preparatory to transferring them to their Orestimba range. About 20 vaqueros are at work with the outfit in charge of John Price.

LAMB SALE.—D. H. Fallon purchased from J. Gallagher this week 1,400 head of lambs at a price in the neighborhood of \$3. J. C. Kelly sold this week to Calmes & Co. of Oakland 1,100 head of lambs at the same price. Lambs are in better condition than for many years past and would have sold readily for \$3.50 before the earthquake.

Butte.

PRUNES PROMISE WELL.—Gridley Herald, May 28: The prune situation is looking up, and growers find that the prune trees have been among those that have paid most to the owners. Several trades have been closed during the past week by which growers in this county have sold their crops on a basis of 2½ c. per lb. The orchards which grow a good percentage of large prunes will obtain from 3¼ to 4 c. per lb. for their product and at those prices prune growers are getting good profits.

BUYS BIDWELL PEACH CROP.—Sacramento Union, May 24: A business deal which means considerable for the people of Chico, especially the working classes, was consummated today. It was the purchase by the Chico Fruit Co. of the entire crop of peaches and prunes of the Bidwell estate. Heretofore this crop has been handled by the California Cannery Co. and a large portion of the green fruit has been sent to other places for drying and packing. It is estimated that the output of the Bidwell orchards this year will aggregate 2500 tons.

LOCAL PACKING FIRM BUYS CROP.—Gridley Herald, May 25: The Griffin & Skelley Co. are in the market early and among the most important purchases this season was that made Wednesday when P. A. Allen, manager of the local plant, bought the crop from the T. B. Hutchins orchard. The acreage of fruit trees amounts to about 400, of which about 70 acres are in prunes. The crop for this year, it is estimated, will amount to 250 tons of dried prunes. The price paid for the crop is not given out but it is understood to be satisfactory.

WHEAT SHIPMENT.—Gridley Herald, May 26: F. G. Moesch has begun shipping 225 tons of last year's wheat crop from the Gridley warehouses. The grain included the crops of several ranches in the vicinity. It goes to Port Costa and will be placed in the California warehouses.

SHEEP OWNERS' ANNUAL EXODUS.

Gridley Herald, May 26: W. R. Rhinehart, the well-known sheep owner, who has a band of 3000 sheep southwest of Gridley, starts for the mountains with his sheep next week. He intends to arrive at the government reserve on June 1, the time set for allowing sheep men to cross the reserve. He will traverse about forty miles of the government property and will pasture the sheep on his own range and on a portion of the reserve which has been allotted him by the forestry officials. It was supposed that the recent decision by the Supreme Court would stop the collection of the tax of 5 c. per head on sheep when moved into their territory by the mountain counties, but it appears that the sheep men are still paying the March tax. Some pay the tax under protest, in the hope that they may some day get it back, if the question is ever settled. The sheep owners pay a tax of 6 c. per head to the government for the forest range, 5 c. per head to the county in which the range is located, and in addition to that must pay the regular tax assessed against all personal property by the counties of which they are residents and in which their sheep happen to be on the first of March. The owners of the animals do not object to paying the government tax, for the forestry officers allot a definite range and each owner is given the exclusive privilege of pasturing his own particular allotment. The tax by the State and county in the regular way is not objected to either, but the sheep men claim that by being taxed three times and by three separate authorities they are given a little the worst of it.

Colusa.

BARLEY CROP DAMAGED.—Sacramento Bee, May 25: The hay crop has been seriously injured by rain and the loss to the standing barley will be about

10 or 15 per cent. The barley crop this year promises to be one of the heaviest ever known until damaged by the storm.

Fresno.

CANNERY FINISHED.—Fresno Republican, May 27: The new cannery at Selma is completed and in trim for business. It will be ready to commence canning apricots on Monday. The greater proportion of the output this season will be canned peaches as it was a desire to bring the grower and the cannery nearer together that caused the location of the plant in Selma at a central point of the southern Fresno county big peach belt. Owing to excellence of the peaches grown it is anticipated that a great demand will be created for the output. The cannery and seeding plant of the Selma Fruit Company will give employment to 250 girls and women throughout the summer and fall months, late into the winter. The owners are well satisfied with the prospects of an abundance of labor.

Glenn.

CREAMERIES PAY.—Willows Journal: The earthquake and fire did not stop the Colusa Creamery from turning out great quantities of choice butter, and during last month paid the farmers of that vicinity \$5000 for cream furnished, the average price being 19½c. per lb. The creamery is going ahead making improvements and constantly adding to their already splendidly equipped plant. The directors are planning to add a steam launch which will ply up and down the river to receive cream.

NO GRAZING FEE CHARGED.—Sacramento Bee, May 25: News has come from F. Freeman at Washington, who is representing the stockmen of this county in the fight against making the Stonq Creek Forest Deserve permanent. A telegram was received from Freeman saying that Chief Forester Pinchot had reconsidered the matter and had vacated his first order, which was to the effect that the reserve would be made permanent, but that no grazing fee would be charged this year. The matter will now be left open until November 15 and in the meantime the Stockmen's Protective Association, which has collected a goodly sum of money to fight the reserve, will renew its efforts to have the lands thrown open to entry.

Los Angeles.

APRICOT SALE.—Santa Barbara Press: J. C. Wilson has just sold his apricot crop on 180 acres near Fernando, realizing \$11,000 for the fruit on the trees. He has been offered \$10,000 for his peach crop on the same number of acres. His hay crop will average two tons to the acre, on 400 acres, and he has been offered \$10 per ton for it. Mr. Wilson came here in 1886 with \$100 of borrowed money, bought a 'bus on time and from that beginning he has built up the largest livery business in the southwest, and has 750 acres of land near Fernando, and is interested to the amount of \$10,000 in the Summerland oil wells. Still there are other opportunities for live men in Southern California.

EUCALYPTUS FOR LUMBER.—Pomona Progress, May 24: Arrangements are in progress for converting the hill lands of the Bixby ranch near Santa Ana into a forest of eucalyptus. It is the intention of Hugh L. Thompson, the manager, to plant one hundred acres this coming winter and an equal number each succeeding year until all of the ranch suitable for such planting and not available for annual crops has been planted. The timber is to be raised for lumber and posts. When it can be secured in sufficient quantity the wood will be largely used in making furniture. At the present time eucalyptus lumber brings one hundred dollars per thousand feet.

Riverside.

HARVESTING GRAIN.—Perris Progress, May 24: J. T. Hamner, of Corona, moved his harvesting crew into this valley on Monday to begin the harvesting of his 2300 acres of grain near Ethanac. Of this amount there is 320 acres of wheat which Mr. Hamner planted for the White Russian variety, but which proved to be only club wheat. The balance is barley, which will probably average 15 sacks per acre. Last year it averaged 13 sacks and he estimates the general crop over the valley at from two to five sacks per acre more than last year.

MAY GET CITRUS STATION.—Riverside Press, May 20: Professor Smith, who is in charge of important lines of pathological work which the State University is doing in southern California, announced yesterday that the commission had decided to locate the citrus experiment station at Riverside and the laboratory at Whittier. This action was taken at a meeting of the commission held in Oakland. The members of the commission are Governor Pardee, President Wheeler of the State University, and Professor E. J. Wickson, head of the agricultural department of the State University. No official confirmation of this report has yet been received.

Sacramento.

SAN QUENTIN GRAIN BAGS.—Merced Sun, May 25: Senator Muentner left Stockton for Sacramento, where he will attend a meeting of the Finance and Judiciary Committees of the State Legislature to consider matters that may come up at the proposed extra session of the legislature. Mr. Muentner intends to bring up a discussion of the way in which the State prison authorities dispose of the grain bags manufactured at San Quentin. There is a general belief that the bags are sold to middlemen, who make a big profit in selling to farmers. The latter have not been able to secure a supply from the prison and are obliged to buy from the middlemen. The present law, which is very unsatisfactory to the farmers, was passed at the solicitation of the prison authorities, who represented that under the former law, which confined sales exclusively to agriculturists, there was a surplus left at the end of the season. To dispose of this surplus, the directors recommended that there be an open season, when anyone could buy, and a closed season, when only the farmers could buy. In the open season orders flowed in, but when the farmers' time came there were no bags to be had. Various remedies have been suggested. One is that no bags be sold in advance of manufacture, and that no orders be accepted in advance; that the first half or two-thirds of the season be open to farmers only, leaving the latter part for others to make purchases if any goods remain. In addition to this it has been suggested, also, that a certain number of bags be kept in reserve for the next season, to meet any contingency, which might occur through the manipulation of speculators interested in raising the market price. It has been suggested further that no sales be allowed unless the recommendation be countersigned by the Governor. The prison directors hold their office by appointment, and therefore are not in fear of the vengeance of the voters. But the Governor is, whatever be the administration in power, and he would take care to keep the output of San Quentin away from speculators and jobbers. It would also be to the interest of the prison authorities to keep a closer eye on the bag business than they seem to be doing now—especially if the Governor has the power, or is given it, to remove them for dereliction of duty in

such matters. But it is questionable whether the Governor would consent to have this additional function imposed upon him. His consent would have to be obtained by the Legislature first, for otherwise he would veto the bill imposing that duty upon him. Senator Muentner does not think that any readjustment of the San Quentin grain bag regulations will be made at the coming extra session, but hopes that some plan may be threshed out for submission to the Legislature at its next regular session.

Santa Barbara.

EXPERT STUDYING FRUITS.—Santa Barbara Independent, May 24: W. A. Boucher, government pomologist of New Zealand, is in southern California gathering information for the New Zealand agricultural department and selecting various fruits for testing in the experimental station. Mr. Boucher expects several small fruits will be introduced into the colony as a result of his labors. In California he has discovered evidences of certain tree diseases, in an early stage as yet, which became serious problems in New Zealand and were successfully coped with. The knowledge which California experts will gain from him will be helpful to fruit growers in this State.

Shasta.

BUYING FRUIT CROP.—Sacramento Bee, May 23: Fruit buyers are passing through Olinda in Happy Valley trying to contract for the delivery of dried peaches this fall at 7 cents. Only a few contracts have been made at that price, most orchardists being disposed to wait until the crop is ready to market, thinking that better quotations will be made at that time. The first crop of strawberries is almost gone and the second crop will not be a big one. However, this is the best berry season Happy Valley has ever had.

Solano.

EARLY FRUIT.—Vacaville Reporter, May 26: The first peaches of the season went east Monday. They consisted of two crates of the Daisy May variety, and were from the ranch of Mrs. M. C. Smith. A crate of Loganberries was also brought in from the same ranch. On Tuesday the first plums were brought in, consisting of two crates of Clymans, from the G. W. Allen place.

Sonoma.

COMMISSION COMPANY.—Healdsburg Tribune, May 24: A company has been formed in Healdsburg which will give special attention to the purchase of eggs, for which San Francisco market price will be paid in cash. Agencies have been established at Geyserville, Cloverdale and other points. These will give farmers having eggs for sale the same chance to get good returns for their product as have the egg men of Petaluma or Santa Rosa.

TEN CENTS FOR HOPS.—Healdsburg Enterprise, May 26: Mr. L. Bledsoe has just disposed of his last year's hop crop, amounting to fifty-two bales. He received 10 c. per lb., a cent or two better than was offered before the earthquake. He says the hops this year so far are looking well and prospects are bright for a good crop.

Stanislaus.

INSURANCE FOR TURLOCK FARMERS.—Modesto Herald: A second mutual fire insurance company is being organized by the farmers in the Turlock quarter. The first of these associations, known as The Hilmar Mutual Fire Insurance Co., was organized some months ago. The new association is to be known as The Turlock Mutual Fire Insurance Co. These associations are organized

under a state law approved April 1, 1897. The term of their charter is fifty years, and the organizers must be not less than twenty-five in number and must represent property (they propose to insure) to the value of not less than \$50,000. The new association has in advance of incorporation obtained the co-operation of many more than the minimum number of property owners and an aggregate of more than \$60,000 of property for insurance. They expect to increase the insurable property represented to not less than \$100,000 in value, in the near future.

Sutter.

WINE GRAPE GROWERS ASK BETTER PRICES.—The wine grape growers of this county are trying to secure a better price for their grapes. The present price offered is \$11.00 per ton. There are about 150 acres of wine grape vineyards in Sutter county and the crop is estimated at 500 tons.

Tulare.

MEN FOR HARVEST WORK MAY BE HAD BY WRITING.—Tulare Register, May 25: Mr. John Tuohy to-day received a letter from the California Promotion Committee saying that there were a large number of persons in San Francisco who would undoubtedly be glad to secure employment in the interior and who would be of value in handling the crop this season. Some of our farmers who have been searching in vain for men may find in this a solution of the difficulty. The advice given by the Promotion Committee is to write to W. V. Stafford, State Labor Commissioner, Herman and Fillmore streets, San Francisco, stating how many men are wanted, the character of the work, and the wages that will be paid; also whether the wages include board and lodging.

Ventura.

ELY'S PATENT BEET BED.—Oxnard Courier, May 25: M. J. Ely, patentee of the Ely Beet Bed, has sold to the United States Sugar & Land Co., which is building a new sugar factory at Garden City, Kansas, the right to their manufacture and use in two counties in that State. The American Beet Sugar Co. has also placed an order with Mr. Ely for ten of the new beds, which it will put to a thorough test on its ranch west of town. Louis Brenneis has the contract for their building. Mr. Ely certainly has an ideal labor-saving device in his new beet beds, and should have no trouble in placing them on the market.

BEANS AND APRICOTS.—Pomona Progress, May 20: In the Mound and Saticoy sections, adjoining Ventura, conditions were never more favorable for a fine bean crop. The yield this year, because of the superior conditions, promises to be better than that of last, when the crop was a record one. It is estimated that the acreage will be from 35,000 to 40,000, which is about the same as that of last year. Prices also promise as good or better this year than last. Last season a number of farmers contracted their crops at 3 cents a pound, and it was this figure upon which a basis in price was fixed. The price never went below this figure, but many who held on sold for more. The old crop is practically all out of the hands of the growers, and what little is left in the county, something like 150,000 bags, are in the hands of dealers. Conditions appear more favorable in the apricot situation than was at first thought. Early in the season it was stated that the crop throughout the county would not amount to one-fourth normal. Good weather has brought out more fruit, and the estimate now is on about a half crop, with figures promised of a gilt-edged kind.

HONEY CROP FAILURE.—Ventura Free Press, May 28: For the first time in many seasons this county's production of honey will be far below the average. In fact many of the leading apiarists are predicting an entire failure. At the outset of the year the rains and conditions generally gave indications of one of the best years in the history of the honey business. Now on many of the bee ranches owners are feeding the bees where they have swarmed and left but few workers with the young bees in the hives, still the beekeepers may be forced to feed all of the colonies before the season is over. This is an off year for sage, and the plant is neither growing nor blossoming well. It has been noticed that the brush is covered with a tiny insect that is destroying the leaves and blossom. All these causes combined will tend to make a shortage in the honey crop.

Yuba.

TO BUILD NEW CANNERY.—Sacramento Union, May 27: It is stated here that the Central California Canneries will replace the cannery that was destroyed in Yuba City last Sunday evening with a \$20,000 plant that will be about twice the size of the one destroyed. Work of clearing the land will commence tomorrow, and the construction will be hurried so that the plant can be in readiness to handle this season's crop. Machinery for a cannery that was to be built at Tudor by Fred Hauss has been purchased, and will be added to that which had been ordered before the fire. The building to be erected will measure 80x400 feet. About 400 women and girls will be given employment in this cannery this season, and the run will be a long one, for the firm handles tomatoes after the fruit is all put up, and has a greater amount contracted for this season than has ever before been handled here.

Yolo.

HAY-BALERS ORGANIZE.—Sacramento Union, May 23: The hay-balers of this county have organized for the purpose of establishing a uniform scale of prices for their work. The following prices have been announced: Where farmers furnish everything, \$1.25 per ton; where the baler furnishes wire, \$1.55 per ton; where baler furnishes wire and board for the men, \$1.90 per ton; where baler furnishes wire, board and buck rake, \$2.15 per ton. In all cases the farmers must furnish feed, wood and water.

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The Lawrence-Williams Co., Cleveland, O.

Placer.

GOOD FRUIT PROSPECT.—Sacramento Union, May 24: G. D. Kellogg, president of the Newcastle Cannery Co., says that there will be a good average fruit crop. The early peaches promise good. The early cherries will be light, but the late ones are good. The pear crop is suffering from scab. The crop itself is good. The shortage of tins has interfered with the canning of asparagus, but that trouble is now over.

Santa Clara.

AGRICULTURAL SOCIETY AND GROWERS.—San Jose Mercury, May 21: The State Agricultural Society desires to learn the result of experiments made by the farmers of California with what is known as "Durum wheat." It is claimed for this particular variety that it is less liable to rust, produces a larger yield, makes better bread and more flour to the bushel than the best of other known varieties. If this is true of "Durum wheat" grown in California, the State Agricultural Society wants to know it, with a view of disseminating the facts for the benefit of the wheat growers generally, and inducing its wider cultivation. Any farmer who has experimented with this wheat is requested to write to J. A. Filcher, Secretary of the State Agricultural Society, and fully describe the result of such experiments, stating particularly the yield per acre and selling qualities compared with other wheats sown under similar conditions.

The Agricultural Society desires to keep in touch with the best that is being done in agricultural lines anywhere in the State, in order to give the people at large the benefit of the knowledge. It is desired, therefore, that "Durum wheat" growers shall favor the society with this information, and thus help along the cause in which they are all interested.

SHEEP AND WOOL

THE OUTLOOK FOR SHEEP.

Mr. C. H. Shurte, who is connected with the sheep and wool trade of Chicago, gives the American Sheep Breeder his idea of the outlook for sheep, some features of which are of direct application to this State. He says:

This season's marketing of fed sheep and lambs is drawing to a close, and the question arises, has the feeder made any money? We, of course, know that the feeder put his sheep and lambs in feed lots at a higher cost than ever before, but I believe every feeder made some money, excepting the new or inexperienced ones, and they are better off, probably, not from a financial standpoint, but they have learned some things about feeding sheep and lambs, as there is much difference in fattening sheep or lambs successfully and profitably, than there is in fattening hogs and cattle, and very few people have ever made fat sheep or lambs at the first trial. But a great many of the farmers who fed for the first time this season are going to stick to it until they make a success of it, having seen their neighbors feed sheep and lambs year after year, and the majority of them have made money, while the cattle feeder finds his ledger balance on the wrong side eight times out of ten. I believe the most of the farmers who have fed no more sheep or lambs than they could take care of properly, are better off by far than if they had not fed any. I am sure this applies to the eastern feeders, or rather those east of Chicago, who bought their lambs at a higher cost than the western feeder. But they have had two advantages: First, cheaper feed than in years past, clover hay selling generally from \$5 to \$6 per ton, corn 35 to 40 cents per bushel; second, lambs were fed in small lots and secured large gains, it being no uncommon sight to see the Michigan feeders

showing 40 to 50 lb. gain on their lambs, and while the eastern feeder has not made such large profits as in past years, I believe he will stick to the lamb feeding business, which is the best business any farmer ever went into.

Now, we hear a great many say they overdid it this year—fed too many lambs; did they? Let us see. Up to February 1 prices for lambs were high, and all who had their lambs in a marketable condition up to that time, marketed them at a good profit. Then the Monte Vista or San Luis valley lambs had commenced to fill up the Chicago feeding stations and were thrown on the market irrespective of conditions, they being out of feed, which glutted all of the markets with undesirable lambs. This valley overdid the thing this year, putting two-thirds more lambs on feed than they had peas for, and this crop had to be shipped out, and the bulk of them were again put on feed. A few thousand are still being fattened, not yet having been marketed. And while the San Luis valley feeders had everything against them this year, still there were no great losses.

The next thing to upset the lamb market was the severe storms in Colorado in the big lamb-feeding districts tributary to Greeley and Fort Collins. About this time the feeders commenced to get short on hay, and the feeders in this district had to market their lambs and take their medicine. But they alone were to blame—not for the bad weather, but for trying to feed more lambs than they had hay for. The above conditions were two, and probably the chief causes of the glutted markets during February and March. But there is another cause, which in my opinion, injured the market badly—as soon as market commenced to weaken and prices decline, you couldn't pick up a paper but what said, "I told you so"; "Didn't I tell you to let lambs alone last fall?" This talk you could hear from every side and see in every paper. The effect was that both east and west thought the market was gone to the dogs, and as fast as they could get cars they shipped their lambs to market. Yet with the heaviest receipts ever known during these two months, the market did not go to pieces, as all were taken, not at a large profit—still, not at a large loss. Now we are here and prices are 75 c. to \$1 higher than 30 days ago, and it is doubtful whether we will have enough lambs to supply the market for the next six weeks. Had lambs been marketed judiciously, there were none too many fed, and prices would have been around the seven and seven and a half cent column throughout the season.

Now, as to the prospects for the coming season: The bulk of feeders say they will not pay the prices they did last season, nor do I believe they will have to, although this year's lamb crop is not yet secured, and the range man is not going to sell his lambs at any low price, unless some unforeseen money situation should occur, or he has an unusually large crop of lamb. With wool selling throughout the west from 20 to 27 c., they are not going to sacrifice their sheep and lambs this season. I believe prices will rule higher during the next 10 years than during the past 10 years. This, in my opinion, is beneficial to both feeder and grower. Sheep and lambs have ruled entirely too low up to two years ago, as compared with other live stock. The Eastern States have been stocking up with breeding ewes, and no doubt we will have some increase throughout that section of the country, but it will take many a year to get the supply up to where it was a few years ago. In fact, I do not believe the small farmers will ever breed and keep as many sheep again, owing to the advance in land values, and if you will investigate, Indiana, Ohio, Michigan and Wisconsin—four States that used to produce thousands of lambs each season, you will find that nine out of ten of the

farmers are in the dairy business and will never keep a flock of ewes again.

One surprising thing in the business is the few wethers that have been marketed this season. It looks as if we were eating up the lambs as fast as we can raise them, and there is no question but what there are fewer wethers on the range than in ten years. It has been no uncommon thing to see wethers sell as high (and in a few instances higher) than lambs, this season. The exporter had to buy heavy lambs simply because he could not get the heavy sheep.

When we size up the entire situation, I believe the majority of both feeders and growers have confidence in sheep and lambs, and I believe prospects were never brighter than at the present time, and that we are not going to see any sheep or lambs go at low prices during the coming season.

THE SWINEYARD

HINTS ON HOG BREEDING.

(From an address by Mr. P. W. Peterson before the American Poland China Record Association.)

The establishing and maintenance of a type is one of the most essential points in the breeding of pure-bred live stock, and it is the key to success in the breeding business.

The breeder that mates his stock with the sole idea of reproduction is not an improver of any breed whatever, and as a usual thing he never makes much of a success in his business. He breeds them more by instinct than by knowledge of the characteristic of the blood lines contained in his animals, and as to the character of the offspring from the mating of such blood lines.

We have heard very frequently the statement by people that were sincere in their statement, and believe that "like begets like," but how many of them have not been disappointed in their anticipations in this respect, and why? Why is it that like will not beget like?

One reason is that an animal can be fed so as to lose all resemblance of the family that it represents, but it cannot be fed so as to lose the hereditary blood lines which it possesses, and whenever mated with another animal that has to some degree some similar blood lines, the offspring will, in type and general build, resemble that of the family which has the highest per cent of the same blood in the sire and dam.

The second and most essential reason is that where the dam possesses to a great extent some particular family blood line and the sire only a small part of the same blood line the percentage in the blood of the offspring will be that of their dam, and they will be the type of those ancestors that represents that blood line. On the other hand, where the sire represents to a larger degree some special blood line and the dam only a small part of the same, but enough of some other blood line—enough so as to give her entirely a different type from that of the sire—the offspring will represent the type of their sire, and they will all look alike as to general build and appearance, providing, however, that the constitutional vigor of the sire and the dam is on an equal at time of the mating.

In this matter of equality in constitutional vigor, it takes the keenest of observation and good judgment to ascertain whether the animals are in condition at the time of mating so as to impress their offspring with the type desired by their owner. This knowledge can only be obtained by personal observation and experience; it cannot be learned from books or from the teachings of others by words.

The strength of propotency of an animal is so very often misjudged by all of us. But we have all found that the ani-

mal has been more prepotent one time than another. For this, there is some cause, but there is no law or rules that can be applied to the cause of these different conditions.

It is generally supposed that the slick, smooth, fat appearing animal is very prepotent, but that is not always the cause. Sometimes we have breeding animals that are overburdened with fat and taxed too much in carrying the extra fat and this burden has taken too much of their strength and vitality, and consequently has reduced their prepotency.

We can take the hogs, for instance, when they came back from the fairs where they have been on exhibition, and as a rule have been fattened to the highest safe point possible, these animals are not in the best kind of condition to breed to establish a type, for the reason that their constitution has been overtaxed by carrying this surplus amount of fat and they have to a certain degree lost their environment and consequently are not as prepotent at this stage. If mated to other animals in the pink of breeding condition, the offspring will all resemble the latter regardless of the blood lines contained in the first, and in breeding such animals of which I speak, where the conditions are so different, is where we meet most of our disappointments as to uniformity in the offspring.

On many other occasions we have found that where two animals have been mated, where the percentage have been on an equal in both the sire and the dam, in representing several different types and styles of families, that their offspring differ in type and show no signs of resemblance. Take, for instance, a brood sow that has been so mated, and you will find that her pigs resemble no type whatever, but will resemble nearly as many different types as she has pigs in the litter. And how many times have we not heard men say that "this sow has such uneven litters I don't know what is the matter with her," when in fact there is nothing the matter with the sow at all. The only thing that is wrong in this case is that the man mates her with no other idea in view than reproduction, and mates her not knowing that all the blood lines contained in both the sire and the dam are on an equal and are constantly at war, and as none of these different blood lines are superior, the consequence is that the litter will be very uneven, and when matured the pigs will resemble no particular type—they are just hogs.

In conclusion will say that it is absolutely necessary in order to establish and maintain a type to mate such animals whose blood lines are not foreign to each other, but which possess enough of the blood lines in common of the type that is to be established so as to transmit the largest percentage of that blood into their offspring.

Now, do not think that you must inbreed in order to establish a type, but you must to a certain extent linebreed, and you will find that the greatest breeding animals of any breed that we have had, that have been the most uniform breeders, were line-bred animals.

This cry of outcrossing is detrimental to any breed, and has a tendency to destroy the good quality that the animal of family possesses.

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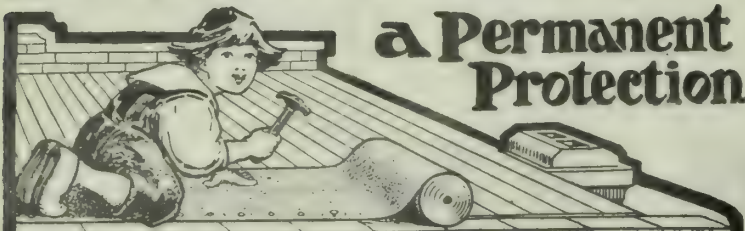
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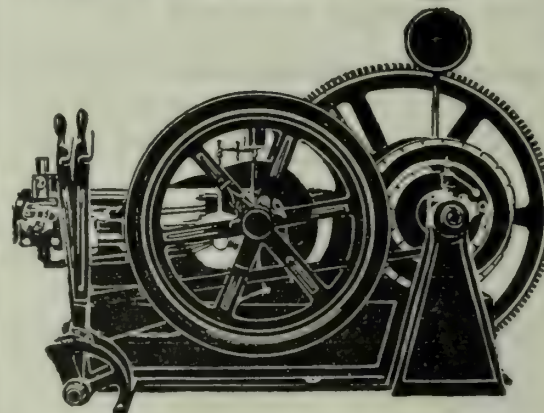
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AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXI. No. 23

SAN FRANCISCO, SATURDAY, JUNE 9, 1906

THIRTY FIFTH YEAR

BERKELEY SCENES

We select views this week from our immediate environment to show distant readers some of the scenes amid which our journal is temporarily established. The central feature of the town is the University of California, which is picturesquely situated on the lower slopes of the Berkeley hills, overlooking San Francisco bay and the Golden Gate. The site comprises about 270 acres of land, rising at first in a gentle and then a bolder slope from a height of about 200 ft. above the sea level to one of over 900 ft. It thus covers a range of more than 700 ft. in altitude, while back of it the chain of hills continues to rise 1000 ft. higher. Berkeley is a city of homes, with a population of about 30,000 people. In the eastern part of the city it is customary to describe the locations with reference to the University, which they surround on three sides.

The city lies on a sloping plain and on picturesque hillsides—a site matchless for beauty of prospect, for healthfulness of climate, for sanitary situation, and for accessibility to metropolitan life. The University came first; the town has grown up about the college. When all the State was open for choice, this spot was selected.

From an early account we are told that President Durant, of the College of California, the predecessor of



Palm Garden—University Grounds.

the University of California, "set out with some friends to seek a place where learning might find a permanent home on our Pacific shore. He passed in review many of the most beautiful valleys of our State, so rich in landscapes that delight the eye and gladden and ennoble the heart. One by one he rejected sites full of beauty, for in his mind there was an ideal spot where Nature would present herself in her loveliest form to the young student and lead him by her display of outward beauty to an appreciation of all that is good and beautiful in the inner world of heart and mind."

The place thus chosen lay facing the famous water entrance connecting the Pacific ocean with the bay of San Francisco, which Fremont, beholding the prospect lying before him from the heights hereabouts, and dreaming of the golden commerce and all the golden life of the future for this region of the world, named the Golden Gate. On April 16, 1860, the trustees of the college dedicated the spot from what is known as "Founders' Rock" with prayer that it might "ever remain a seat of Christian learning, a blessing to the youth of this State, and a center of usefulness in all this part of the world." And in 1866, at the suggestion of Frederick Billings, one of the trustees, the name of Berkeley was given to the college home as seeming to fulfill the verse of Bishop Berkeley:

"Westward the course of empire takes its way."



Street Scene North of University Grounds.



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A Picturesque Berkeley Residence.



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E. J. WICKSON - - - - - Editor

THE WEEK

Weather affairs are assuming normal phases and agriculture is proceeding satisfactorily. Growth is good, barring some troubles which arose from the unseasonable rains and they are being met confidently. This week it is Europe which gets the wrong end of the weather whip for the cable says that frosts are reported throughout the middle of Germany. In the low levels two degrees below freezing point were registered, and in the mountainous districts six degrees below. The fruits and vegetables are badly injured. In the interior of this country the tornado is still active and scores of farm houses, stock, barns, warehouses, as well as incoming crops, were destroyed by the heavy wind and hailstorm which swept over the southern portion of Oklahoma and Indian Territory. The damage will run into six figures, as practically all the big cotton acreage of the section was devastated. All such reports should encourage Californians to be content and courageous. The world is a little uncertain all around and we do not on the whole get more than our share of the trouble.

The Legislature is at work this week in Sacramento doing all it can to remove the scars of shake and fire, and it is expected that a few days' sessions will smooth the way toward refitting the State's institutions and assisting individuals who labor under hardships which a little legal aid will help them to surmount. There are some things, however, which should hardly be regarded as emergency measures. One of these is the tax on mortgages. It may be largely a fiction and probably as a rule the borrower pays for everything and yet this mortgage tax is such a wide affair that it should not be lightly removed. If one could be sure that the interest rate would surely decline sufficiently to meet the tax which it is proposed the borrower shall now pay outright, it might be all right, but what assurance is there that the mortgagee would not net greater interest than now and the borrower have to pay a greater total cost than now. The subject, it seems to us, should go to the regular session of the Legislature and have a wider chance for inquiry and discussion.

Agricultural experts and investigators seem to be advancing into political recognition rapidly. Dr. Withycombe, director of the Oregon Experiment Station, made a brave run for Governor of Oregon and came very close to election, if he did not succeed, which, as we note, is not fully determined. Dr. Withycombe knows the agricultural industries, as well as the general public affairs of his State, well and is fully qualified for administration. Another significant recognition of the agricultural expert is the appointment of F. D. Coburn of Kansas to be United States Senator to fill a place vacated by a boodling incumbent whom the courts declared unfit. Mr. Coburn has been secretary of the Kansas Agricultural Society for many years and has been powerful in the upbuilding of the State and has published reports famous all over the country for their excellence. He has not been a candidate for any office, but the Governor of Kansas just seized upon him as a man fit to do his duty well. We rather like this idea of successful leaders in agriculture going into politics in that way. It will work a great deal better than to have politicians go into agricultural leadership, and they certainly will do that if agricultural leadership becomes too conspicuous as a route to political preferment.

Undoubtedly the present onset of President Roosevelt against the abominations of the meat packing establishments will temporarily injure the export meat trade which is such a great source of income to the country and it will also for a time lower the price of cattle. That is very unfortunate and we do not wonder that the interior range cattlemen are protesting vigorously against interference with the packers which will be passed back to them in the form of cheapened cattle. It would seem that the evils in the packing business could be reduced in some executive way and not advertised to the world. But this President Roosevelt explicitly states in his message to Congress cannot be done. These are his words:

"Let me repeat, that, under the present law, there practically is no method of stopping these abuses, if they should be discovered to exist. Legislation is needed in order to prevent the possibility of all abuses in the future.

"If no legislation is passed, then the excellent results accomplished by the work of this special committee will endure only so long as the memory of the commission's work is fresh, and recrudescence of the abuses is absolutely certain.

"I urge the immediate enactment into law of provisions which will enable the Department of Agriculture adequately to inspect the meat and meat food products entering into interstate commerce, and to supervise the methods of preparing the same, and to prescribe the sanitary conditions under which the work shall be performed."

This being true it is certainly for the good of the whole country that the condition be effectively met at the first possible moment. The great packing houses of the Central West are simply abominations of filth and disease-breeding. The reports show that the conditions are what might be expected in factories of fertilizers, but not of foods. This must be entirely overcome both in the interest of the foreign trade and our own food supply. Nothing short of this will satisfy the American people.

The pear growers are doing a very commendable thing and that is in the way of effective organization to push the pear blight war for the saving of their fruit product. At a meeting held in Sacramento it was decided to form a permanent Pear Growers' Association, to hold meetings concurrently with those of the County Horticultural Board, on the second Tuesday in each month, beginning with the second Tuesday in July. The meetings are to be held in the office of the State Commissioner of Horticulture, in the State Capitol building. The purpose of these meetings is to gain information concerning pear growing and blight eradication, and to forward the campaign against the blight. E. A. Gammon was elected Chairman and W. J. Smith Secretary. This organization has our earnest approval. We hope all pear growing counties will get together in the same way.

We are glad to see that the authorities are able to enforce measures to cope with pear blight and other similar troubles. There has been some doubt about the effectiveness of laws and ordinances against the rights on inertia of the American citizen but Mr. John Isaac, secretary of the Horticultural Commission, recently said that a county commission has power under the law to enter orchards and work eradication of the blight. The courts have settled that matter in the Butcher case. Butcher's orchard was infected. The County Commission insisted upon entering and clearing out the pest. Butcher stubbornly resisted. But the commission entered and fumigated the orchard, and the right to do so was carried into the courts by Butcher, who lost, and the Supreme Court affirmed the decision below, thus effectually settling the question concerning the power of a commission to act as was done in that case.

In view of the fact that the growth of cover crops for soil refreshment is becoming so popular in California it is interesting to note that vetch seed may now enter the United States free of duty, according to a ruling of the Board of Appraisers at New York, which reverses

former decisions. Vetch is used in the eastern states for pasture and hay, and for growth upon lean or barren and light soils, which it enriches when a green crop is plowed under. In California the chief demand is for winter growth in orchards. At present most of the seed is imported, but there is quite a question whether we cannot grow our own. This should be experimented upon in regions where legumes seed well.

Californians who use the septic tank for the treatment of house wastes will be interested to read that the Bengal Government was forced to investigate the subject of disposing of the sewage and has approved the septic tanks erected on the banks of the Hugli. The addition of chlorinated lime to the effluent rendered the fluid virtually sterile, and much purer than Hugli water itself. The copper sulphate and the sand filtration methods were tried and dropped, the one because of the expense, and the other owing to the large filtration area required. The wide extension of the system now in use on the banks of the Hugli is expected.

It is now possible to burn off forest lands if your purposes require it, but you must do it in the way prescribed by law. State Forester Allen at Sacramento is prepared to send out blanks upon which application may be made for leave to burn rubbish in woods or to have forest lands burned over. These applications have to be passed on officially, and upon them permits may be issued, with the proviso that under guard and watch of fire wardens a sufficient number of men are provided to insure check of all such fires when necessary to be stayed. A case is now pending in Shasta county in which a man is held for trial on \$1,000 bail for building a fire without the necessary permit. He was seen by the Fire Warden leaving a spot in the woods whence smoke ascended and was pursued and arrested. This is the first case under the new law prohibiting the lighting of fires in forests, except under certain conditions, and it is considered, therefore, a very important one, and one that will have a good deterrent influence. That the attempt to fire the woods was felonious the district attorney has no doubt. The only motive that can be surmised is that the offender has some grievance against the owner of the lands on which the forest stands.

QUERIES AND REPLIES.

SMOOTH BARLEY NOT DESIRABLE.

To the Editor: I have some barley grown from a single head found last year, in which the kernels shell out clean and free from the husk like a kernel of wheat. Is this something new; and what is its probable value? Is such a quality desirable in barley? The kernels part from the chaff as readily as does wheat, and I believe a thrashing machine would separate them very easily.
FARMER, Livermore.

Varieties of barley without adherent hulls are quite common in Europe and stray seeds of such varieties are continually appearing in this State. Smooth barleys are not desirable from our point of view, because they are not suitable for malting; also because they are not so good for feeding purposes. The hull of the barley is desirable for roughage for feeding purposes and the reason why ordinary barley is a better feed than wheat is found in the fact that this coarse material is taken into the stomach of the animal and separates the starchy mass so that it is more easily digested. Wheat is less desirable for feeding because it becomes a pasty mass in the stomach and is difficult to digest. For this reason we do not desire to have our barleys like wheat, and the smooth barley is for all such purposes just like wheat. A great many varieties of smooth barley have been distributed in California from time to time, but no one has anything good to say of them. They seem to be most desirable in cold northern countries, where they desire a smooth grain for milling purposes and where the season is too short for the growth of flour wheats.

WHEAT AND CHEAT.

To the Editor: Will you kindly inform me as to whether or not the plant commonly known as cheat which grows among wheat, in wet places, and wet seasons, is a plant of itself or is degenerated wheat?

FARMER, Shasta county.

The plant known as "cheat" in California is a wild rye grass. It takes possession of a field in very wet seasons because its seed can resist standing water, which rots the wheat. This wild plant, the seed of which is always present, seizes upon its opportunity to grow vigorously and in this way it is able to displace the wheat crop, which has disappeared because its own seed has rotted, or the young plants have either been destroyed by the water or choked out by the rapidly growing cheat. Cheat is not a degenerate wheat; it is an entirely different plant.

SALT NOT A CURE FOR MILDEW IN THE FIELD.

To the Editor: I wish to get an opinion on keeping wet grain from mildewing (getting rotten) by the use of salt.—ENQUIRER, Drytown.

The use of salt will not prevent grain from fungus attack in the field. It does have a certain effect in preventing mildew, which may come in a stack of cut grain or hay, but salt is very destructive to plant life, and the use of it in the field would probably destroy the grain and do more injury than the fungi. There is no satisfactory field treatment for grain affected by fungi, because the cost of such treatment is greater than the value of the grain. About all that you can do is to cut for hay and scatter as much as possible so that it will dry quickly.

WOOD ASHES.

To the Editor: I wish to ask if there is any value to ordinary pine wood ashes used in an orange orchard; also if it would be of any value to lima bean land?—FARMER, Ventura county.

Unbleached wood ashes from any kind of firewood are certainly valuable as a source of potash, which is required by all fruit and field crops. It is, however, difficult to get at the actual money value of wood ashes because they differ considerably in composition, hard wood ashes being generally accounted best.

THE DROPPING OF FRUITS.

To the Editor: I would be very grateful to you if you could tell me why fruit will drop when apparently well set. The pears were looking most encouraging, likewise "Hungariens" plums, now they are dropping without any apparent cause for same.—GROWER, Colfax.

It is impossible to tell why fruits drop after making considerable growth. Sometimes it is probably due to lack of proper pollenization of the blossom. The fruit then is imperfect and only continues its development to a certain stage and is then cast off by the tree. All fruits, however, drop more or less, and no one has ever fully explained nor suggested any practicable remedy. Fortunately in most years enough fruit remains, and in some years too much remains, so that thinning is necessary.

DIABROTICAS.

To the Editor: Enclosed please find in small envelope two bugs taken in the act of eating leaves from young peach trees; they are quite numerous and have damaged some of the trees. Kindly let me know the name and if they are likely to become a pest.—ORCHARDIST, Dinuba.

The insects are Diabroticas and have a very bad reputation for eating young leaves and ripening fruit also. They spend their larval stage in the ground living upon roots, and inasmuch as the pest is underground during the greater part of its life and a very active flier during its perfect state, also because it is very difficult to poison, horticulturists have been greatly disappointed in their efforts to reduce it. The insects can be driven to some extent by the use of smoke; that is, by the building of fires of damp straw, or other such materials, on the windward side of the orchard the pests may be forced

to seek other feeding grounds on the lee side. This is, unfortunately, about all that we can suggest to you in the way of treatment.

CABBAGE LICE AND CABBAGE WORMS.

To the Editor: I have as pretty a garden as ever was seen in my back yard, and have quite a patch of cabbages, and the past few days lice have appeared quite plentiful. But the worst thing is a worm about one inch long and green in color, who is just eating up the cabbage entirely. What will kill both, as I take quite a pride in my garden.—AMATEUR, San Francisco.

You can often dislodge lice from cabbages by the use of garden hose, shooting the water at them with a pretty strong pressure, dislodging them mechanically. The worms have to be poisoned and paris green is generally used for this purpose, about one ounce of paris green to ten gallons of water, applied with a garden syringe or force pump. The liquid should be kept well stirred because the paris green will settle to the bottom otherwise. This treatment has proved to be safe, although paris green is such a violent poison, because the cabbage grows from the inside and the outer leaves are all removed before cooking. The water should be applied in a very fine spray or mist so that it will not run away, but will remain and hold the poison ready for the worm.

ALFILARILLA.

To the Editor: Can you give me any information about a fodder plant that is grown in California, commonly known as "filaree"? I should like to know how far north it is known to have grown, and to have any information about it that may be at hand.—ENQUIRER, Omaha.

The forage plant known as "filaree" is *Erodium cicutarium*, or alfilarilla, the latter being its full name in Spanish. The plant was brought to California at some time during the Spanish occupation and was quite widely distributed before the Americans came. It grows freely in all parts of California and has been introduced into Nevada and other interior regions by sheep, but we do not know with what success. The plant belongs to the geranium family, is an annual, is quite hardy against such winter frosts as we have in California, but finishes its growth on the approach of the dry season. The seed is very hard to secure, nor is the plant grown as a cultivated crop, but rather as wild pasturing.

CORRECTION OF DEFECTIVE GROWTHS.

To the Editor: Will you kindly advise me as to what is required in order to get samples of soil analyzed? I have a small place near Los Angeles on which I am at present growing figs, and I am not entirely satisfied that it is the best crop for the soil or that I am getting as many figs as I should. I notice every year that I have a few of what we call 'first crop' figs, and as they are as a rule finer figs than the second crop and bring a better price I would of course like to increase my first crop. I have about forty acres, but not all of it is planted to figs, and I desire advice as to the best crop and the best fertilizer to use. I also have a few English walnuts on the place, but I experience the same difficulty with them as is so common in the vicinity of Los Angeles; that is, quite a number of limbs die. Have you any suggestions to assist me to remedy or cure or prevent this?—OWNER, Los Angeles.

It is not possible by chemical analysis to tell to what particular fruit a piece of land is suited. Sometimes one can tell more by horticultural examination of the soil, its depth, its coarseness or fineness, etc. The behavior of the English walnut would indicate that there is something the matter with the moisture conditions; either the soil is too heavy and keeps the water standing in it for some time, or else too coarse and loses so much moisture by drainage that the tree fails to get supplies in the latter part of the season. These conditions usually cause "die-back" in the walnut, and the remedy is either under-drainage to remove the standing water in the winter or irrigation to maintain the moisture supply late in the summer. The failure of your later figs seems to indicate that they do not have water enough, while the first crop may be well supplied. The

matter of getting more figs in the first crop is very difficult and is often determined by the habit of the tree, although it is possible that if the tree had better growing conditions during the latter part of the summer and autumn it might prepare for a fuller first crop. You have to look into the physical condition of the soil and the water supply. You may also need fertilization, and if you cannot get stable manure for this purpose any of the Los Angeles fertilizer dealers can furnish you with the proper mixture to stimulate growth and give more vigor to the trees.

GROWTH OF BURR CLOVER.

To the Editor: I have been offered burr clover seed for cover crop uses, but it is objectionable on account of its germinating late in the season. I write specially to know whether by planting the seed early, say September 1, it would not germinate in a couple of weeks just as peas and vetch do or will it come up late anyway no matter when planted. I notice that volunteer burr clover does not show up before December, and is not very much in evidence until the latter part of January. I should be tempted to use a little of it for cover crops, especially on steep hillsides, if it can be made to germinate early.—GROWER, Redlands.

Our experience in this part of the State is that burr clover starts quickly after the first rains and really makes a fine mat of verdure during the autumn, providing the moisture is continuous; if not it maintains its vitality until more moisture comes and then does make its heaviest growth in the winter. This is due to the abundance of the moisture supply and we know no reason why you would not get a good growth by early sowing and fall irrigation. If, however, you wish to grow it upon lands not reached by irrigation its behavior will probably be just as you describe, a waiting for more water, which the winter rains supply.

LICE ON MELONS.

To the Editor: I have watermelons and muskmelons with four leaves on them, and the plant lice are eating them up. Is there any remedy? If so, what is it.—GROWER, Shasta county.

The best remedy for leaf lice on the melon is the kerosene emulsion. You need a spray pump with a nozzle shaped so that you can shoot the spray against the under surfaces of the leaves where these insects congregate.

Pollarding Blue Gums.

To the Editor: Will it injure eucalyptus trees, to cut them off at this season of the year? I want to head some off about 5 feet from the ground so that they will start out again and make a wind break; they are about 10 years old, I should think. I would have cut them before, but had a crop on the land which we have just cut, and wish to cut the trees at once if it will not injure them.—READER, Santa Cruz.

Cut away when and where you like. You cannot injure a blue gum in that way, according to our experience. If you had wished to know when to cut to kill we could not answer.

FERTILIZERS FOR MUSHROOMS.

To the Editor: What commercial fertilizers should I use for mushrooms and what can I grow to prevent flies from laying the eggs from which the maggots come which bore into the mushrooms?—GROWER, Los Angeles.

Very little has been done in the use of commercial fertilizers in mushroom growing. The mushroom needs the organic matter in the animal manure to grow upon; it must have nitrogen in that form, and substitutes of other organic matter have not proved satisfactory. The nitrate of soda dissolved in water and applied warm to partly spent beds has made them useful for another crop, but the use of commercial fertilizers with common soil as a basis and without the organic manure would probably fail. We do not know of any plant that could be grown as a repellent for the flies which produce the maggots that attack the mushrooms. One reason why it is desirable to start at very short intervals with freshly made beds is to escape insects and diseases which gain access, and there is probably no other way to avoid them.

HOW TO USE SPROUTING WALNUTS.

To the Editor: I have several hundred black walnuts sprouted in a bed in my garden. They are about 4 in. apart. What is my next step to take with them? At what age should I graft the walnut of commerce on them?—BEGINNER, Glenn county.

You should plant them out at once, but you must make up your own mind as to how you will do it. If you wish to plant out the nuts in place, that is, where the trees are to remain, you may do as Mr. Burbank recommends, and that is to put two or three nuts in the place to guard against accidents and afterwards to remove all seedlings but the best one. These seedlings are allowed to grow for several years, as the grafting is easier as the tree gets older, and Mr. Burbank advises that they be allowed to stand as wild seedlings for six years. Others are in the habit of grafting a year or two sooner. If, however, you wish to bud or graft the trees in the nursery, plant them out in nursery rows, the rows about six feet apart and the nuts about one foot apart in the rows. Give good cultivation and undertake budding or grafting as the trees attain proper size. The best account of propagating by budding is that prepared by Mr. Felix Gillet and published in the Pacific Rural Press of March 24. The best way to work over walnut seedlings is, however, still under consideration and discussion, and before your trees reach satisfactory size may be better understood. The thing which you should undertake at once is the planting out either in place or in nursery rows, and the growth of the trees in nursery rows for a year or two would not interfere with your planting them in place at the end of that time if you then conclude that grafting the orchard is a better plan.

Scalding Morning Glory.

To the Editor: In answer to recent request for experience in killing morning glory in pastures I report that a patch two rods square in my hog pasture was corralled in with a levee, the check connected up with the ditch and a little water run in every other day—just enough to keep them covered. It took about three weeks. The July sun did the rest. Anything that can stand stagnant water in the San Joaquin valley in our hottest weather must be to the "manner born." Dead is no name for it so far as the morning glory was concerned.—SUBSCRIBER, Dos Palos.

This is a very valuable suggestion for the interior valley. Something else must be sought for the unirrigated districts and for the coast regions where the summer heat is not so effective at a scalding process.

HORTICULTURE.

A TRIBUTE TO A CALIFORNIA WALNUT ORCHARD.

We recently stated the fact that the Oregon Nursery Co. had obtained exclusive supplies of nuts and grafting wood of the Franquette walnut from Mrs. Vrooman's orchard near Santa Rosa. We hope to have some day Mrs. Vrooman's own account of her very creditable enterprise, but give at once an interesting account of the orchard prepared by Mr. Leon Girod, who recently visited it.

"It is two miles from Santa Rosa, California, and is owned by Mrs. Emily N. Vrooman, widow of the late State Senator Vrooman. The fifty-five acres of seven-year-old trees grown from grafts, last year yielded 14,000 pounds of good marketable nuts, and as the years go on this amount is bound to increase. The trees in the orchard are planted fifty feet apart, but this is too much space. [We presume this statement is intended to apply to grafted trees particularly.—Ed.] Planted forty feet apart will give plenty of room. I at once secured this crop, and the nursery company later made arrangements for the entire yield of the grove during the next three years along with all scions cut from the trees. While inferior nuts brought in the neighborhood of 13 cents on the market, the nuts from this grove easily commanded from six to eight cents more. When properly cured they can be kept indefinitely. The Franquette walnut originated in the south of France, scions from the original tree having been brought over by John Rock. The original tree, 300 years old, still bears great quantities of nuts.

"From the nuts planted this spring, will grow trees of second generation which will begin to bear as early as five to seven years. At seven years the average yield is about twenty pounds of nuts to each tree, the nuts

being as large and fine as the first generation nut. From this on the increase is rapid, the trees bearing 70 pounds at 10 years, and more as time goes on."

Asked why the Franquette nut had been selected for propagation in the North Pacific States, Mr. Girod pointed out the fine quality of the nut. "You see," he said, "it is elongated in form, of large, uniform size, and has a smooth, well filled shell of medium thickness with meat light yellow in color and of a rich oily, nutty flavor. The most important consideration, however, is the late blooming quality of the tree, which is most essential in this region where late frosts prevail."

STRAWBERRY GROWING ON THE UPPER COAST.

Strawberry growing on the upper States of the Pacific Coast is not like strawberry growing in California, and yet there are points of experience in the interior districts at the north which are applicable to this State. For this reason we select a careful essay on the subject prepared by Mr. R. A. Jones of Spokane for the Northwest Horticulturist, which our readers may find suggestive.

Varieties.—About eight years ago I began growing strawberries on a commercial scale. I found amongst the many varieties which I had tried that many kinds were absolutely worthless for my particular location, among which were, Greenville, Mary, Lovett, and a number of other varieties which have slipped my memory. A few kinds seemed to do very well, among which were, Glen Mary, Haverland, Clyde, Crescent, Wilson, Clark's Seedling and a few others of less importance. Among all of them, Glen Mary seemed to be far in the lead, and I might also say that Warfield seemed promising but it mildewed badly. In the spring of the second season before my field had fruited, I planted two acres more of runners of many kinds which I had on hand. Not knowing which were the best, I put in some of most all kinds. This gave me about three and three-quarters acres and I still knew nothing at that time of what I should have planted. I would have done better to have contented myself with the acre and three-quarters originally planted and waited for results before increasing my acreage. The following year I planted nearly two acres more mostly of Glen Marys; flattering myself at that time that as soon as they came to bearing, I would be strictly in it. Sure enough the following year after planting they were enormously productive and when the young crop was developing I was in high spirits, but to my dismay, when I came to market my crop, they proved to be so soft and ill-shaped that I could scarcely sell to the same merchant more than once, as they would not stand up for twenty-four hours and look salable. Picked one day, the following morning many of them would be covered with white whiskers even though we picked them half green. I was obliged to sell them at any price I could get; away below prices for which good berries could have been readily sold.

Essential Points.—I then cast about for a berry that would fulfill several conditions. 1st, productiveness; 2nd, firmness; 3rd, quality. I was at that time experimenting with the then new William Belt, and Warfield also gave encouragements; a little later came Senator Dunlap, and Clark's Seedling, which was doing well although not a heavy producer.

The following year I planted largely of William Belt, Warfield, Senator Dunlap, Hood River and Tennessee Prolific, besides trying a number of new varieties. By this time three years of experience had passed and I had made but little more than my expenses. Strawberry growing at the end of these three years did not look as flowery to me as it did when I planted my first patch. However, I was convinced from my experience that it was possible to select varieties and select the best plants of the varieties that would produce a handsome profit, and so I persisted in my efforts. While the following year was not a banner year, yet it was far in advance of the former years and convinced me that I was on the right track. I want to mention before I go any farther that in planting the third season, I selected very carefully the best plants, rejecting all plants which did not show a blossom bud. The result was that I obtained a field of berries which were nearly all money makers.

By this time I had plowed up most of my old fields and about half of my large patch of Glen Marys, which had proved so soft that they were not marketable, even though they were picked half green, and to my agreeable surprise, the Glen Marys which I saved were producing much better berries than they had in previous years, not quite so many of them but of nice shape, color, and firmness. And to this day these same fields of Glen Marys which I retained are producing good crops of firm, handsome berries.

Manured Before Planting.—I had manured the ground heavily before planting any of my fields to strawberries, and I believe that with the exception of the Glen Mary it was very important and perhaps necessary to the production of a large crop. But in the case of Glen Mary, I have learned that it should not be planted on heavily manured land, or, in fact, land rich in nitrogen, for in every case where I have watched it, in such rich ground it becomes soft and bad shaped; but if planted on good soil strong in potash, lime, and phosphoric acid and not very strong in nitrogen, it will produce a very large crop of good, firm, marketable berries.

Important Points to Observe.—First, manure your ground heavily for nearly all varieties, but not for Glen Marys.

Second, use hill culture planted one foot apart in the rows and three and one-half feet between rows. Keep off all runners the first year. Keep well cultivated and irrigated if necessary. In the spring cultivate and hoe well, then after the blossoms have fallen and the berries set, mulch between the rows with straw or hay about one inch and not over two inches thick. Let this mulching extend close under the leaves and fruit in order to keep it clean. As soon as the crop is harvested, mow off the tops and allow them to dry for a few days, then set fire to the field.

It should burn reasonably close and clean. Do not leave large heaps of straw or leaves in any place, but let the leaves and mulching be thinly spread over all. In this way no injury will come to the plants from fire. As soon as the field is burnt, cultivate and if necessary, irrigate. In a few weeks the whole field will be bright and green and look new. All weeds and seeds, worms and fungus have been destroyed and the field is purified. Treated in this way, few or no runners will appear during the season, thus saving the trouble and expense of cutting the runners, as the strength of the plant will be absorbed in producing new foliage and setting fruit crowns for the following year. Under this system of culture the fruitfulness of a field can be maintained for double the length of time that it can be from the matted row plan. However, I have found that a narrow matted row, not too thick, matting of the William Belt and Glen Mary is advisable, but do not allow them to increase their matting after the first year.

Results of Experience.—The first three or four years I was barely making my expenses on my fields, but from the time that I began to select my breeding stock of plants and planted my fields to the varieties which did the best, I have been abundantly successful. For three years past, I have had six acres of berries which have produced nearly three thousand dollars clear of expenses annually. While this may not seem large to some growers, I am satisfied with it and believe that it is far above the earning of the average field.

I want to mention that a part of the six acres is of the old planting of Glen Marys now five and six years old, yet they are producing handsome firm fruit in abundance, and so far as I can see the majority of the field is about as vigorous as ever and at this writing the old hills are full of blossom buds.

Selecting Plants.—I cannot too strongly impress upon growers the importance of careful selecting in plant breeding. Much of my success I attribute to this principle. My plant breeding fields are renewed annually and I select annually the best of the best and have been doing so for years past until now my strain of plants are wonderful producers and each year we cull out with the same severity. Of course, it costs a great deal more to do this than to take plants helter-skelter; but the reward to the planter under these modern and scientific methods is large.

In conclusion I will say to parties intending to go into the berry business and who are not experienced, do not undertake too much to begin with. Don't buy strawberries simply because they are cheap, but learn how they are bred. The first cost amounts to but little when compared with future results. Try a number of kinds to begin with and find out which does the best in your locality. A strawberry may do well in some particular spot, but move it a mile to a locality of different soil and conditions and it may be a failure, so I do not advise anyone what varieties to plant.

Perhaps the kinds that have been money makers for me would be failures with others. Each must experiment in his own grounds and determine which varieties are most successful, then plant those kinds; the planter must make up his mind, when he starts in, to be several years in reaching the time when he will have large money-making fields.

KILLING CATERPILLARS.

Some caterpillars collect on the ground or on the trunk of the tree and it is desirable to kill them before

they can return to the branches. Mr. Wm. H. Smith of St. Helena gives the following prescription which kills as soon as it touches:

"Crude carbolic acid (genuine) one pint, kerosene oil, seven pints; mix and use with fine sprayer.

"This of course burns the foliage, but not prune trees. The worms work at night and congregate when the sun is hot on the trunk and large limbs of the trees. That is where we get them. This will not injure the trees by getting on the bark. By this method we kill millions and prevent them from doing much damage."

THE VINEYARD.

INVASION BY SPHINX WORMS.

To the Editor: Will you please identify the caterpillars which I send under separate cover, and inform me of the most effective means of destroying them. They work mostly on grain and grape vines, though one Car. poplar tree was attacked by them. Both the black and green ones are found together moving in a sort of army a few hundred yards wide.—R. McCURDY, San Benito county.

To the Editor.—We are sending you to-day a number of worms which have been working in this part of the county for about a week. We first discovered them on Thursday traveling on the county road looking for green stuff to feed on. On Friday they came across the road to our vineyard and we have been fighting them since. They have done no damage so far, as we have been able to keep them under control. They, however, have completely destroyed a four or five acre patch of young vineyard belonging to a neighbor of ours. They seem to feed on any kind of green feed, excepting sun flowers, but they prefer vines. If left to work unmolested they would clean out a vineyard in a short space of time.

Before they reached our vineyard in any numbers we dug a ditch about a foot deep and about a foot wide, with the sides straight up so that there would be nothing for the worms to climb on. As soon as the worms fell in the ditch they tried to climb out, but would fall back, and in this manner we were enabled to keep them out. However, before the ditch was dug there were a number of the worms which reached the vineyard. To kill them we tried coal-oil, and this did the work, but it was too slow, so to-day we are cutting them in two with scissors. This works very fast and we will get them under complete control by to-night, unless a great many more come in on us. Please let us know the kind of worm and also its habit. Undoubtedly these worms would cause an immense amount of damage should they appear in very large numbers. There are tens of thousands of them here now.—BUHACH PRODUCING AND MANUFACTURING CO., Merced.

The caterpillars which you send are the larvae of two species of Sphinx moth. They breed on the weeds and other native plants and move forward into cultivated fields as they see fit. They are sometimes held in check by herds of turkeys, but they are such ravenous eaters that defense operations are not usually quick enough. When they attack vineyards it is common to send men in to pick them off by hand and crush them. If they are getting into a defined path it is a good idea to sprinkle straw, allow them to congregate in the straw and fire the whole business. Usually they are not numerous enough to do very much harm, but some years they are so abundant as to almost defoliate the vines. About 25 years ago they appeared in such numbers in the Barton vineyard at Fresno that hundreds of men were armed with scissors and sent in to snip the worms as the fastest way to dispose of them. Your methods of fighting them are the best known. The moths are of the group known as humming-bird moths.

THE WINE CONDITION AND OUTLOOK.

The condition of the wine trade as the result of the San Francisco fire is thus presented in a circular letter sent out by P. C. Rossi, president of the Italian-Swiss Colony:

"We are glad to be able to inform the trade, and especially our friends, that although the business portion of San Francisco was almost totally destroyed by fire, together with a large section of the residence district, we have been exceedingly fortunate in miraculously saving our property, and are, therefore, in a position to resume and continue business, executing all orders with the usual promptness.

"One of the results of this disastrous conflagration

has been the destruction of 15,000,000 gallons of wine, the larger part of which was old red and white wine, especially put aside for ageing purposes. In view of this extraordinary situation affecting the industry in general, a consultation of the most interested persons was held, and by unanimous consent it was considered advisable to adopt emergency prices, raising the value of the different grades according to the shortage produced by the destruction in one different qualities.

"We realize very well that for the welfare of the California wine industry the prices should be kept as reasonable as possible, as the largest consumers of wine are people of moderate means, who use the wine at meals so long as they can get it at reasonable prices, but discontinue to use the same when prices get too high; and it is the general intention of the merchants to again reduce the prices as soon as conditions of the market permit it.

"Fortunately for the industry, the prospects for the next vintage are excellent, and if nothing happens until then, California will be blessed with a very large crop, which fact will again permit the quoting of low prices for claret, which is the principal wine used by the masses, and the consumption of which will certainly be curtailed unless supplied at lower prices.

"However, no matter what will be done with the new wines, the old wines will for many years to come command very good prices, as houses with established reputations for fine wines having a large bottling trade, and who are fortunate enough to have fine vintages, will have to reserve the old stock on hand for that purpose."

FRUIT PRESERVATION.

THE FRUIT CANNING OUTLOOK.

The following circular letter has been issued by the California Fruit Canners' Association to agents and brokers, and it will interest our readers to see how the subject is handled from a trade point of view:

It is estimated that 300,000 cases of goods were burned in the factories and warehouses of the various packers, in addition to such stocks as were in the hands of the wholesale and retail grocery trade. A large part of the stocks in packers' hands had been sold and stored for jobbers' account.

Trade has been heavy on damaged goods, but regular stocks have not been freely offered, owing to the desire of packers to check up warehouse accounts and get their outstanding accounts adjusted.

In the disaster the following canneries were burned: California Fruit Canners' Association, Sansome street; California Fruit Canners' Association, Fontana branch; Corville Packing Company; Central California Canners; California Canners Company; Presidio Canning Company. The California Fruit Canners' Association cutting plant was not burned, and is now in operation on pease and early fruits. The Overland Packing Company plant was not burned, but has been leased to other parties in another line of business. N. Goetgen's plant, used chiefly in the packing of meat and vegetables, was not burned. Mr. Jacobs is engaged in building a new plant for the California Canners Company, and hopes to have it ready for the fruit season. The Code-Port-wood plant was not burned, but arrangements had been made to move across the bay to East Oakland, and the city plant will not be operated hereafter.

It would appear, therefore, that the California Fruit Canning Association's cutting plant, N. Goetgen's, and possibly the plant of the California Canners Company will be the only ones operated in San Francisco this season.

The Central California Canners lost their factory in San Francisco by fire the day before the earthquake, and the plant in which they were interested in Yuba City was only recently burned on May 20.

On the whole it is likely that the packs will be materially shortened. San Francisco has always been the determining factor in the price of standard and cheaper grades of fruits and vegetables, owing to the large output, cheaper labor, cheaper delivered cost of all materials, and usually cheaper fruit.

The inquiry for future prices from all quarters indicates a strong market. The situation in Great Britain has improved materially, owing to the poor condition of the growing fruit crops. Holders of California goods have marked up their prices, and show unexpected interest in the prospective pack.

In spite of the good crop of peaches promised in Maryland and Delaware, etc., the volume of business on the Atlantic seaboard and in the Middle West—subject to approval of opening prices—is reported as being heavier than last year.

Packers seem unwilling to quote new prices until the can supply is more fully assured and until time is given to provide for the changed conditions.

PROTECTION AGAINST THE WHITE FLY.

The following order has been issued by State Horticultural Commissioner Cooper and approved by Governor Pardee in accordance with the quarantine law of the State:

Whereas, information has been received by this commission to the effect that the white fly (*Aleyrodes citri*) is prevalent in the State of Florida and Louisiana, and that it is found upon wider range of plants and trees in those States, where it is a serious, costly and uncontrollable pest, and that orange, lemons, citrus and other nursery stock, as well as herbaceous and other plants, are infected with said white fly; and,

Whereas, said *Aleyrodes citri* does not exist, nor ever has existed upon any fruit, trees or plants in the State of California; and,

Whereas, there is great danger to be apprehended to the fruit industry of this State from the importation of nursery stock, trees, fruits or plants from infected sections of Florida and Louisiana; therefore

It is declared that a horticultural quarantine be, and is hereby established against all fruit, nursery stock and plants, imported from the States of Florida and Louisiana into California, and all horticultural commissioners and local inspectors are hereby instructed to hold any and all such plants, fruit or nursery stock subject to the shippers thereof, for exportation out of the State, and to take every necessary precaution to prevent the introduction of the said white fly into their districts.

CANNERY BURNED.

The cannery of the Sutter Preserving Company in Yuba City has been destroyed by fire, entailing a loss of \$15,000. The warehouse was saved by the willing workers who tore away a section of building connecting the two larger ones and by carrying water from nearby houses to throw upon the fire as it approached the warehouse by way of the platform. A large number of men with saws and axes worked in the heat of the fire to cut away the platform and carry off the lumber so there would be nothing to feed the flames.

The entire plant was insured through the Farmers' Union Bank of Yuba City for \$6500.

The fire was discovered at about 8:30 o'clock and within a few moments the whole building was ablaze. In half an hour there was little of it left. The fire started in the vicinity of the engine room, but the cause of it is not known. There is some talk of incendiarism, but there is little to base such suspicions upon. When the insurance adjusters arrive they will learn all the facts, and if they see any suspicious circumstances they will institute an investigation.

The cannery was under lease to the Central California Canners for a term of five years, commencing with this season, and orders had been placed for machinery and supplies to increase the present capacity of the plant. The buildings were to be enlarged and contractors had been asked to submit bids.

WHEAT OUTLOOK POOR.

Prospects for a heavy wheat crop in Sacramento county are poor. In the early season the grain looked well, but the rains of spring were torrential and continuous. The wheat in low places was drowned, and on high ground the earth was packed so that the grain could make but little progress. W. R. Cook of Galt says that the wheat in the southern part of the county will be cut for hay. Information concerning conditions up the Sacramento valley are better, though there has been a gradual diminution of the acreage devoted to wheat, the introduction of orchards and vineyards having done much to decrease the space allotted to cereals.

TEACH FARMING THROUGH MAILS.

A novel feature is to be started in instruction in irrigation in the University of California, which is to take the form of a system of instruction to the farmers throughout the State by means of correspondence. When the method proposed is completed the agriculturists throughout the State will be able to study irrigation at their homes. Professors W. T. Clarke and Elwood Mead are now at work arranging the course and expect that they will have it in working order by the beginning of next term. Professor Clarke has just returned from a tour of the State, and his experiences will serve to guide him in preparing matter on irrigation that will be of the most benefit to farmers who would study irrigation difficulties. The course will deal with the laws regarding irrigation and the practical difficulties. An examination will be given at the end of the term.

It is planned to have the course similar to that now carried on in entomology, which Professor Clarke inaugurated and carried on with success two years ago.

The two courses will be known as "Irrigation Institutions" and "Irrigation Practice." It is expected that the new courses will prove of great value to recent arrivals from the East ignorant of irrigation work.

THE IRRIGATOR.

IRRIGATION FOR YIELD, SIZE, QUALITY, AND COMMERCIAL SUITABILITY OF FRUITS.

By E. J. Wickson in the report of Irrigation Investigations of the U. S. Department of Agriculture.

Introduction.

In earlier publications of the Department the writer endeavored to prepare useful statements of irrigation policies and methods from the point of view of the irrigator himself, securing the data by careful inquiry from the experience of several hundred irrigators in the Pacific Coast States. It has seemed fitting to pursue the inquiry along the practical side one point further and draw from experienced irrigators their conclusions as to the effects of irrigation upon the commercial availability and value of fruits.

Questions were sent to about 300 growers of irrigated fruits in the States of Idaho, Washington, Oregon, and California and to a number of shippers, driers, and canners who had used irrigated fruits in their trade or manufacture. The response from all the above-indicated interests was very satisfactory; a very free expression of belief and a very ample citation of experience were secured. It is the aim of this publication to deduce from this collection certain facts which seem to be clearly established by experience; to enforce them, where desirable for beginners in irrigation, with some account of the general principles which underlie them; to give due attention to responses which seem to contradict the prevailing conclusions on the same points and to account for the divergence of views by reference to different controlling conditions which give rise to it.

Quantity of Product as Affected by Irrigation.

This is a matter which is really not in controversy in its general features, for there is a general disposition to credit irrigation with greatness of product; in fact this concession is often made with the view of denying its desirability—a question which will be discussed later. There is, however, a question newly broached and now commanding much attention, viz., how far is irrigation desirable in regions of considerable rainfall, or, in other words, how much water can a fruit tree or vine use to the profit of its owner? It is more clearly appearing each year, as Pacific Coast trees become older, larger, and with greater bearing capacity, that more water is desirable than earlier in the life of the plant and that in the same locality some water in addition to an average rainfall, and much water in addition to an occasionally scant rainfall, make for the strength and capacity of the tree, which are manifested in the aggregate weight of the product. The recognition of this fact is carrying irrigation practice each year farther into the regions where the heaviest rainfall is received, which, on the annual rainfall figures alone, are called humid. Really, the districts in which the advantages of irrigation are now most warmly discussed are the districts where a few years ago freedom from irrigation was gloried in, and in such districts the most striking instances of the commercial benefits of irrigation are to be found. The old contrast between the desert and the irrigated garden remains, of course, but it is accepted and admired in silence. The contrast which awakens most interest is that between the product of irrigation and that of rainfall where the latter was formerly held to yield all the water that could be desired. It requires a few more years of experience to multiply instances along this line, but they will be found ere long in great numbers in western Washington and Oregon and in Northern California.

In the individual reports of observation on the influence of irrigation upon the volume of produce, all comments from strictly arid localities are omitted. Where it is manifestly impossible to grow fruit without systematic irrigation, the considerations which it is aimed to develop in this connection do not appear, because the use of irrigation is essential to any produce at all. The comments of correspondents upon the growth of berries and of citrus fruits are also largely eliminated because the shallow rooting of the former and the evergreen growth of the latter render both dependent upon irrigation during the long, dry season to a degree beyond any requirements of deep-rooting deciduous fruit trees and vines. The following excerpts from correspondence then apply to localities where it is quite possible to grow the fruits, at least on some soils, with some degree of success, without irrigation, so that comparison with adequate use of water can be made:

Idaho.

W. G. Whitney, Payette: The weights of single fruits by irrigation are increased about 10 per cent and the crops about 50 per cent.

L. A. Porter, Porters: I have kept no account of unirrigated trees, as neither the growth nor the fruit was such as to excite admiration.

Washington.

C. Robinson, Chelan: Trees here are planted close, say 16 to 20 ft. each way. As they get larger the number must be reduced unless irrigation can be had.

A. L. Graham, Anacortes: No fruits are grown by irrigation as yet, but probably all would be benefited in dry seasons, especially apples and pears during August and September.

Jason Whinery, Spokane: I can not irrigate my land, but most of it would be greatly benefited by it.

Oregon.

Seufert Brothers, The Dalles: I have picked 500 lb. of fruit from a Royal Ann cherry tree 12 years old. Without irrigation it would not yield a pound, as it is on dry soil.

W. Dimmick, Hubbard: Not much irrigation is needed in the Willamette valley, though it might be used to some advantage.

Ray C. Brown, Roseburg: The prevailing opinion of fruit growers in this section is that deciduous fruits need no irrigation. For myself, I am of the opinion that the moisture retained in the soil during the protracted drought of July, August, and September would easily admit of supplement by judicious irrigation.

A. H. Carson, horticultural commissioner, Grants Pass: There is not a 40-acre tract of land in Josephine county on which an abundance of water can not be had by digging wells, and with cheap gasoline or electric power it is profitable to dig the wells and use the water. Especially is this true when it is known that one acre, intelligently handled with water to irrigate with, will, during a year, produce ten times as much as without. To illustrate, Olwell Brothers, of Central Point—commercial apple growers—have made a success growing apples without irrigation. These successful men do not allow themselves to drift—they keep on doing things. As an experiment, last year, in their orchard at Central Point, they put in a gasoline pumping plant, which cost them for well and gasoline engine and gasoline for the season, \$720. They irrigated 100 apple trees and last fall sold the apples from their irrigated trees for \$1,100—\$380 more than their plant cost them. Without irrigation, these 100 apple trees, owing to the very dry season and the very dry ground where they were situated, would not have matured a dollar's worth of marketable apples.

California.

Owen Daily, Whitmore, Shasta county: I can not give weight or measure, but I believe irrigated trees produce twice the amount of fruit that can be had from non-irrigated trees and of better quality.

W. E. Whitmore, Whitmore, Shasta county: Mr. W. A. Smith owned a dry ranch 10 miles from Millville, at an elevation of 1,200 to 1,500 feet, the soil rocky, a clearing of blue oak and digger pine. He had early grapes, but Muscats did not mature. He secured irrigation water, and since then has had good Muscats also.

George A. Lamiman, Anderson, Shasta county: The yield of good-sized trees by irrigation will be about 200 lb. of fruit, while non-irrigated trees will yield from 40 to 50 pounds.

George H. Flournoy, Corning, Tehama county: Thomas White, of Richfield, gathered in 1903 50 to 60 lb. of peaches from trees planted in dormant bud in 1900. Non-irrigated trees of the same age bear nothing. There are some lands in this section upon which fruits do well without irrigation, but I do not know of any that would not be benefited both in quality and quantity of products by the proper use of water.

W. E. Hazen, Manton, Tehama county: I have picked and weighed a ton of apples from one irrigated tree. Prunes do about the same. Non-irrigated trees do about one-half as much.

J. L. Barham, Manton, Tehama county: Irrigated apples are large (16 to 22 oz.) and plenty of them. Irrigated prunes run mostly 40 to 50's and 50 to 60's.

G. M. Gray, Chico, Butte county: I am satisfied I have doubled my fruit crops by irrigation.

Rio Bonito Orchard Company, Biggs, Butte county: Irrigation is the life of prune trees. In our experience, when over half a mile from a river, irrigation has increased the size of the trees about 30 per cent. and the crop about 100 per cent. Since commencing irrigation I have never had a failure of the prune crop, regardless of years of drought and other causes. Prunes have yielded 12.6 tons to the acre, green weight. Cling peaches 6.5 tons to the acre of 2½ in. in diameter (cannery size) and clean fruit. Pears, unirrigated because out of the reach of water, are an uncertain crop.

A. D. Cutts, Liveoak, Sutter county: We have determined that to get the best results with deciduous fruits we must keep moisture at the roots of the trees from the time they start growth until the fruit is picked. There is no question in my mind as to the value of irrigation to this end, as we have grown larger peaches than before, while most growers who do not irrigate get very small fruit.

C. E. Burns, Fulton, Sonoma county: From what I see of orchards in this county I am sure that the trees are suffering from lack of moisture and would be greatly benefited by irrigation. Some of the trees have light crops, but still do not look as healthy and vigorous in leaf and shoot as they should.

E. W. King, Ukiah, Mendocino county: Two great dangers of fruits here are, first, frost; second, hot weather in July and August, which burns the fruit. The latter, I believe, would be obviated by irrigation, and the quality and quantity of the fruit much improved.

A. E. Burnham, Healdsburg, Sonoma county: I have an early cherry tree which, after bearing three or four years, began to die back. The leaves would droop and wilt soon after the fruit was ripe. I had a well sunk close to it for my windmill and 3,000-gal. tank, for house and barn use. More or less water was thrown around the tree and it started to recover, and has borne several crops of better fruit, and today it is perfectly healthy. All it had was plenty of water in the dry season. I have four cherry trees in my dooryard, and in 1903 apparently every bloom stuck, and about the time the fruit should begin to swell out the cherries looked as though they would be good for nothing; but I ran water from the tank by tons until I had the ground soaked deep. The fruit began to swell out and the leaves brighten, and the result was I sold nearly \$40 worth of fruit for canning from four trees.

John T. Harrington, Colusa: I have grown oranges weighing 78 lb. to the box by irrigation and a thorough system of cultivation.

T. J. Wagoner, Rough and Ready, Nevada county: From three irrigated Crawford peach trees I have picked 40 boxes of fruit. The average of the orchard was eight boxes per tree (20 lb. per box), and they sold at 50 c. per box.

P. W. Butler, Penryn, Placer county: Fruits can be grown without irrigation, but it is absolutely obligatory in this region that they have irrigation if grown for profit.

W. R. Fountain, Newcastle, Placer county: My 780 cling peaches (irrigated) have yielded from 53 to 70 tons of canners' size fruit, and are cropped every year.

F. B. McKevitt, Vacaville: I have known a single irrigated two-year-old peach tree unpruned and the long growth staked up to produce 200 lb. of peaches.

W. J. Pleasants, Winters, Yolo county: We have in Pleasant valley about 25 in. of rainfall upon an average each year. I do not believe we need irrigation here for growing fruit because of the heavy clay subsoil which prevents the water from escaping from below. On the other hand, any soil that has a gravelly or sandy subsoil can be greatly benefited by irrigation because the rainfall in the winter goes through and leaves the tree roots dry. Land with this gravelly or sandy subsoil should have water in spring and summer to get the best results. A great deal of the soil of the Sacramento valley has such subsoil and shows the want of summer irrigation. In many places irrigation would double the production and value of the lands.

Edgar J. De Pue, Yolo, Yolo county: We are fully satisfied that without irrigation our crop would virtually have perished during the past few years. We have 500 acres and aim to irrigate the whole of it. We have found water particularly beneficial to almonds, assisting the development of the hull as well as the kernel and preventing "sticktightness."

Charles W. Landis, Folsom City, Sacramento county: The early varieties of deciduous fruits are not irrigated here, and plums and prunes seem to mature without irrigation. No satisfactory results have been obtained from irrigating almond trees. Peaches and grapes are irrigated, though all these fruits will grow and come to maturity without water yet the net results usually pay more than the expense of irrigation.

William Johnston, Courtland, Sacramento county: Twice in my life I thought it best to irrigate peach trees, and these times were two dry years twenty years apart. At these times the water applied proved of great value, but ordinarily I do not think we need irrigation.

Vital E. Bangs, Modesto, Stanislaus county: I know of but one orchard here that has yielded fair crops without irrigation and that is an olive orchard half a mile north of Modesto, but even this orchard could be made to increase its yield by irrigation.

A. J. Heese, Merced, Merced county: I have irrigated peach trees seven months from planting which are larger than the average of four-year-old trees planted on an adjacent dry land and grown without irrigation.

W. S. Shelly, Hollister, San Benito county: On land short of natural moisture irrigation will increase production from 10 to 20 per cent.

Charles Downing, Armona, Kings county: My pear orchard is sub-irrigated by seepage from the main ditches. There are two or three spots where the ground is higher than the average of the orchard on which the trees are not of as vigorous growth nor do they

yield fruit of the same value as the average trees of the orchard. In my peach orchard a sand streak is noticeable by failure of trees to grow, probably because the streak will not hold the water.

Frank Femmons, Ahwahnee, Madera county: I have weighed 80 lb. as the product of a single irrigated grape vine and estimated five tons on one-half an acre.

H. J. Dennison, Nordhoff, Ventura county: The soil of the Ojal valley is very deep and rich, and with good winter rainfall and spring rains we can grow very good fruit without irrigation. I have, however, a few fruit trees near a water tank, which have been irrigated, and their product is larger and the fruit finer and larger than unirrigated trees. I believe irrigation would much improve the product, and in dry years would perhaps double it.

E. S. Thacher, Nordhoff, Ventura county: I am now beginning to irrigate a large olive orchard, being satisfied that in this locality olive trees can not be made to bear heavily without water after they have gained considerable size.

Robert Dunn, Fillmore: By my experience in Ventura county I found that irrigated apricot trees averaged 300 pounds per year for five years, while other trees of the same age in the same soil, but not irrigated, did not average 100 pounds per tree.

P. F. Cogswell, Elmonte, Los Angeles county: My English walnut trees (on sandy loam, 25 ft. to water) are vigorous and thrifty, showing large new growth each year and well-filled nuts of good weight. In other orchards on equally good soil and other conditions the same, but not irrigated, or so little water used as to be practically useless to a walnut, the trees show little or no growth, much dead wood in the tops, and nuts small and not well filled. In another situation a 12-year-old walnut orchard, unirrigated, yielded less than \$20 per acre, while irrigated orchards of the same age yielded \$100 per acre, and the unirrigated trees of 12 years old are no larger than irrigated trees at five years of age.

H. D. Briggs, Azusa, Los Angeles county: I have always irrigated, as I knew the returns would not be satisfactory if I did not. I have picked 1,000 lb. of apricots from one tree.

Henry D. Engelhardt, Glendora, Los Angeles county: A tree or vine properly irrigated will bear 50 to 100 per cent more fruit than one which has no irrigation.

James Boyd, Riverside: I have a small family orchard of deciduous fruits which has been irregularly irrigated with waste water, but not irrigated from July to September. This year the irrigation has been regular and thorough, and the trees and fruit are in better shape than ever before, apples especially. The trees have much better foliage, are making a better growth, and the fruit is better developed.

J. H. Reed, Riverside: We had considerable mixed plantings of deciduous fruits with oranges, and used plenty of water, but judiciously. Our trees were in bearing much earlier than adjacent non-irrigated trees—in fact, paid for the planting and care of the citrus trees up to the time the latter began bearing. This was a great saving, not to speak of the increased crops later.

I. Ford, Redlands: Apples can be grown in the mountains at 5,000 ft. elevation without irrigation by careful cultivation, but with a full crop the fruit is much finer and larger with irrigation. Ten-year-old apple trees will yield 10 tons per acre with a fair crop. My Ben Davis apple trees, planted in 1899, averaged 40 lb. per tree in 1903, 4,800 lb. per acre, as the trees are planted 15 by 20 ft., with expectation of thinning the trees when older. This would not be possible without irrigation, as in that case the trees ought to be planted not closer than 30 by 30 ft.; in fact, an apple grower at Julian, not using irrigation, says he would plant apple trees 50 by 50 ft., as they bear so much better. The difference in production of 120 trees or 20 trees per acre for the first five years of bearing will pay for the orchard many times over, and this is made possible by irrigation.

W. S. Corwin, Highland, San Bernardino county: Irrigated trees give 25 per cent more fruit than unirrigated.

C. A. Walter, Independence, Inyo county: My experience of 40 years convinces me that the best way to raise fruit is by irrigation.

R. Egan, Capistrano, Orange county: With full-bearing English walnut trees, 30 trees to the acre, the yield for several years has been 125 to 135 lb. per tree.

A. S. Bradford, Fullerton, Orange county: The yield of peaches, apricots, and apples has been fully one-third to one-half greater with irrigation, and the fruit is larger.

D. Edson Smith, Santa Ana, Orange county: In a few localities, where the soil is of such nature that it persistently retains its moisture, apricots may be grown to perfection with proper cultivation when we have an unusual amount of rain, but as a general proposition irrigation is necessary in order to secure the best fruit.

H. Culbertson, El Cajon, San Diego county: It is safe

to say that an orchard irrigated from the first, compared with one not irrigated, will yield five times as much fruit at five years old. The difference for grapes would not ordinarily be so great. Peaches at eight years old, under proper treatment, will yield an average of 300 lb. of marketable fruit to the tree. I have done this and know of others who have done better. Well-irrigated raisin grapes with me have produced two tons of raisins to the acre, where one-fourth that amount would have been a good yield without irrigation.

Lewis E. Kent, Poway, San Diego county: There is no doubt about the desirability of irrigation, as one can easily see the increased crops by irrigation, grapes and olives especially.

It is very significant that there is such unanimity in favor of irrigation, although many of the growers, whose conclusions are quoted above, are situated in districts having considerable rainfall. It is notable that, in fact, no reports denying the efficiency of irrigation in increasing the product of trees and vines were received, although there are, manifestly, conditions under which irrigation is not essential to the fullest service of the fruiting plants and therefore hardly worth providing. Correspondents, however, did not consider this point worth making in their reports. This clearly indicates a change in the public mind with respect to irrigation in fruit growing and betokens full recognition of its importance. A few years ago objections to irrigation as either unnecessary or undesirable, or both, would have been urged by scores of correspondents when offered such an opportunity as this inquiry placed before them.

THE FIELD.

ALFALFA CULTURE IN CALIFORNIA.

A very interesting account of alfalfa growing in California is prepared for the Farmers' Voice by Elenora Elizabeth Reber, who seems to be particularly familiar with the newer districts in the northern parts of the San Joaquin valley:

One enthusiastic California grower says that if he were called upon to express an opinion as to what product of the soil would probably assume the greatest importance to his State within the twentieth century he should not hesitate to say alfalfa. "As a forage plant for general use," he continued, "as far as I know it has no equal in value. This may be said not only in regard to its enormous productiveness, but as well in regard to its excellence as a feed, particularly for horses and cattle. For teams doing ordinary work on the farm and for milch cows, it answers the purpose of both hay and grain. I feed no grain to my teams, and they not only stand work well, but they keep in good condition and in good flesh."

That there are many California ranchers who agree with the one quoted is evident from the numbers and extent of the alfalfa ranches seen in the various parts of the State. Since it is under irrigation its growth is attended with the greatest success, and probably no finer alfalfa ranches could be found in the State than are seen in Stanislaus county of the San Joaquin valley, where the great Modesto-Turlock irrigation districts are located. It is estimated that 25,000 acres of land are now planted to alfalfa there, and the acreage increases continually.

Alfalfa does not thrive so well in the coast localities in the regions of cool fogs and cloudy days. In such parts it is of slow growth, and, furthermore, experience in this San Joaquin valley seems to show that it is not satisfactory to try to grow it where there is not irrigation. There is no other plant known which seems to require so much water so uniformly applied. Observation shows that rains, however great, will apparently not produce a satisfactory stand. This was noted during the past season in the Modesto-Turlock districts. The rains were so heavy during February and March that many growers failed to irrigate their alfalfa fields, feeling that the rains provided sufficient moisture to bring up the first crop. The fields that were irrigated proved this to be a wrong conclusion, however, for they showed a thick, dark green stand, while those that were not irrigated were weak and thin in their stands.

During the heated season alfalfa will turn off a crop every six weeks, as it is an exceedingly rapid grower. It must be irrigated after each cutting, and if not so irrigated, will refuse to grow another crop even though the heat of the climate be all that would be otherwise required. Accordingly the number of crops grown depends upon the presence of moisture during the heated period. In the Modesto-Turlock districts water runs in the canals until August, and four crops are grown in a year. Following the fourth crop there grows from a third to a half crop after the water is shut off, which is used as a grazing crop, as the stock roaming over the field during the period of a month or so does it no harm. This crop is too short to cut, and if it were

not grazed off it would die down when the winter weather sets in and the stalks cling to the plant in many dead, stiff straws, which would be an injury to the following spring crop. And so for every reason it seems desirable that this herbage should be grazed off. As soon as it is eaten, however, the stock is removed from the field, the spader run over it, the surface dressed with manure and the field then left to receive the winter rains. A field so treated will yield from a ton and a half to two tons to the acre at each cutting. So if the grower gets four cuttings the aggregate yield will be from six to eight tons to the acre. The grazing crop may be safely estimated to be half a ton to the acre. These estimates are in the cured product and not uncured grass.

After alfalfa is cut it is cocked at once and left to cure in the cocks. A common practice in Stanislaus county is to rake it in furrows while it is still moist and then cock it. If the field is very heavy, though, it is considered better practice not to put the rake into it at all, but to gather it with the hand fork. It is gotten into the cocks while still moist for the reason that if permitted to cure, spread out on the ground the subsequent handling and gathering will shake off large quantities of the lateral small leaves of the plant, which are the most nutritious part of the hay. For the same reason the hay is hauled to the stack in a carrier with a tightly closed bottom so that these small leaves will not thresh out with the movement of the vehicle.

The hay in this district is stacked in the open and the stack covered with grain straw, the precipitation of moisture being insufficient to make this an unsafe plan. Since alfalfa hay is highly fibrous and quite coarse and stalky, it does not lie close together and compactly as does grain, hay, and the open mesh-like mass is easily penetrated by the water from rains if the topping of straw is not applied. The danger of heating and spoiling is also thus obviated. If, however, the straw is not available the stacks are covered with canvas.

Alfalfa hay sells in the market at from \$6 to \$10 a ton; in the season, loose, delivered in town, and at times in the field or stack, for \$6; in the winter as a baled product it commands the higher figure. A hay baler is a valuable adjunct to the California alfalfa ranch, as the grower often gets more for the baled hay than he can make by feeding it to stock.

In grass and hay alfalfa comprises food for every kind of animal life kept on the farm, except the dogs and cats! Cows, horses, hogs, sheep and poultry of all kinds thrive on it. Hogs and cows are grown on alfalfa alone, and give good returns without other food. Indeed, the dairying industry is based upon it.

A fact probably not generally known is that ostriches are kept in small flocks until they are four or five years old, when mating begins, in alfalfa fields. They are fed in the feeding pens three pounds cut alfalfa to the bird, mixed with bran and barley in a wet mash.

The general practice on most alfalfa ranches is to irrigate by flooding, the land being graded and checked previous to planting. Three-acre blocks are considered about the right area for flooding so as to attain an easy and equal distribution of the water. A good flooding is applied after each cutting or oftener, if needed.

However, if land may be selected which is so located that subterranean moisture reaches near the surface and water applied by percolation, being run in wide, shallow ditches through the field upon the higher parts, seeping through the soil from these ditches and reaching thus all parts of the field, it is considered the more desirable plan.

A person purchasing land for the production of alfalfa alone would do well to select this kind of soil where irrigation by percolation may be employed, as the first cost of preparing the land is less, the crop produced is larger and of better quality, and the field is longer lived than where surface flooding is necessary, especially if the flooded land is sandy and porous, as successive floodings gradually leach the lime, potash, etc., out of the soil.

Seeding time varies with locality, the seasons being October or November for fall sowing, and February to April for spring sowing. By far the greater amount of sowing is done in the spring, however. When grown for seed the second crop is the one usually saved and the yield varies from 300 to 600 pounds per acre.

Interesting figures in regard to the Modesto-Turlock irrigation system, upon which the success of the alfalfa industry in this section depends, are briefly these:

The Modesto district main canal, feeding out of the north side of the dam, is 45 miles long, is 57 feet wide on the bottom, and will supply 90 miles of laterals averaging from 18 to 14 feet wide on the bottom. This main canal, with its laterals, has a capacity of 750 cubic feet per second and could supply 200,000 acres of land. There are, however, under the canal at the present

time only 82,000 acres. On the Turlock side the main canal is 22 miles long, 74 feet wide on the bottom, and is designed to carry a depth of 8 feet of water. There are two main laterals on this side aggregating 30 miles, 40 feet wide on the bottom, and six sub-laterals aggregating 80 miles, which are from 18 to 40 feet in width. The Turlock system is capable of carrying 1500 cubic feet of water per second. This would be sufficient to irrigate 375,000 acres of land, while the present district on the Turlock side embraces but 176,000 acres. The average cost per year to the consumer of this irrigation water is 42c. per acre. The water which feeds these canals comes from the Tuolumne river. Land in these districts and through which the canal passes can be bought at from \$25 to \$75 per acre, depending upon the usual qualifications of quality of soil, distance from market, etc.

One rancher who has 300 acres of three-year-old alfalfa says that the first year he cut 1200 tons of hay and reaped 5½ tons of alfalfa seed from the field. The following winter he pastured 300 head of cattle and 150 head of hogs thereon. The next season at one cutting of the 300 acres he secured 700 tons of hay, then pastured 400 head of cattle and 200 hogs upon it the remainder of the season and the following winter.

While the stories we hear of securing 10 to 12 cuttings from alfalfa in a single year must be taken with the proverbial grain of salt, there is no doubt but that alfalfa culture in California is an exceedingly profitable industry.

THE MARKETS.

San Francisco, June 5.

WHEAT.

Although the Merchants' Exchange has been in operation for a couple of weeks, there is practically nothing doing in futures. The speculative element seems to be entirely lacking, very few sales of December wheat having been made. The price for December has generally ranged around \$1.33. The spot market has been firm. Round lots of Bluestem are quoted at \$1.38½ and single car lots at \$1.40 Port Costa delivery. Club wheat is quoted about eight cents lower. There have been no spot offerings of red. For wheat to arrive \$1.33½ has been asked. Apparently the export requirements from this coast have been satisfied and present business is almost entirely for milling account. Holders in Oregon and Washington still continue to demand higher prices and are letting go very sparingly. Exporters of wheat on this coast are watching with much interest and with some little anxiety the arrival of wheat cargoes in Europe. These cargoes are now reaching their destination in considerable numbers and are expected to furnish a real test of the soundness of the present position of floating cargoes. The tightness of the money market in Europe and America is expected to have some effect upon prices realized for the cargoes now reaching Europe.

FLOUR.

There has been more inquiry from the Orient as well as from Central and South America during the past few days. Offers are coming in for small lots and these are generally accepted by millers here and on the Columbia river and Puget Sound as well. These orders have been generally on a basis of \$3.10 per barrel. California is still receiving small lots of flour from the north, but from now on this business is not expected to be anything more than normal. There is absolutely nothing doing with the United Kingdom or with continental Europe and no business seems to be in prospect. Millers generally are counting only on the domestic trade for the time being. California extras are still selling at \$4.65 per barrel, baker's grades bringing from \$4.40 to \$4.60 per barrel.

BARLEY.

Considerable interest seems to be taken in the barley market although prices for spot and future are both showing a tendency to weakness, owing to the imminence of the new crop. December barley has been selling on 'change at 95 and 96 c. Spot feed barley is weak, but a good deal has changed hands. The new crop is expected to arrive almost any day and this will entirely displace the old. At Portland and Seattle, where the new crop is further off, the market is steady to the extent of local requirements. California buyers of northern barley have entirely dropped out, as California prices have dropped beyond the par of northern prices. Spot feed barley is now selling at from \$1.07½ to \$1.15, while brewing barley is practically out of the market and quotations are nominal.

OATS.

Receipts of oats have been light, especially in the choice grades. Off grades have been more plentiful, the demand running somewhat below the supply. There is

practically no shipping going on at the present time. Eastern grown oats show a tendency to advance where the quality is of the best. In the north the firmness of the market has stopped all thought of shipping to this point.

MILLSTUFFS.

The demand for millstuffs has not changed to any extent during the last week. Supplies are comparatively light, being about equal to the light demand. The condition of the market is, however, fairly firm for this season of the year when green feed is plentiful. Ground barley is selling at from \$24 to \$26 per ton, bran at from \$19 to \$21 per ton, and middlings at from \$27 to \$30 per ton.

BEANS.

The bean crop of Southern California is reported to have been considerably injured by the recent heavy and unexpected rains. Crops along the Sacramento and San Joaquin rivers have also suffered some. In both cases, however, it is too early to gauge the loss and with good weather from now on it is probable that the damage will not equal the first reports. Stocks on hand at present are naturally very light and practically all varieties are being firmly held.

WOOL.

Most of the wool buyers of California now have temporary headquarters at Stockton where most of the larger concerns have secured warehouse room. To this point wool is now being shipped freely from the northern end of the State. During the last few days a good deal of the Tehama county clip has been sold at Red Bluff and Corning. Prices have ranged from 23 to 25 cents, the price being generally considered a very satisfactory one for all concerns. A good deal of mohair has also changed hands in Tehama county at varying prices. Word has been received from Great Falls, Montana, of the sale of the largest clip in Montana, amounting to 1,250,000 lb., at 25 cents.

HAY.

The irregular delivery of hay by rail is now causing serious inconvenience in San Francisco. Hay dealers state that if shipments came forward as directed the market would be fully and satisfactorily supplied, but that owing to the congested condition of the tracks, hay can be brought in only as there is room for it. The result is that many cars, some shipped weeks ago, are not yet marketed and the trade is forced to depend very largely on water shipments for supplies. Shipments during the past week show a total of 2,300 tons as compared with the total of 2,585 tons for last week and 3,250 tons for the same week last year. One car of new volunteer hay has been marketed here, this shipment having been harvested before the late rain. Prices are still without material change and no serious weakening is anticipated before the freight blockade is raised or the new crop begins to come in largely by water. The damage to the new crop by the late rain has still to be figured on and undoubtedly this damage is very heavy.

BAGS AND BAGGING.

The grain bag situation has not changed within the last few days. Bags are still quoted for June and July delivery at from 9½ to 10 c. The question of an actual scarcity is still being discussed, though the general idea is that there will be enough to go round.

HOPS.

The hop vines throughout the State have been put in good shape by the recent rain and the outlook is for a larger crop than heretofore. Advices from the northern part of the coast also indicate large crops. Eastern and European advices indicate crops below the average and altogether the outlook for the coming season is hard to gauge. Contracts are being made in Oregon at 10 c., which does not indicate any great confidence in strong prices.

WINE.

Both grape growers and wine makers are now beginning to figure earnestly as to the price of wine grapes during the coming season. So far the highest price contracted for seems to have been \$11, at which figure something like 1,000 tons per year for five years has been secured in the Sacramento valley. The general belief, however, is that grape prices will go higher as a result of the wholesale destruction of wine in the San Francisco fire. One of the largest wine makers in the State is quoted as saying that dry wine grapes in the Sonoma district will go as high as \$25, and growers in that section are talking \$30. In the San Joaquin valley growers are talking \$20 and upwards, while some of the wine makers, who will have to come into that market to buy grapes, are complaining that the destruction of cooerage in San Francisco, as well as the ruining of one of the most important markets for California sweet wines, will lead to lower rather than higher prices. The crop outlook is better, having been improved substantially by the recent rain.

POULTRY.

The demand for poultry is not particularly active and a good deal of last week's stock was carried over into this week. A car of Eastern poultry was also put on the market this week and the resumption of Eastern shipments will have a tendency to make the situation uncertain until it becomes obvious about how much Eastern is to be expected. As has been the case for several weeks, small stock is neglected, practically the entire demand being for full grown young stock.

BUTTER, CHEESE AND EGGS.

The demand for butter continues good and the market is kept well cleaned up. Receipts are of good quality and with the continued improvement in business conditions in San Francisco an increased supply could probably be cared for without materially weakening the market.

Cheese is more plentiful this week and the tone of the market is a little weaker. On the whole, however, the cheese situation is satisfactory and no slump is anticipated. The demand for eggs shows an improvement and prices have a tendency to advance. The closing price last week was 18½ to 20 c., and the market opened this week very firm at the same figures for selected stock.

FRESH FRUITS.

The main feature of the fresh fruit market this week has been the rain damage. Cherries are coming in partly cracked, but those in good condition are still bringing good prices. In many places the strawberry crops have been ruined and probably the damage to other fruits is not yet fully realized. Some shipments of raspberries have been received from San Leandro and Watsonville. Peaches have made their appearance, being held at from \$1 to \$1.50 per box. Both Clyman plums and cherry plums have appeared on the market, though arrivals have been green and have not been in very good demand. Apricots are coming in in varying quantities and the range of price is all the way from 75 c. to \$2 per box. The shipping of strawberries to Portland and Seattle has ceased, owing partly to the damage done by the rain and partly to the marketing of large quantities of Oregon and Washington berries, which are now coming in freely.

VEGETABLES.

The vegetable market is rather more satisfactory than at any time since the fire, owing probably to the fact that dealers are more able to gauge the altered demand. New potatoes are somewhat easier though the consumption is increasing. Asparagus and string beans, together with most other lines of vegetables, are a little firmer. Green peas are being bought largely by canners at one cent a pound. Reports from points in Central California indicate large crops of tomatoes, onions and cucumbers.

DRIED FRUITS.

The dried fruit situation is still problematic. The destruction of the San Francisco canneries will naturally tend to increase the quantity of fruit dried, though it is possible that the destruction of large supplies of canned fruits at the same time may raise the price of the canned product to such an extent that the outside canneries will work overtime and thus counteract the natural effect of the burning of the San Francisco plants. The Eastern demand for fresh fruits will also be an important factor. It is generally admitted that the dried fruit season will be late in opening owing to the almost total failure of the apricot crop.

Senator Simmons' Bill.

A bill providing for an inspection of certain agricultural products, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of Agriculture be, and is hereby, authorized and directed, under such rules and regulations as he may prescribe, to examine and inspect at the place of final destination fruits, berries, vegetables, potatoes, and melons shipped from any State or Territory in the United States to the District of Columbia or any other State or Territory of the United States. The inspectors and sub-inspectors appointed by the Secretary of Agriculture to make such examination and inspection shall be located at as many of the centers to which fruits, berries, vegetables, potatoes and melons are shipped as may in the judgment of said secretary be practicable, and it shall be the duty of said inspectors upon the arrival at said centers of cargoes of fruits, berries, vegetables, potatoes, and melons, transported thence from another State or Territory of the United States, to examine and inspect such cargoes or parts of cargoes as the consignee or consignees thereof shall claim and so report to said inspector to be damaged or in bad condition, for the purpose of ascertaining whether the same is in marketable condition, and if in marketable condition, whether

damaged or not. That it shall be the duty of the said inspectors to give to the consignee of such products a certificate in duplicate containing the result of such inspection, and the said consignee shall transmit to the consignor with his remittance of the proceeds of the sale of said products either the original or duplicate of said certificate; and any consignee of such cargoes alleged to be damaged who shall willfully fail to report the same for inspection, or who, having caused the same to be inspected, shall fail to transmit a copy of the inspection furnished him by the inspector to said consignor as herein required, shall be guilty of a misdemeanor, and upon conviction shall be fined not less than one hundred dollars and not more than three hundred dollars, or imprisoned not less than two months nor more than six months, or both, at the discretion of the court; and any consignee of such cargoes having failed to report same for inspection, or having reported same for inspection shall fail to transmit to his consignor the certificate of inspection, as provided in this act, shall represent to his consignor that said cargo was received in bad and unmarketable condition shall, in any indictment under this act for such failure, be presumed to have made such representation falsely and for the purpose of defrauding his said consignor.

Sec. 2. That it shall be the duty of all commission merchants or other persons receiving by consignment for sale fruits, berries, vegetables, potatoes, or melons shipped from one State or Territory of the United States to the District of Columbia or to any other State or Territory of the United States, to keep a book or books, wherein shall be recorded a truthful account of the receipt, sale, amount realized from sale of such products, and to whom sold, which said book or books shall be at all times open for the inspection and examination of the inspectors provided in this act; and any such commission merchant or consignee who shall make a false entry in said book or books, for the purpose of cheating or defrauding the consignor of said products or misleading or deceiving said inspectors, shall be guilty of a misdemeanor and upon conviction shall be fined not less than one hundred dollars nor more than three hundred dollars, or imprisoned not less than two months nor more than six months, or both, at the discretion of the court.

Sec. 3. That if the consignee of any fruit, berries, vegetables, potatoes, or melons shipped from one State or Territory of the United States to the District of Columbia or to any other State or Territory of the United States, shall willfully make a false report to his consignor as to the condition of said consignment when received by him and the price at which the same was sold by him, or shall fail to account for and pay to the said consignor the amount at which the same was sold less actual charges and commissions for selling and handling the same, or if he shall falsely and fraudulently misrepresent any fact concerning the condition and sale of said consignment, he shall be guilty of a misdemeanor and upon conviction shall be fined not less than two hundred dollars nor more than one thousand dollars, or imprisoned not less than six months nor more than two years, or both, at the discretion of the court.

Sec. 4. That there is hereby appropriated, out of any money in the treasury not otherwise appropriated, the sum of twenty-five thousand dollars, to be expended for all necessary expenses to comply with the provisions of this act under the direction of the Secretary of Agriculture.

GROWING EUCALYPTUS SEEDLINGS.

To the Editor: I notice in your issue of May 26 the inquiry of "Experimental" in regard to starting eucalyptus trees from seed.

This month of June is the time to sow seed to have trees for next winter and spring planting. Prepare a nice loamy bed perfectly level, one rod square, for a pound of good seed. Make the bed smooth and firm by laying a board and walking upon the board. Sow the seed and cover by sprinkling fine sand not over one-half inch deep. Shade the bed with lath, leaving as much space between the lath as its width. The lath should be two feet or more above the bed. Sprinkle every evening until the seed is well up, which will take about two weeks, if the weather is warm. After the plants are one inch high, flood the bed often enough to keep the ground moist, but not wet. Do not put any boards around the bed to break the wind, for without a good circulation of air, the plants will die. When two inches high, transplant into shallow boxes keeping shaded for a few days. Plants treated this way should be one foot or more high by planting time next winter.

Linden. D. W. MILLER.

These suggestions will be widely helpful.

TIMBER STUMPAGE BUSINESS OF THE NATIONAL GOVERNMENT.

A natural feeling among lumbermen toward the forest work of the Government is that the Government is not in the lumber business and can not, therefore, take the lumberman's point of view. Yet a greater misconception could scarcely exist. As a dealer in stumpage the Government is the largest lumber dealer in the country. Further, it applies to its sales the practice of scientific forestry, requiring the removal of the timber under the same sort of instructions which it advises for private operators. Thus the Forest Service, in its reserve work, is giving an object lesson on a huge scale to enforce its teachings that conservative management and profit may go hand in hand. In the year 1905 the total sales reached a value of \$273,659.82.

By the act of March 3, 1891, the President of the United States was authorized to proclaim forest reserves; a power first exercised by President Harrison, who on March 30th of that year created the Yellowstone Park Timber Land Reserve. Authority over these reserves was given to the Secretary of the Interior, the administrative work to be conducted by the General Land Office.

The mere creation of forest reserves, however, without provision for their administration, was both ineffectual and annoying to local interests dependent upon their resources. Consequently the Secretary of the Interior, in 1896, requested the National Academy of Sciences to recommend a National forest policy. This resulted in the passage of the act of June 4, 1897, under which, with several subsequent amendments, forest reserves are now administered.

Change of Administration.—Still, the result was not satisfactory. Scientific knowledge and a technically trained force were necessary. The Bureau of Forestry had frequently to be consulted. Finally, the act of February 1, 1905, was passed, transferring the entire jurisdiction, except in matters of surveys and passing of title, to the Secretary of Agriculture. The actual work of administration was thereupon given to the Bureau of Forestry, since July 1, 1905, styled the Forest Service.

The policy upon which these reserves were to be administered is indicated by the following extracts from the letter written February 1, 1905, by the Secretary of Agriculture to the Forester:

"In the administration of the forest reserves it must be clearly borne in mind that all land is to be devoted to its most productive use for the permanent good of the whole people, and not for the temporary benefit of individuals or companies. All the resources of forest reserves are for use, and this must be brought about in a thoroughly prompt and businesslike manner, under such restrictions only as will insure the permanence of these resources. * * *

"You will see to it that the water, wood, and forage of the reserves are conserved and wisely used for the benefit of the home builder first of all. * * * In the management of each reserve local questions will be decided upon local grounds; * * * where conflicting interests must be reconciled, the question will always be decided from the standpoint of the greatest good to the greatest number in the long run."

The principal object of the forest reserves is use. The policy governing these great storehouses of natural wealth is not one of locking up and rendering inaccessible their resources, but of conserving and multiplying them and making them available to consumers.

Effective Organization.—That a Government bureau can actually thus subserve the interests of users is at first a matter of some skepticism with practical lumbermen. Their fear is that such work will be conducted from a remote Government office by men unfamiliar with local needs.

It has remained for the Forest Service practically to demonstrate the groundlessness of these fears. To this end it has rapidly developed an organization. On July 1, 1898, the Division of Forestry employed eleven persons, of whom six filled clerical or other subordinate positions, and five belonged to the scientific staff. Of the latter, two were professional foresters. The Division possessed no field equipment; practically all of its work was office work. At the opening of the present fiscal year the employees of the Forest Service numbered 821, of whom 153 were professional, trained foresters. The field force of the Forest Service contains the grades of Forest Inspector, Forest Supervisor, Forest Assistant, and Forest Ranger. In so far as possible the administration of the reserve takes place on the ground and with the promptness that is supposed to characterize private business.

One of the most important aspects of forest administration is the sale of timber. All timber on forest reserves which can be cut safely and for which there is actual need is for sale. Applications to purchase are invited. Green timber may be sold except where its

removal makes a second crop doubtful, reduces the timber supply below the point of safety, or injures the streams. All dead timber is for sale. The cutting of this timber is done under the local supervision of the Forest Service and in accordance with certain clearly defined and practical rules.

Speculation Prevented.—The restrictions governing the timber sales, while effective, are simple. Application is made to the local officer in charge of the reserve from which the timber is desired, who executes small sales on the ground. In case of large sales, the application is forwarded to the Forest Service, from which the advertisement of the sale is made. Applicants for timber are requested to send sealed bids to the Forest Service. Small bidders enjoy exactly equal opportunities with large, and monopolization is effectually forestalled. The highest bid fixes the price. Should the first applicant desire to begin cutting immediately he may (except in California) do so, on condition that he pay in advance at a price already fixed by the Forest Service, and that he obligate himself to pay the full amount named in the highest bid. Thus delay is avoided and the Government is protected. Speculation in reserve timber is made impossible by the provision that the timber must be removed within a specified time, and that when a contract extends over several years a proportionate amount of timber must be removed each year. Five years is the extreme limit of a sales contract.

That these restrictions are not onerous is shown by the numerous sales made under them. A single sale of 50,000,000 feet of lodgepole pine for railroad ties is pending on the Montana Division of the Yellowstone Forest Reserve. It is estimated that 165,000,000 feet B. M. of lodgepole pine can be taken from one watershed in the Medicine Bow Forest Reserve, still leaving a large percentage for future crops. Much timber is sold in small lots; fifty applications for such sales are made to each single application for 1,000,000 board feet or more; the prompt, businesslike consideration accorded such applications standing in marked contrast with the slow methods once prevailing, when all applications had to be made through Washington.

Forests as Revenue.—During the year 1905 the sales of timber from the National reserves were as follows:

The largest sales so far made are 71,466,537 board feet from South Dakota; 68,255,916 from Wyoming; and 5,327,443 from Utah.

In sales of wood for fuel South Dakota led with 29,844½ cords; Arizona followed with 16,649; and Colorado with 10,795½. The total number of cords sold was 74,120.

In sales of posts and poles Montana led with 119,500, followed by Wyoming with 30,750, and Colorado with 13,988. The total number sold was 188,740.

The largest timber sales were made in Wyoming, where they reached \$143,894.81. South Dakota's sales ranked second in value, amounting to \$78,958.24, and Colorado's to \$23,937.07. The total sales for 1905 reached \$273,659.82.

Nor are the receipts from these sales swallowed up by the cost of administration. The entire property of the forest reserves, worth \$250,000,000 in cash, is now being administered at a cost of less than one-third of one per cent of its value, while increase in that value of not less than 10 per cent a year is taking place. As the use of the reserves increases, the cost of administration must, of course, increase also, but receipts will certainly increase much more rapidly. The time is not far distant when the forest reserves will become self-sustaining. Later, they may confidently be expected to become a source of public revenue.

CONDITION OF PERISHABLE PRODUCTS.

To the Editor: I enclose herewith a copy of Senate Bill No. 5945, introduced by Senator F. M. Simmons from North Carolina. The purpose of this bill is to prevent commission merchants receiving perishable farm products on consignment from defrauding shippers. Those who are familiar with the commission business need no argument to convince them of the importance of this bill. It is presumed that all who are interested in the welfare of the farmer are in sympathy with the purposes of this bill and I send you the copy herewith in order that you may give it such publicity as you think it may warrant. A full and free discussion of the merits of the bill and suggestions for its improvement are certainly desirable.—W. J. Spillman, Agriculturist U. S. Dept. of Agr., Washington, D. C.

It certainly would be an ideal condition of affairs if the shipper could really know in what condition his goods reached the market and it would be a relief to honest receivers if they could escape suspicion by having a certificate of inspection to send to their consignors. This is what Senator Simmons hopes to do for the interstate trade by his proposed law and if it works between States it will not be long before it is arranged for domestic produce trade.

HOME CIRCLE

UNCONQUERED.

Out of the night that covers me,
Black as the pit from pole to pole,
I thank whatever God there be
For my unconquerable soul.

In the fell clutch of circumstance
I have not winced or cried aloud.
Under the bludgeons of chance
My head is bloody but unbowed.

Beyond this place of wrath and fears
Looms but the horror of the shade,
And yet the menace of the years
Finds and shall find me unafraid.

It matters not how straight the gate,
How charged with punishment the
scroll;

I am the master of my fate,
I am the captain of my soul.
—New York Sun.

THE BELLS OF MONTEREY.

In an ancient Mexic city stands an old
cathedral lone,
Rich in legend and tradition to its last
foundation stone;
Far beneath it lies the valley, far above
the heights of snow,
And the people hear the music of the
bells so soft and low;
Long ago the mail-clad Spaniard to that
beauteous region came,
And the winds that sweep the valleys
breathe to-day his deathless fame,
He has vanished like a vision, years
agone he passed away,
To the oft, entrancing music of the bells
of Monterey.

The old and drowsy city, basking in the
tropic sun,
Recounts its ancient glory ere the Span-
iard's race was run—
Ere the warrior drove his charger past
the old cathedral grim
Whose chancel echoed sweetly to the
slowly chanted hymn;
To-day, as in the centuries whose foot-
steps sound afar,
A softer, holier anthem greets the gentle
evening star,
And out upon the scented air, as hun-
dreds stop to pray,
Floats the ever sacred music of the bells
of Monterey.

—Thomas C. Harbaugh.

ADAM AND EVE.

I don't blame girls for falling in love,
because they've nothing else to do; but
I can't see why fellows want to. They've
cricket and footer and all sorts of things,
without making asses of themselves.

Ted Johnson is an awful swell at
cricket, and he plays footer for the coun-
ty, so he hadn't any excuse for bothering
about girls; but he went and got engaged
to Violet all the same. She's my sister,
and four years older than I am. (I'm
fifteen and in the lower fifth.)

He and Vi had just "fallen in love," as
they call it, when I came home for the
summer holidays, and they made awful
fools of themselves over it. They had
just fallen out when I came home for
Christmas. The whole of both families
made fools of themselves over that.

It was a jolly nuisance, because Minnie
Johnson and I were rather chums. I
don't think much of other girls, because
they're so silly; but Minnie isn't. She
isn't quite so good as a boy at doing
things, but she's sharper at thinking of
them. It was she who gave me the tip
to put wax on the back of Uncle George's
chair to fetch his wig off. There was
rather a row about that. He was going
to cut me out of his will, and the mater

made a terrible fuss; but Minnie heard
about it and came over to our house and
told Uncle George that she proposed it.
She got round him somehow. (Girls
can.) He said she couldn't help it, be-
cause she was a daughter of Eve, and I
was like Adam, "fondly overcome by fe-
male charm." It always puts him in a
good temper when he makes a quotation.
So it was all right afterward—only they
called us Adam and Eve.

A fellow has to stick up for his friends
as well as his family. I wasn't going to
be down on Minnie just because Ted and
Vi had quarreled. I went and whistled
behind their back fence the first after-
noon I was home, and she came out and
stood on the big roller and looked over it
(the fence, you know). I said "Halloa!"
and so did she. Then we stared at one
another.

"Well," she said at last, "you've looked
at me long enough to know me. What
do you think of me?"

"Your hair is redder than ever," I told
her.

"I know a boy who likes red hair," she
said.

"Who is he?" I asked.
"It doesn't matter to you," she said,
"because I'm not to speak to you in fu-
ture, mother says."

"Well," I told her, "you're speaking to
me now, anyhow. If you don't want your
mother to see, you'd better come this side
of the fence."

I tried to catch hold of her and pull her
over, but she got out of the way.

"It isn't red," she said.

"All right," I agreed; "it isn't, then.
Come on."

So she jumped down, and we went and
had a slide on the pond behind Brooks'
barn. Then we went to Mother Green's
and had some tuck. (The governor had
given me a tip.) Some one saw us there
and told our mothers. There was a row,
of course.

The next day we went on the golf links
and made slides on the mud. (You can
make a ripping slide on mud when it's
half frozen.) We thought we were safe
from them all there; but we ran right
into Ted. He was looking at something
and shaking his head. He stuffed it in
his pocket when he saw us, and held out
his hand to me.

"Glad to see you, old chap," he said.

"I—er—this is a very unfortunate busi-
ness." He gave a sort of groan. "Well,
I'm glad you two aren't bad friends, any-
how."

"We are," Minnie said. "At least I
am. He says my hair is red."

"Never mind," he said. "I know a boy
who likes red hair."

Then he went off. I asked Minnie
again to tell me who the bouncer was,
but she wouldn't. So I tried to think
what I could say to aggravate her.

"Your brother is a silly cake," I said.
"I bet that was Vi's photo that he was
looking at."

She got in a rage directly, and stamped
her foot.

"It wasn't," she contradicted. "He
doesn't care a bit for her; and she's a
beast."

"She isn't," I said; "and if you say
it again I won't speak to you."

"She's a beast," she repeated directly.

I turned round and walked off one way,
and she turned round and walked off the
other; but somehow we met round the
corner. I was going by without taking
any notice of her, but she laughed over
her shoulder.

"I know a boy who likes red hair," she
said.

"He's a beast," I told her.

"Yes," she said; "he is! But if he took
me out he'd take me home."

"Come along then," I said.

So we made it up again.

The day after we went to Delsham. I

had a catapult. We were trying if they
would break greenhouse glass, when who
should come along the road but Violet!
She was reading a crumpled old letter,
and she put it in her muff when she saw
us. I knew she wouldn't tell, so I didn't
care.

She gave me some chocolate drops, and
offered some to Minnie; but the little
beggard put her hands behind her.

"No, thank you," she said.

"It's about her brother," I explained.
I knew she must feel pretty bad about it
to refuse chocolates. (They were big
ones, with sweets on top).

"Yes," Violet said, and gave a sort of
sigh. "You are quite right to take your
brother's part, dear; but—well, I'm glad
you and Jack are friends, anyhow. Good-
by." She walked on.

"If you call her a beast again," I said,
"I won't speak to you; and I mean it."

"You ought to," Minnie agreed; "and
I wasn't going to. Jack, that was one of
Ted's letters and she's been crying."

"Rot!" I said. (She had, though!) "Vi
wouldn't cry about him. She could get
engaged to a dozen fellows if she wanted
to."

"She doesn't want to. She wants Ted.
That's just it."

"Well," I said, "there's no accounting
for taste."

"No; I know a boy who likes—red
hair."

"Then he can take you out to-morrow."

"All right." She laughed. "But you've
taken me out to-day. So you may as well
be agreeable. I'll race you to the sign
post."

So we raced. Then we had another
practice with the catapult. I hit a can
that a milkman was carrying and she hit
the man. So we had to race again. You
should have seen the chap jump!

Mother and father were out when I got
home, so Vi gave me my tea. She was
very agreeable and talked to me about
Minnie. She was a dear little thing, she
said, and I mustn't quarrel with her,
whatever I did.

"Girls are different from boys, Jack
dear," she said. "They say things some-
times and don't mean them, and pretend
they don't like people when they do, and
make out they like other people when
they don't. If Minnie ever pretends she
likes some one else better than you, don't
you believe her; and if you ever quarrel
make it up again directly. People ought
to."

"Umph!" I grunted. (My mouth was
full of muffin, and I hate being preached
at). "Then why don't you make it up
with Ted?"

You never know how girls will take
things. I'm hanged if she didn't begin
to blub, and then ran right out of the
room. I couldn't make it out at first, but
I saw it before I had finished the muffins.
She wanted to be engaged to him again!

I told Minnie about it next morning.
(It was Christmas eve.) She said I was
right "for once"; and she'd tell me some-
thing, too. "Ted wants to be engaged to
her again."

"Then why don't they?" I asked. "No-
body wants to stop them that I can see."

"They're both obstinate," she explained
—"like you are."

"I can't be 'both,'" I objected.

"No," she agreed; "I meant myself,
too. That's how it is with Ted and Vi-
olet. If they knew how the other one felt
about it they'd make it up directly; but
they don't."

"Let's tell them," I proposed.

"Donkey!" she said. "I know what we
will do. You tell Violet that Ted wants
to speak to her about something very im-
portant, and he would be very much
obliged if she would meet him in Delse
lane, by the big oak, at three this after-
noon. I shall tell him that Violet wants
to see him there."

"Umph!" I said. "I may be stupid, but
I've sense enough to know he won't be-
lieve that. Violet would cut off her head
before she'd ask him. She isn't the sort
to run after a fellow."

"No—o," Minnie said; "she wouldn't.
I know what she would do, though. I'll
tell him that you told me that she always
walked to the oak about three, and you
believed it was because she thought he
might be there."

"Umph!" I said, "they'll find out in
five minutes that we've been stuffing
them."

"They'll find out something else in five
seconds," she said. "They're better at
finding out things than you are!"

Ted danced Minnie around the room
and gave her a florin when she told him.
Vi went red, and smiled—and kissed
me.

"I don't know that I shall go," she
said. "He's no right whatever to ask
such a thing; and mamma would be
dreadfully cross. I really can't—Are
you sure it was three? And by the
oak?"

"It doesn't matter if you aren't going,"
I said.

"Don't be mean," she begged. "You've
been such a nice, kind boy, Jack; and
I'll give you a shilling—Tell me?"

"Three o'clock," I said, "by the oak.
Thanks."

Minnie and I hid behind a tree and saw
them go into the lane. We waited half
an hour before we went down there. He
had got his arm round Vi (she pulled it
away when she saw us), and they were
grinning like Cheshire cats!

"You young—story tellers!" Ted said.
"You dears!" Violet said.

"I suppose you're engaged again?" I
asked.

"Thanks to you two," Ted said.—Owen
Oliver, in the Sketch.

CHAFF.

Teacher—When water becomes ice,
what important change takes place?
Pupil—The change in price.

May—Is he a man you can trust?
Bess—Oh, yes. Papa says he owes ev-
erybody.

Ostend—Say, pa, how do they raise
"political plums?" Pa—By grafting, my
son.

Insurance Superintendent (suspici-
ously)—How did your husband happen
to die so soon after getting insured for a
large amount? Widow—He worked
himself to death trying to pay the pre-
miums.

"Did you ever make a personal sacri-
fice?" asked the visiting parson. "Yes,
indeed," replied Mrs. Le Style; "I once
declined to be interviewed by a society
reporter."

Lady Customer (in baker's shop, to
shop girl)—Are these buns to-day's? be-
cause what I bought yesterday weren't.

Mrs. Bleachblonde—I found this black
hair on your coat. What does it mean?
Mr. Bleachblonde—Why, that is my last
winter's coat. Your hair was black then,
you know.

"Papa," said the darling daughter of
the household, "how did you propose mar-
riage to mama?" "Don't ask me," an-
swered the old man. "I can't remember a
thing about it. Go and ask your mother.
She managed the whole affair."

First Stranger—Excuse me, sir, but
I notice that you are looking at me close-
ly. Is there anything about me that is
familiar? Second Stranger—Yes, there
is. My umbrella.

First Clubite (cheerily)—Well, there's
a good time coming. Second Ditto—Yes,
my wife is going away, too.

He—Before you married me you used
to say there wasn't another man like me
in the world. She—Yes; and now I
shouldn't like to think there was."

MEASUREMENTS.

Says I to Susan Simpkins,
In a friendly sort of way,
As we jogged along the turnpike
One pleasant summer day;
"I have thought the matter over
And as far as I can see,
I guess you are the woman
That is just the size for me."

I was rich and Susan wasn't,
For I owned a farm and more,
I owned a tract of timberland,
A sawmill and a store;
While Susan earned her living
As a hired girl, and did
Her duty by her mother
And a little orphan kid.

But Susan, she was thrifty,
And so plump and fresh and fair,
That certainly there wasn't
Any finer anywhere.
Of course she wasn't my equal,
And her station wasn't mine,
But as Mrs. Hiram Higgins
She would have a chance to shine.

Then Susan Simpkins halted,
And she looked into my eyes,
Without a sign of thankfulness
Or natural surprise.
"I'm sorry, Mr. Higgins, sir;
Indeed I am," says she.
"But when it comes to sizes
You are one too small for me."
—W. J. Lampton.

HINTS TO HOUSEKEEPERS.

An old-fashioned remedy for sore throat that is said to be effective is a nutmeg worn on a silk thread around the neck. The hole through the nutmeg is made with a red hot awl.

A bottle of camphor or oil of cedar with the cork left out, if hung on a hook in the closet, will keep away moths without imparting a disagreeable odor to the clothing.

To clean velvet first brush or shake out all of the dust and remove any grease stains with benzine. If it needs freshening pass the wrong side first over a bowl of boiling water and then over a hot iron. If it is badly crushed brush carefully with a soft brush.

Now that strawberries are in the market, try a strawberry salad, which has the merit of novelty. Make cups of blanched lettuce leaves and put in each a few ripe berries. Dust with powdered sugar, and place on top a spoonful of mayonnaise into which whipped cream has been stirred.

If the carpets in summer are left down and covered with linen they are saved from moth ravages by brushing the edges with a hot solution of alum and water and sprinkling them over with powdered borax. If they are taken up and put away borax will preserve them as effectually and be far less objectionable than the dreadful carbolic acid balls, whose perfume cannot be mitigated nor overcome the next season by any number of potpourri jars whatsoever.

A shoe that is uncomfortable from pinching may be eased by laying a cloth wet in hot water across the place where it pinches, changing it as it grows cooler a number of times. This will cause the leather to shape itself to the foot.

Stains on white flannel are hard to remove. The best way is to mix equal parts of the yolks of eggs and glycerine, apply it to the stains, and allow it to soak for half an hour or so before the article is washed.

For a hot water fomentation a much easier way than wringing cloths out of hot water is to fold the cloth to the required size, put it into a steamer and place over boiling water.

SOME MEDICAL FALLACIES.

A doctor was pointing out medical fallacies—the wrong ideas about things medical that many people hold.

One fallacy is that beef tea is nourishing. It is nothing but water in which certain pleasant and exhilarating meat salts are dissolved. You would starve to death on beef tea, the same as on whiskey or on coffee. Another fallacy is that alcohol—whiskey—warms the body. Alcohol lowers the temperature. It chills, instead of warming. Hence it is of no use whatever as a guard against cold. A third fallacy is that one egg contains as much nourishment as a pound of meat. Sick people without appetite think complacently that if they take an egg or two a day they are doing well. As a matter of fact, they are doing anything but well. They must remember, if they are substituting eggs for meat, that eight eggs, not one, are required to equal one meat pound. Then, there's the liver fallacy. Many, as soon as their stomachs get out of order, begin to treat their liver. But the liver is a dangerous thing to treat unless one understands it, for there are over ninety distinct liver troubles, and what is good for one of them may be bad for all the rest.

DOMESTIC HINTS.

Halibut Salad.—Cold boiled halibut may be used for a delicious salad. Flake the fish with a silver fork, toss with it about half the quantity of chopped celery and pour over it a French dressing. Arrange on lettuce leaves and cover with thinly sliced and crisped cucumbers. Over this spread a mayonnaise. Shredded sweet peppers may be substituted for the cucumbers if preferred.

Potato Chowder.—Pare and cut into blocks two quarts of potatoes. Peel and chop two good-sized onions, half a cup of celery, and two tablespoonfuls of parsley. Put in the bottom of a kettle a layer of potatoes, a sprinkling of onion and parsley, a dusting of salt and pepper, and so on until your ingredients are all used. Add a pint of water, cover tightly, and cook slowly until the potatoes are tender. Rub together one tablespoonful of butter and two of flour, add a pint of milk and stir until boiling; add a small teaspoonful of salt, then pour over the chowder and serve.

Peppers Stuffed with Cold Ham.—Use six large green peppers. Scrape out clean and fill them with a mixture of one cup of minced ham, one cup of bread crumbs and one tablespoonful of butter. Put into a baking dish with a half pint of strained tomatoes seasoned with salt and pepper and a tablespoonful of sugar. Bake for three-quarters of an hour.

Luncheon Rolls.—Make a good biscuit dough and roll it rather thinner than for biscuit. Cut into pieces about three inches square. Wet the edges with cold water and in the center of each square put a heaping tablespoonful of cooked meat, well seasoned and chopped fine. Fold the opposite corners together, pinching the edges so that they will not come apart in baking and bake for about fifteen minutes in a hot oven.

Macaroni and Cheese.—Into two quarts of boiling water break half a pound of macaroni. Add half a tablespoonful of salt and boil twenty minutes. Drain through a colander. Line your well-buttered baking dish with cracker crumbs, then add a layer of macaroni, a liberal sprinkling of grated cheese, dust with cracker crumbs, and use dabs of butter. Repeat this until your dish is full. Then pour over all a cupful of milk or cream if you have it. Brown in the oven before serving.

Devilled Lobster.—One can lobster, 1 cup full bread crumbs, 2 hard-boiled eggs, half of lemon, 1 pint of cream sauce, salt and paprika. Cut lobster into dice with silver knife, add bread crumbs, the egg chopped very fine and the juice of the lemon; add cream sauce enough to make paste; fill scallop shells and sprinkle with bread crumbs; brown in a very hot oven.

Southern "Golden Buck."—Break fine and melt one-half pound good cheese; when perfectly soft add one cup of cream or rich milk and a pinch of red pepper; stir all thoroughly until the consistency of thick cream; when blended break on top five eggs; cover dish for a minute or two; when eggs have begun to set, but are not hard, remove cover and with a large spoon beat mixture briskly for a few minutes. Serve on buttered toast.

PATRONS OF HUSBANDRY

TULARE GRANGE MEETING.

To the Editor.—Saturday, the 2nd, was Children's Day in Tulare Grange, and a very happy lot of them there was there. Children's Day is strictly a Grange institution; the regulations of the Order requires its observance. Lunch with fruits, candies and ice cream came before the program, prior to which the children occupied themselves in games. The program, under the conduct of Mrs. Dr. Field, consisted of vocal and instrumental music and recitations. All did well; all were applauded; the instrumental pieces were played with taste; some of the voices are very promising.

After the children's program was over, an open Grange meeting was held for the purpose of discussing the subject of the day, an essay by Sister Bertha I. Morris: "Does Our Duty to the Grange Require Us to Consider and Discuss Subjects of Legislation?"

Sister Morris, like the bright woman she is, made a very interesting address, keeping strictly to her subject. Her claim is that all subjects of legislation, partisan ones excepted, in any way affecting the agricultural interests of the country, should be considered and discussed in the Grange. This is the true and correct way to get at the merits of the subject. Subjects so considered by the Grange are considered from a purely patriotic standpoint, for there is no class of people whose impulses are more patriotic or whose actions are governed by a higher standard of patriotism, right and justice than are the Patrons of Husbandry. Incidentally it was agreed by all, for nearly all participated in the discussion, that much care should be given to the qualifications of members of the legislature.

They should be thoughtful, careful men, knowing the needs of the country and how to meet those needs.

Such men cannot always be had, nor will they always present themselves for office, as in too many cases other reasons than fitness for the office governs the selection. If all classes of our people would give the impartial consideration to subjects of legislation and to legislators, that is given to the subject in the Grange, much better results would be had and much fewer thoroughly unfit men would get into the legislature. It would be expecting too much to expect that all classes will give the subject the careful consideration it deserves or that only competent men will offer themselves for office.

At the next meeting, June 16, the 3rd and 4th degrees will be conferred on a class, and brother J. T. Lawson will discuss the subject: "Do Good Roads Add to the Value of the Farm and Promote the Enjoyment of Farm Life?"

J. T.

AGRICULTURAL REVIEW

Butte.

DAIRY LEASE. — Chico Enterprise, May 28: A deal was consummated to-day between the proprietors of the Chico Butter and Cheese Co. and the Model Farm Dairy Co., also of this city, whereby the latter will operate the factory.

SMALL ALMOND CROP.—Chico Enterprise, June 1: There will be a very small almond crop this year, compared with that of last. It is estimated that there will not be five cars of nuts shipped from this vicinity. A good year generally yields about forty carloads. There is a difference of opinion regarding the cause of the small crop this year. Some orchardists claim that the almond crops are governed to a great extent by the crop of the previous year and that one good crop cannot follow another. On the other hand there are many who claim that the crop is governed by climatic conditions. The prune crop, according to all reports, will be large.

Colusa.

A PROFITABLE VINEYARD. — Arbuckle Planter: J. H. White has the champion vineyard, yielding a greater income per acre than any other in the noted raisin belt. Although less than forty acres, it has yielded as high as \$5200 gross income for one crop of raisins and ordinarily produces a \$4000 crop. Raisins from this vineyard took the premium at the St. Louis World's Fair. The net income from the vineyard has been fully \$75 an acre, which aggregates more than Mr. White realizes from the grain produced on his 320-acre farm of No. 1 land. We noticed the vines are literally loaded with young grapes as are the vines in many other vineyards.

Fresno.

DON'T KILL THE OWLS.—Kingsburg Recorder, May 30: J. M. Clarke has in his possession three young owls. His boys killed the mother a few days ago, and finding the nest took the young ones and put them in a cage. The problem was how to feed them. Mr. Clark put the cage out in the yard. In the morning the problem was solved—the old father owl had found them. On top of the cage the faithful old fellow had laid a gopher and a number of field mice. Since then he has not failed to supply bountifully for his captive children. Mr. Clarke says in four nights 22 mice, 2 or 3 gophers and smaller game have been laid by this old owl on the cage and early each evening he comes and sits near the prison. Mr. Clarke says he will kill no more owls, and when these young birds are able to rustle for themselves, they will go free.

Kings.

IMMENSE CORN CROP. — Hanford Journal: Chas. Williams is preparing, in connection with another party, to put in 1300 acres of Egyptian corn on his land, and the Kings River Land Co. is putting in a great deal more on its land, so that there will be nearly 4000 acres of Egyptian corn there in one block. Mr. Williams lost some money in lake wheat that was overflowed, but he expects to do a good deal more than make it up on his corn crop. A great deal of alfalfa will be put in on the old Botsford tract next year, as it is well supplied with water, and there is no danger of that land being overflowed.

Los Angeles.

CALIFORNIA SHIPMENTS. — Riverside Press, June 2: Shipments of citrus fruits from Southern California for May 31 consisted of 76 cars of oranges and 18 cars of lemons. This makes a total for the season to date of 21,292 cars, of which 2383 cars were lemons. For the same period last season 24,451 cars were shipped, of which 2123 cars were lemons.

Mendocino.

NEW ROSE.—Ukiah Press, May 30: Mrs. T. A. Templeton has produced a rose of which she is particularly proud. It is a pink Lamar or California beauty and measures seven inches across the bloom—or at least the blossom brought to this office did. It was only the fourth or fifth blossom that had matured on the bush, which had been under Mrs. Templeton's care and observation for some time, having been brought as a slip by Mrs. Cannon from Los Angeles. The parent bush produced a pink rose, but the blossoms on the one in possession of Mrs. Templeton show all the beautiful varieties of shading from the light pink to the deep yellow, and it is sweet smelling.

Nevada.

TAKING CATTLE TO SIERRAS.—Sacramento Bee, June 2: A general exodus of cattlemen is on from around Grass Valley to the summer ranges in the high Sierras. All the cattlemen have secured permits to herd their stock in the forest reserves, where the finest summer pasture abounds. The late spring rains have assured plenty of dry grass for next fall when the cattle are driven down from the mountains to the ranges below.

Placer.

FIRST PEACHES.—Newcastle News, May 29: The first peaches from Placer county, a box of Alexandrias, and probably the first from the State, was shipped by the Pioneer Fruit Co. from Loomis, Tuesday. They shipped the first box last season May 17, 12 days earlier.

San Bernardino.

ORANGE PROFIT.—Riverside News: That Colton oranges are worth "their weight in gold," was demonstrated this evening, when A. S. Fox, manager of the Independent Orange Company received a check from New York for \$1,748, the net proceeds from the sale of a car of seedlings. The car netted \$3.50 per box. The oranges were gathered from two acres and a half of ground on the bench lands. There are 255 trees in this grove, which yielded five cars and 63 boxes. Four other cars have not yet been heard from, but the packers are confident they will each net a handsome profit.

San Joaquin.

WHITE HELP TO BE EMPLOYED.—Stockton Mail: At the Stockton cannery the announcement was made that only white help will be employed the coming season, which will commence in July. Owing to the unfavorable climatic conditions, no attempt will be made to secure cherries for canning here. Any quantity which may be purchased in this vicinity will be sent to another cannery. The local establishment expects to have a good output of canned peaches and apricots, however, and will probably can tomatoes.

San Joaquin.

NEW WOOL MARKET.—Willows Journal, May 29: As a result of the disaster in San Francisco, Stockton has temporarily become the wool market of California, and it will continue to be for some time. Stockton is a freight terminal on two trans-continental railway lines and navigable water; it is centrally located as regards the source of wool supply; it has warehouse facilities at low rent and its banking facilities are ample.

Horse Owners! Use

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A Safe, Speedy, and Positive Cure
The safest, Best BLISTER ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Blushes from Horses and Cattle. SUPERSEDES ALL CAUTERY OR FIRING. Impossible to produce scar or bluish. Every bottle sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars.
THE LAWRENCE-WILLIAMS CO., Cleveland, O.

It was these points that determined the question of the location of the new wool market. Within thirty days of the San Francisco disaster Stockton became the wool market of California. Within this time 7000 bags of wool, weighing over 3,000,000 pounds, and being about one-fourth the spring clip, was in warehouse, and the work of grading, packing and scouring was well under way. About 15,000 bags of wool, valued at nearly \$1,000,000, will be handled through Stockton this spring. This industry, in all its branches, is giving employment to between sixty and seventy-five hands.

Santa Barbara.

WARFARE AGAINST TEXAS TICK.—Santa Barbara Independent: A crusade against the Texas tick has been inaugurated throughout the cattle ranges where infection has become evident, by the county veterinarian. In spite of all the work that has been done to exterminate the tick, it has again made its appearance on some of the ranges. Dr. Saunders has been working diligently to cope with the situation. It has been found that cattle on thirteen of the ranches in the northern section of the county have given evidence of infection. There are two near Lompoc, three between Naples and Gaviota, and one near the Santa Ynez river, the Alisal, that are considered to be the worst of the number. Dr. Saunders stated that the owners of the two ranches near Lompoc had decided to sell their cattle and to raise sheep for a couple of years. The tick soon is exterminated upon ranges where sheep are allowed to graze. On the Alisal ranch there are 200 head of dairy cows that will be cleaned by dipping in oil and removed from the ranch. The cattle on many of the other ranches will be dipped in oil during the next few weeks, will be removed to grounds where tick cannot be found, and a couple of weeks later will be given another dipping. The Texas tick breeds and thrives only during the warm weather.

Santa Barbara.

COLONIZATION SCHEME.—Santa Barbara Independent: Articles of incorporation of the Santa Ynez Valley Development Co. have been filed. The company has secured 32,000 acres of the old College ranch for \$350,000. Of this \$150,000 will be paid in cash and the balance within the next five years. It is believed by the syndicate that it can sell 3000 acres with water at \$100 to \$150 per acre. It has appropriated 10,000 in. of the Santa Ynez river, which can be put on the property by gravity or by pumping at a cost not to exceed \$20,000; 7000 acres of farm land (some of which can be irrigated) at from \$40 to \$60 per acre; the balance of 22,000 acres consisting of fine grazing land, well timbered and watered. This land is interspersed with side-hills, and is fine vineyard land and all of it can be sold at from \$6 to \$20 per acre. This land could also be leased to stock raisers and farmers for more than enough to pay interest on these figures. There are now about 6000 acres sown to wheat and barley, of which the syndicate gets one-fourth of the crop. The land is particularly adaptable for small farms and orchards. It is greatly diversified, comprising sandy and gravelly loam, red ferruginous vine lands and alluvial sediment in the low lands. The syndicate has secured water rights so that there will be an abundance of water for domestic and irrigating purposes.

Solano.

CHERRIES FOR CANNING.—Solano Republican, June 1: W. T. Hickock, manager of the Rio Vista Cannery, is in Suisun for the purpose of buying cherries, to be preserved by the maraschino process. The recent rains have injured the cherry crop to a large extent, but Mr. Hickock expects to do quite a large business in his line.

THE DAIRY

BUILDING A CEMENT SILO.

In previous months we have had points on the agricultural uses of cement. It is possible that some readers may desire to build a cement silo. The following detailed suggestions are from a Missouri correspondent for Hoard's Dairyman. He tries to give the description so that anyone can do the work for himself.

"My silo is 16 ft. in diameter, inside measurement, eight feet in the ground and 32 above. Underground, the wall is eight inches thick; above ground six inches. Wire rope, made of four strands of No. 12 smooth wire, was imbedded in the wall every 18 in. Each of these ropes goes around the silo near the outer edge. The door frames were made one foot and eight inches wide by two feet in height, of 2 by 6 in. stuff, and set in as the wall went up.

The excavation was dug 17 ft. 4 in. in diameter, perfectly round, and the bank cut smooth and perpendicular, and the bottom made level. From the exact center of the excavation, a circle was drawn 16 ft. in diameter, which left just eight inches between it and the bank all around. On the inside, close up to this circle, 2 by 4 studding, two feet apart, were perpendicularly placed, and braced to a studding set perpendicularly in the exact center of the silo. One-inch boards six inches wide were used to brace each studding, both at the top and bottom, to the center studding. On the outside of this circle of studding, next to the bank, half-inch boards, six inches wide, were nailed with small shingle nails. These could be easily bent to the form of the circle. I used a spirit level to get them at a true level on the ground. When this was boarded up solid for about two feet the building of the wall began, and as needed, more siding was nailed on, the bank being the outside form until surface of the ground was reached. My studding was 12 ft. long. When the top of these were reached, other studding was spiked on, lapped 1 ft. and braced to a center studding as before. When the top of the second course was reached, the lower studding was pried off, and they and the half-inch stuff used again above. The center studding should not be taken out.

When the top of the excavation was reached two sheet iron forms were used, made of No. 20 galvanized iron, each 18 in. wide and about 55 ft. long, so as to reach quite around the silo. On the ends of these forms, angle irons were fastened; one iron being set about one foot from the end to allow for that much lap. Two 5/8 by 8 in. bolts, with long thread cut on one end go through the angle irons, by means of which, the form was tightened. To keep these sheet iron forms just six inches from the inner form all the way round, pieces of 2 by 6 in. studding one foot long were placed every two feet inside the sheet iron form and just opposite the studding of the inside form. These pieces were slipped up as the form was filled. When the first form was filled, the other was placed on top, and likewise when it was full, the one beneath was loosed and put on top. The cement will set fast enough to allow of the filling of two forms a day. Three or four lifts made of strap iron, with a hand hold turned on one end and the other end bent to a right angle for half an inch, were convenient for lifting the forms. Great care should be taken to start the forms level; a good, true spirit level should be used.

Portland cement, clean sand and broken limestone were the ingredients of the concrete. The sand and cement were mixed dry in the proportion of one of cement to two and a half of sand for the lower one-third of the silo and one of cement to three of sand for the rest of the way. Two mortar boxes were used so that while the mortar was being taken

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BEST FOR SPRAINS AND SPAVINS.

Concord, N. H., Aug. 25, 1904.

The Lawrence-Williams Co., Cleveland, O.:
Please send me lithographs of the celebrated horses (all of them) to advertise GOMBAULT'S CAUSTIC BALM. We know it to be the best remedy for sprains and spavins.

GEO. F. UNDERHILL

from one, the mixing was proceeding in the other. The mortar was mixed rather thin and poured into the forms to the depth of three or four inches and at once all the broken rock tamped in that the mortar would hold, care being taken that all the rock spaces were filled. When the work was interrupted so that the cement would be likely to set before building could be resumed, the upper surface was left rough with partly exposed rock so that when the next cement was poured in, it would adhere firmly. The broken rocks were thoroughly wet before being put in the wall. Bolts one-half by six were imbedded in the top of the wall all the way around and standing out two and a half inches in order to fasten the roof plate. When the wall was completed the inside was made smooth with a coat of cement, as a cistern is finished. The mortar should be made one part of cement to two parts of fine, well sifted sand.

The amount of material used and the cost was as follows:

54 bbl. of cement at \$1.60.....	\$86.40
23 cubic yards of sand.....	25.00
200 lb. of wire.....	2.00
2 doz. of bolts.....	1.00
100 ft. of lumber for frames and doors.....	2.00
2 galvanized sheet iron forms....	18.00

Total\$134.40

The lumber used for staging and for inside form was used for other purposes. The roof has not yet been put on, and although we have had an excessively wet fall and winter, the silage has kept beautifully. With the material all on the ground, four men could build the silo in about 14 days. I built this silo entirely with unskilled labor, such as is usually employed on farms. I had had no previous experience in concrete construction, and had never seen a silo in my life. So I feel justified in saying that I believe a concrete silo built as described is the easiest form of silo for the inexperienced and unskilled to build and I am confident when we consider how perfectly it preserves its contents, and how for all time, it will stand with little repair, it is by far the most economical.

Hewton, Mass.

Dr. S. A. Tuttle,
Dear Sir:—Having used Tuttle's Elixir in my hack and boar-ling stable for the past three years I heartily endorse it for the general purposes for which it is recommended by the proprietors.

S. P. WHITMAN.

THE STOCK YARD

FEEDING CATTLE FOR MARKET.

From an address by Mr. R. J. Kinzer of the Kansas Agricultural College at the Kansas Breeders' Association meeting:

To be a successful cattle-feeder requires something more than muscular exertion. What to feed, how to feed, and when to feed are all questions that must be settled or the profits will not be burdensome; no matter how carefully a man may feed or how well he may prepare his feeds, unless he has the right kind of cattle his profits are not going to be great. Therefore, one of the first essen-

tials in the profitable production of good beef is a thorough and clear conception of what constitutes a good feeder. A scrub Jersey or Holstein steer may make as many pounds of gain from a bushel of corn as a Shorthorn, Hereford, or Angus, but in the first case you are producing a cheap grade of beef, while with the steer of a good beef type and a good feeder, every pound of gain is worth from 1 to 3 c. more than that of the scrub. And there is certainly much more pleasure in feeding a good bunch of cattle than in feeding a poor one.

What we want in our fattening cattle is maximum weight at a minimum cost. And under cost consider the length of time which they are to be fed, the amount and kind of feed which they are to consume, and the value of the yards or pasture which they are to occupy.

The price of land has increased; feeds are too high in price and the price of cattle is too low for us to make it a profitable business to feed as was the method 50 years ago. Cheap pasture lands and the free range are almost a thing of the past, and our cattle now must be turned to market at an early age. Grass is the most natural feed for cattle, and it is hard to get any combination of feeds that will equal it for cheapness of gains. Summer feeding on grass is preferred by many to winter feeding. One of the largest cattle-feeders that ever operated in this country said that he could not afford to feed during the winter months. But the average farmer has considerable more time to do feeding during the winter months than he has in the summer; and this is perhaps why we find so many feeding in the winter. I was unable to find figures giving a comparison of the relative cost of summer and winter feeding; but the averages of 100 experiments with hogs in winter and 99 in summer show a saving of 11 per cent in favor of summer feeding. A great many who summer-feed find cottonseed cake about as economical as any feed to use in connection with grass. Cottonseed-meal or cake will produce fat as fast as any feed we have, but the price of this product is hardly in keeping with the price of fat cattle, and there is some objection to it on account of its sometimes causing sickness, or what is called cottonseed poison; however, this is seldom seen when cattle are on pasture. If used for dry-lot feeding it should not be fed for too long a period or in too large quantities.

Corn will perhaps ever hold its place as the chief feed for fattening cattle, and it is safe feed for either grass or dry-lot feeding. When feeding on grass, soaked shelled corn can often be used to advantage. By using a wagon tank, soaking is a cheaper operation than grinding, and experiments show that there is a saving of 15 per cent in favor of soaked corn as compared with whole shelled corn, and about 5 per cent can be saved by soaking where there are hogs to follow the steers. Ground corn is always preferable to whole corn where the expense of grinding is not too great. Corn-and-cob meal in nearly all experiments has proved equal to corn-meal as feed for steers. This gives fourteen pounds more feed per bushel of corn, but the expense of grind-

ing is considerably more with the corn-and-cob meal than with corn-meal.

When the price will permit, bran may often be used to advantage. Steers fed on bran and hay by the Pillsbury A mills, of Minneapolis, made an average daily gain of nearly two pounds per day for a period of four months. Two or three pounds of bran, fed in connection with corn-meal, will often prove a valuable addition to their ration.

Oil-meal has long been used as a food for fattening cattle, and with good results in most cases, when fed in connection with corn, but it is a too highly concentrated nitrogenous food to be fed alone with profit. At the Kansas station it required 732 lb. of oil-meal and 814 lb. of hay to produce a 100 lb. of gain. At the present prices this would make a 100 lb. of gain cost about fourteen dollars.

In our feeding experiments we have been unable to find any combination of feeds that will equal corn-and-cob meal and good alfalfa hay; and at the present prices of the various by-products, we doubt if there is much economy in feeding any of them.

Last winter at the Kansas station, with 2-year-old Shorthorn steers fed 219 days, it required 612 pounds of alfalfa and 690 pounds of corn-and-cob meal to produce a hundred pounds of gain, and the cost of gain was six and a half cents per pound.

One mistake that is sometimes made is turning on pasture, steers that have been heavily grained during the winter. This is usually a losing operation, and the more radical the change from the dry lot to the pasture the greater will be the loss. The increase in the cost of gains as the age of the steer increases and as the length of the fattening period increases are factors that must not be overlooked. We find that it takes all the way from 400 to 1500 lb. of feed to produce 100 lb. of gain, the amount depending on the kinds of feed used and the length of the feeding period.

From a fat-stock-show record, the cost of gain is given as \$4.03 for calves, \$7.98 for yearlings, and \$12.54 for 2-year-olds. The amount of grain required per hundred lb. of gain increases about 10 per cent after 60 days, 15 per cent after 90 days, and 20 per cent after 120 days.

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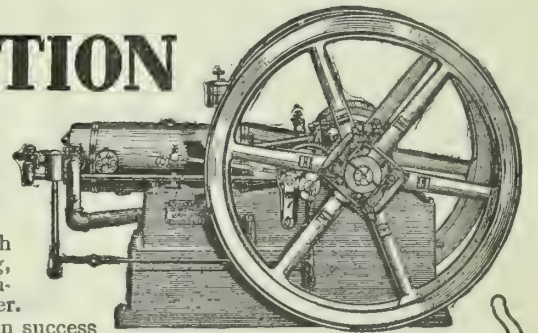
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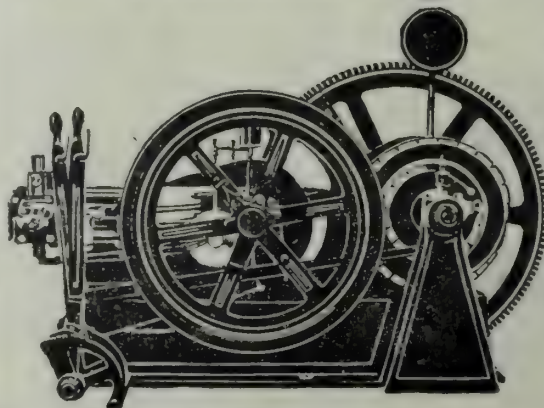
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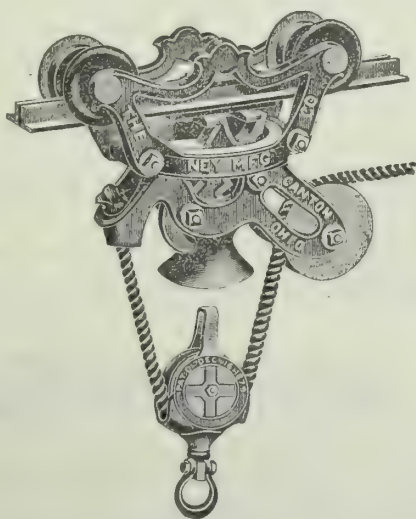
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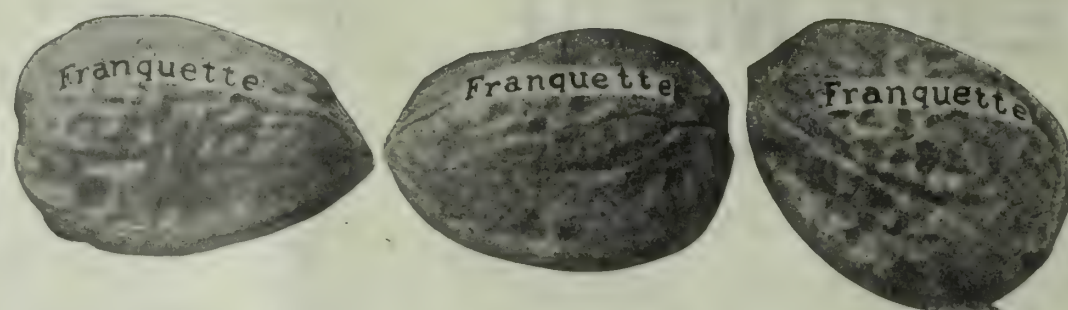
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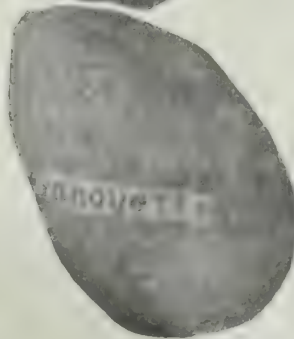
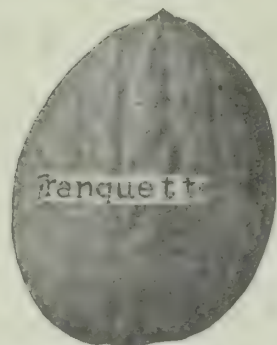
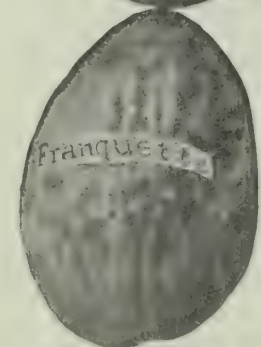
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Vol. LXXI. No. 24

SAN FRANCISCO, SATURDAY, JUNE 16, 1906

THIRTY-FIFTH YEAR

DEVELOPING THE COUNTRY.

Last week we gave views in Berkeley, one of the older towns in California, and turn in this issue to the beginnings in the process of town making on the Pacific Coast which the pictures on this page well illustrate. Many towns which are now in the midst of an agricultural environment and thriving upon the output of fields, orchards and vineyards, began on the basis of mining development. Others of course were agricultural from the beginning and have no such phases in their history which are suggested by the engravings. And yet the relation of mining to the development of the country cannot be forgotten even though such development is more conspicuous now in some of the interior States than in California. An interesting instance is the new town of Manhattan in Nevada and the pictures are illustrative of the way it is approached and the beginnings of industry upon the success of which its future is to rest. The name Manhattan applies to a small area, about two miles wide by seven long, following the course of Manhattan canyon in the Toquima or Smoky range of mountains. The elevation of 7500 ft. gives a cooler, moister climate than is found further south, and this encourages the growth of some timber. The steep sheltered sides of tributary canyons support a sparse growth of pinon and juniper with some fir and mountain mahogany. This will give fuel, but it is too scrubby for mining purposes.



How Mining Begins—Sacking Ore at Manhattan.



A Rest-House in the Desert.



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THE WEEK

Things are moving along very satisfactorily. The large snowfall is melting rather rapidly in the mountains and the streams are high at some points in the San Joaquin valley, but this means, on the whole, plenty of water for summer industries, which is a general blessing. Hay and grain crops will be large this year. Fruit shipments are proceeding but the season's total thus far is low, because cherries were shortened by the rains and apricots are too scarce to spare on distant people in a large way. Fruit prices are realizing all that we anticipated for them and buyers of fresh fruits are eager. Prune holders are still confident and their attitude seems warranted by the features of the general fruit supply of the country. In San Francisco the greatest activity in cleaning up and rebuilding prevails. Insurance affairs are not altogether satisfactory but they are beyond California control. It is fortunate that most of the companies are however actuated by sound principles of humanity and good business. All agencies for spreading the news of California's courage and exact information of the relatively small injury to the State at large are active. Lieut. Gov. Alden Anderson of the Sacramento Chamber of Commerce, is giving wide circulation to an excellent circular which will have a good effect. The Promotion Committee is holding a large convention at Napa as we go to press, for a similar purpose. On the whole the situation is very reassuring.

We are glad that the State Board of Agriculture is undertaking crop reporting, which is clearly within its field and a thing to be expected from it. Statistical work has always been entrusted to it and paid for by the State and yet has never been done except in a most perfunctory and post mortem sort of a way. Mr. Flicher proposes to have his figures too fresh to be offensive and we are glad to present his first report on crop prospects in this issue. It will be easy for a man who has an appreciation of the needs of the work to organize a corps of reporters who will enable him to do a work which will be of the highest immediate value and furnish the data for a review at the close of the season, which will consist of something more than the figures which the commercial organizations have left over. Governor Pardee's patient and persistent work for the rehabilitation and new life of the State Board of Agriculture is beginning to bear fruit and the farmers of the State will not be long in sitting up to take notice.

Another thing which we are glad of is the disposition of the San Francisco people to wake up to the necessity of systematic pulling, not only for themselves, but for the industries of the whole State. The disposition of some of the insurance companies to evade their responsibilities has sharply raised the question of what such parties were using California for, if it were not to gather all the income they could for years and then to repudiate obligations. Such distrust of outside interests naturally makes San Franciscans wonder whether they have ever been as near to the heart of California in business affairs as they should be. There has been a marked improvement during recent years, it is true. San Francisco capitalists and investors have developed a better appreciation of California's rural industries than ever before, and it will certainly be a desirable result if recent experiences knit the metropolis more closely to its environment. In a recent joint circular issued by the Pacific Commercial Museum and the Manufacturers' and Producers' Association, these sentences occur:

It is a self-evident fact that the only man who can help the California producer at this time is the California producer himself. Neither Eastern firms nor their agents will do other than assiduously serve their own interests. Consequently some plan of action, some logical campaign, must be instituted, so that the scattered units of our productive and manufacturing strength may be welded into a power through which accomplishment will be an assured fact and not a mere fiction in the minds of optimistic persons.

We are not sure we are making just the application of these words which their promulgators intended but they will stand such construction and such is certainly the import which the State at large desires them to convey.

The issue for sound food and clean packing, to which we alluded last week is still being actively made in Congress and it looks as though some wholesome enactment would result. Among the important features of probable legislation are that it places the cost of the inspection on the government and makes an annual automatic appropriation of \$2,000,000 to pay the expenses. It requires a rigid post-mortem and ante-mortem inspection of all animals killed for food. It requires a government label as a passport for all meat and meat products which enter into interstate commerce, and in addition to this label a certificate of purity to the carrier and to the Secretary of Agriculture for such products which enter foreign commerce. These provisions faithfully carried out would seem to meet the necessities of the case. President Roosevelt believed the packers should stand the cost by a fee levied on each animal slaughtered and while that is theoretically correct in placing the burden upon the trade which can only grow through the undertaking, in practice it would not leave the burden there at all. It would drift at once to the grower of the stock in the form of reduced prices which the packers would pay. They are organized so that they could arrange that by the issuance of a few circular letters. Again, an inspection in the pay of the packers, even indirectly, would not be the inspector which the world needs. Let the government pay its inspectors just as it pays its other servants and then protect them by the closest supervision from all tampering by interested parties. It is true, of course, in the end that the "farmer pays for all," and he had better do it in that way than by reflex action from the packers.

There has been quite a southward movement of cattle from the interior which may help the present darkness due to disclosures of packing house abominations. The Mexican government has temporarily provided for the free admission of cattle until June 30 with the object of improving the quality, but the Mexican butchers have taken advantage of the opportunity to supply the market. Cattle are said to be scarce in Texas at present. They have been high in price in Mexico for several months, owing to the unfavorable winter.

Some weeks ago we mentioned the pineapple canning industry of the Dutch colonies of Southern Asia. The Manila Cable News states that with a preferential tariff on the importation into the United States of Philippine products there is but little doubt that the pineapple canning industry in the Philippines could be made one of the most productive that could be introduced. At the present time some of the finest pineapples ever grown are being cultivated in Bataan and Bulacan, and even in the red clay soil of Benguet there are growing plenty of plants producing this luscious fruit which is in so much demand in the United States. The product imported into the United States is largely derived from foreign countries, and it is only the size of the fruit at present grown and the tariff that keep the industry from assuming great proportions in the Philippines. The Philippine pineapples now grown are said to be remarkably suitable for canning, as they are relatively free from fiber. Of course one should not forget that Hawaii is also in the canned pineapple industry and grows fine fruit.

QUERIES AND REPLIES.

MILL SHAVINGS FOR STABLE ABSORBENT.

To the Editor: There is much interest in this neighborhood in regard to the use of planing mill shavings as bedding for stables and the effect on the soil as manure. Some claim it is bad, others do not know. Can you enlighten us?—SUBURBAN, Sunnyvale.

Fine mill shavings and sawdust are good absorbents and may be used in the way you describe, providing you are dealing with rather heavy soil in which such coarse material could have good mechanical effect as well as contributing its contents of absorbed fertilizer. Such material has, however, a disadvantage in the light soil, making it too open and non-retentive of moisture. For these reasons the use of shavings, as you describe, might be very good or bad, according to soil and moisture conditions. The safest absorbent and also a material having some intrinsic value, is finely ground gypsum.

A LAWN PEST.

To the Editor: I take the liberty to enclose a sample of a weed which is spreading over portions of my lawn and appears to me dangerous. Is it an annual and what is the best method of getting rid of it?—GARDENER, Santa Barbara.

The plant which you find in your lawn is perennial *Cerastium triviale*. It is a bad pest in a lawn; it grows low so that its seeding is not prevented by the cutting of the lawn and the seed is borne in such quantities that the plant rapidly spreads. If a lawn is very badly infested the best treatment is to dig deeply, or to have recourse to trenching, throwing the surface soils as far down as possible and re-sowing with lawn grass. It can be kept somewhat in check by raking after watering, bringing the prostrate stems up and pulling out as much as possible of them. In this way the lawn can be prevented from becoming patchy and unhand-some, but there is no way of exterminating the plant known to us.

COMMON SORREL.

To the Editor: I enclose a plant which we find in spots on a mesa. Wherever it is found the barley does not grow. Will you oblige us by giving us a report upon the nature of the plant and if it is to be feared?—RANCHER.

The plant which you send is common sorrel (*Rumex acetosella*). It is a weed which frequently comes into pasture lands in the coast district as the better plants disappear under continued grazing. It is a plant which can endure very hard conditions of soil, and that is the reason why you find it growing where barley will not succeed. Sorrel also increases because other plants which the stock relish are fed off so short that they cannot produce seed. There is no satisfactory treatment for sorrel; sometimes the use of lime seems to have a repressing effect upon it. Wherever it is possible breaking up of the land, use of manure and of seeding down with grasses and clovers is the best method of pasture restoration. Wherever land begins to run down and grasses begin to run out you may expect sorrel to spread.

ERINOSE.

To the Editor: At our last meeting of County Board of Horticulture I had samples of grape leaves with me as per samples enclosed. I called it Erinose, but they were not satisfied and requested me to forward samples to you for examination.—ISAAC PHILIPPI, Acampo.

The leaves which you send are for the most part affected with erinose, and your statement with reference to it at your County Board meeting was correct. The other leaves contain brown markings upon them which do not seem to be a disease at all, but merely the result of rubbing or abrasion, from what agency we cannot at the moment determine.

FERTILIZING TO HARDEN TISSUE.

To the Editor: There has been some talk in this vicinity attempting to check the growth and harden the bark of Bartlett pear trees by applying 10 or 12 lb. of potash as fertilizer. Can you tell me if potash will harden the bark of the pear tree without having an injurious effect? The idea, with me, is to keep suckers and water-sprouts off the trunk and main limbs of the tree without having the danger of cutting them in blight time.—PEAR GROWER, Winters.

There is quite a wide belief that potash does act in the way of repressing growth and is, therefore, in a certain way, in opposition to nitrogen, which is disposed to stimulate growth, but we are not aware that this point has been demonstrated so fully that it can be accepted without question. It would be well for you to try it, but the amount which you propose—10 or 12 lb. to the tree—is two or three times as much, if you count 100 trees to the acre, as is usually applied for fertilizing purposes. Five or six pounds to the tree, well scattered, would be a safer application.

SWEET CLOVER.

To the Editor: Please find enclosed a piece of a plant that grows here very thriftily and is excellent feed for stock. I would like very much to know the name of this plant and to find where I could procure the seed.—GROWER, Ventura county.

The plant is commonly called "sweet clover." It is *Melilotus alba*. It is usually counted a weed because as a general thing stock will not eat it, although your experience seems to be otherwise. Large clumps of it are frequently seen standing in pastures, allowed to grow by the stock, who seek other herbage rather than to feed upon it. It is a great nuisance in alfalfa fields for this reason, and it usually finds its way into new districts because the seed is mixed with the alfalfa seed. It is a good plant for bees and probably is most valuable in that direction. The seed is not in much request but the seedsmen may have it.

THE MELON APHIS.

To the Editor: The cantaloupe crop of this section is in grave danger from the melon aphis. It seems as though a total loss is imminent. What will help matters? Lady bugs are present but are not active enough. I fear they are not the right kind. Can you recommend any mixture for spraying that will discourage them. We have tried fumigation but they soon return and lay more eggs. These hatch in turn and the trouble is on again. The winged aphis are everywhere and unless there is some especial mixture they don't like or some parasite attacks them soon and strongly the crop is in a fair way to be a total loss.—GROWER, Riverside county.

Fumigation is a good treatment when the plants are small and can be readily covered, but it will have to be done as often as they reappear. The best way to cope with the melon aphis would be to spray it at short intervals with carefully prepared kerosene emulsion, using a good force pump and nozzles like the "Cyclone," which can be held near the ground and shoot the spray upward so as to strike the under surface of the leaves. Any one who will make a good emulsion and apply it faithfully will save his vines, but it will be expensive in cost of labor.

DEBILITATED TREES.

To the Editor: I noticed some plum trees, five or six years old, which look conspicuously weak. They have more slender and thinner branches than those of other trees which grow near them. Their young shoots are smaller and shorter than another. Leaves are pale and small, but not shrunk. A foreman told me such a diseased tree will wither up in a few years and this disease seems to be infectious. I tried to find an insect or something like mycelium or spore of fungi, in shoots, branches and leaves, thinking it due to pathological cause, but without success. I wish to know the cause of this symptom and its prevention.—ORCHARDIST, Santa Clara.

It is impossible to tell without personal examination of the trees what is the occasion of the unhealthy appearance which you describe. It is quite likely, however, that the trouble is in the root and not in the top of the tree. Such trees should be cut back somewhat and given some manure and water, to stimulate a better growth, if possible.

A HARD PROBLEM.

To the Editor: Can you give me a list of crops that would be good to use on summer fallowed land during the otherwise idle year? I am farming on a rented ranch about 25 miles directly east of Fresno City, and the place is overrun with wild sunflowers. Last year

they were so high and so thick that it was difficult to urge a team through them, and the only way to put in the crop was to cut them first with disk harrows. I have been making extra strenuous efforts to keep them out this year, but the rains are coming so they will have moisture all summer while I have to stop for harvest. I must have some sort of a crop that will pay for keeping the land clean and yet not take too much from the wheat. In San Luis Obispo County we used "flour corn" with very good success, but I have 600 acres and it would be hard to take proper care of so much at the right time.—RENTER, Fresno county.

We regret that we cannot mention anything to you as a summer crop which will not take so much moisture out of the soil for its own growth that one purpose of the summer fallow—that is to store up moisture for the following crop—will be defeated. Kaffir corn or Egyptian corn would be most likely to yield a good return and to make most growth with the least amount of moisture, but the effect of this upon the following year's grain crop would not be good. A good clean summer fallow which would prevent the growth of weeds would be the best way to insure a good following crop, but this, as you say, would be expensive, and yet we cannot think of anything better to mention to you. We would like to have all readers participate in a free discussion of this important subject.

PRUNING AND BEARING IN THE APPLE.

To the Editor: Will heavy pruning induce bearing in an apple tree, and if so, will a tree so pruned in the fall show the effect the following spring? We'll take a tree, for example, 10 or 12 years old, low headed, rather bushy, strong and vigorous, and with no dead wood. This tree has always been pruned with a view to symmetry, taking out the crosses and keeping the limbs far enough apart so as not to chafe in the wind. Would the effect of heavier pruning on this tree be to give the roots the advantage of the top and to strengthen the blossoms and codlings so that they would be more liable to mature? Would the balance of growth between the top and the roots be naturally restored?—C. QUEEN, Fish Rock.

The irregularity in bearing of a tree in the condition and the age you mention is chargeable to the local behavior of the variety or to weather conditions. With such a tree we do not regard heavy pruning as likely to exert a beneficial effect upon bearing; in fact, heavy pruning during the dormant season would be more likely to effect more wood growth than more bearing. Certainly if heavy fall pruning had any effect the spring following it would be in this direction. The balance between the roots and the top would be naturally restored in time. An experiment which naturally suggests itself would be summer pruning in July or root pruning or neglect of cultivation this summer to repress the vegetative vigor of the tree somewhat. Such things often promote bearing, but there is a native cussedness in some varieties in some places which will not yield to any treatment.

CURL LEAF AND CHERRY SLUG.

To the Editor: I am mailing to you some leaves of cherry and peach trees which are affected from either bugs or disease, destroying all the leaves. The peach trees appear to be dying and perhaps you cannot determine the cause by the leaves alone. Will you please let me know in the columns of your valuable paper what it is and what to do for them?—GROWER, Gilroy.

The trouble with the peach is curl leaf of which a full account was given in these columns in our issue of May 19. As late in the season as this with no greater proportion of leaves curled than your specimens show, there is little apprehension of serious injury to the trees. You should prepare for thorough winter treatment with bordeaux mixture next season. Your cherry leaves are being eaten by the cherry slug. If they continue work after the fruit is picked, spray with lead arsenate, one pound to seventy-five gallons of water.

HIMALAYAN BLACKBERRY.

To the Editor: One of your correspondents some time ago praised the Himalayan blackberry. Where can I get the plants?—SUBSCRIBER, Haywards.

This variety is now being quite widely propagated and all nurserymen carrying a general stock of small fruits should be deep and moist but not wet.

A TROUBLE WITH THE ROME BEAUTY.

To the Editor: In our orchard we have some of the "Rome Beauty" apple trees, four years old, the bark is cracking and peeling back down close to the soil, and in many instances below the soil. None of the other trees are affected and several neighbors are troubled in the same way. Can you tell me the reason and what is the best thing to do?—SUBSCRIBER, Payette, Idaho.

We do not recognize this trouble; perhaps some reader can expound it. Remove the diseased bark and paint with the bordeaux mixture. If you irrigate do not allow the water to touch the bark of the tree.

AGE AND BEARING OF WALNUT TREES.

To the Editor: As a recent arrival in your State, looking around for an opportunity to invest a small sum of money along agricultural lines, I have become naturally a good deal interested in walnuts. Most of the reports I have heard would seem to indicate that walnut groves outdo United States bonds in security and bonanza gold mines in per cents—a state of affairs tending to make the cautious minded stranger go somewhat slow. Recently, however, I have heard a different tale and am wondering if I have at last come across the rift within the lute.

There are about here a number of young groves with a few old trees scattered among them. Upon inquiry it appears that old groves cease to be profitable bearers at between 20 and 30 years old, and must be cut down to begin the 10 years of preparatory waiting all over again. Now is this generally true? Or is it due to a rising water-level, or too close planting, or what? I have picked nuts from trees in Switzerland whose age I should be more inclined to measure by hundreds than by tens of years, and so was not prepared to find the new world tree so ephemeral.

Under these conditions would it be at all feasible to plant young trees in between trees in full bearing? Or to start young trees close together and transplant them to the destroyed orchard at six or seven years old? What do you call a fair average yield in pounds for an orchard? What are some of the points about which a novice should be especially watchful in buying bearing land?—NEW SUBSCRIBER, Santa Barbara.

California walnut growing on a large scale is too young to tell all you wish to know. The next generation of growers will know more than we on some of these propositions. It is true that some old walnut orchards have been cut out in Southern California as unprofitable or as less profitable than other things. At the same time there are some old trees which are making large yields in different parts of the State. The contradiction may be due to difference in the varieties and to difference in soil and water conditions in individual cases. The great acreages of the new varieties are not old enough to answer your questions on the profitable longevity of the trees. But is not a profitable life of 20 or 30 years enough to figure on? Perhaps our grand-children would rather do something else with the land anyway. Who will give us facts about what old walnut trees are doing and what they are worth?

Walnut trees can be successfully transplanted at even such age as you mention, but an old tree, stunted in the nursery, is not as good as a younger one in thrifty conditions. We do not like to promise a yield, so much depends on conditions; you might count on 30 lb. to the tree at eight years old. The soil for the walnut should be deep and moist but not wet.

PICKING UP PRUNES.

To the Editor: Was there not a machine invented some little time ago for the picking up of prunes? It seems to me that I saw a notice of such in your paper. If so, or if you know of such a machine, could you give the address of the inventor or manufacturer; or failing that, could you give brief description of machine?—READER, Sacramento.

We do not remember a machine for picking up prunes except the monkey proposition which a brilliant San Jose man announced a year or two ago. A low truck with wings to fold outward to catch prunes which are shaken onto it was described from San Jose, but we do not know to what extent it was used. The Anderson Prune Dipper Co. of San Jose can answer all questions about prune machinery.

HORTICULTURE.

COVER CROPS IN CITRUS ORCHARDS.

By Mr. Ben V. Forbes of Covina, at University Farmers' Institute in Southern California.

The subject of cover crops is one of great importance to the agriculturist, for by a careful and judicious use of same on his land, he can secure one of the most valuable means of increasing the fertility and productivity of his soil and at a very slight cost.

The government of our nation gives evidence of the importance it attaches to this subject by devoting no small part of the work of the Department of Agriculture to experiments to ascertain the most desirable variety of plants to use for cover crops and their culture, and some most wonderful results have been obtained at the experiment stations and in the Southern States.

Many of our prominent orchardists are now beginning to realize we have been ignorantly or wilfully destroying the source of one of our best nitrogenous fertilizing agents by keeping our orchards so clean and free from weeds and plant growth during the winter months, necessitating a great deal of cultivating and hoeing to maintain this condition and at no small expense, and then later on, purchasing the fertilizer, which we might have derived by using cover crops, at a much less expense and in a form better adapted to plant food.

What Are Cover Crops?—By the term "cover crops" I refer to any form of plant life that is allowed to grow on the land, whether it be weeds or leguminous plants, which are plowed under while green and full of sap, causing it to decompose quickly, making a splendid source of humus, which is a most necessary factor in all plant food, as well as improving the physical condition of the soil.

But as the greatest value of cover crops is derived from the use of leguminous plants, such as the peas, clovers, vetches, alfalfa, beans, fenigreek, etc., I shall confine my remarks to this class of cover crops for profitable use in our orchards.

It is a well known fact to all farmers and especially orange growers, that nitrogen is one of the most important elements of food for a plant, which it absorbs from the soil by its root system, and a succession of crops soon drain the land of this chemical, and must be replaced by using artificial fertilizers to restore the nitrogen which the plant has removed.

We import from South America shiploads of nitrate of soda, or ship carloads of dried blood from the eastern packing houses, to get our source of nitrogen, both of which are expensive, too, while the very air we breathe contains stores of this fertilizer, as nitrogen forms seven-tenths of the atmosphere and it has been computed that 75,000,000 lb. of nitrogen are above each acre of land awaiting to be converted into plant food. But this source has been of no use to us until very recently, as man had no means of capturing the free nitrogen and putting it into the soil.

But now all is changed, as the scientists have discovered tiny bacterial germs, invisible to the naked eye, which has made it possible to utilize this free nitrogen in the air in a practical manner, by making it available as plant food in the soil.

Introducing Germs.—Without taking time to go into the minute details of the propagation and distribution of this wonderful discovery, let me merely add, that, by using this bacterial nitro-fixing culture which the department has supplied to us free, we can vaccinate our soil, or seeds, with the germ which will draw the free nitrogen from the air, into the soil, ready for plant food.

These bacteria only appear on leguminous plants, forming nodules on the roots, but they do not contain the nitrogen itself (as is often erroneously supposed) but the bacteria in the nodules make it possible for the plant to obtain the free nitrogen of the air, which it distributes into the soil through its roots. If the roots of leguminous plants already show an abundance of nodules it may be regarded as a good indication that the soil is already inoculated, (mentioned nodules on all burr clover and lupins) and it will not be necessary to practice artificial inoculation, although the nodules are usually increased in size and number by inoculation.

One reason why many local orchardists have seen such small results from using the government inoculation material, is in my opinion from the fact that much of our soil in this valley, in fact all over Southern California, is quite thoroughly inoculated by the long continued growth of burr clover or sweet clover, which we all know to be a native of this district and is to be found everywhere, and I have never dug up a plant for examination that did not show a good production of nodules, according to the age of the plant, and failure will surely follow carelessness in following the direc-

tions the department has issued for inoculating the seeds.

A Source of Nitrogen.—In planting a legume as a cover crop we give our land a steady, slow supply of nitrogen, continuing throughout the life of the plant, or until it is plowed under to decompose and furnish humus as well.

Nitrogen as applied to the soil in this manner is more desirable and valuable as a plant food than from any other source, whether it be from nitrate of soda, dried blood, manure or any others, as these fertilizers are often a strong stimulant to a tree, and the after results may not be satisfactory.

Experiments With Cover Crops.—In deciding upon what variety of cover crop to plant, one should try to select the one best adapted to his soil and locality, and this can be best determined by experimenting with the different legumes on our own land.

This season I have tried five kinds of legumes as cover crops on a 40-acre orchard. I had 10 acres in New Era cow peas, 20 acres White Canadian peas, 12 acres in burr clover, 10 acres in Yorkshire Hero garden peas (mentioned their nodules) and one acre in Hairy Vetch (sometimes called Sand Vetch).

My 10-acre block of Yorkshire Hero peas were frozen in the "freeze" of last December, just as they were ready to pick, and I could only find a few green vines on which to look for nodules, but those I found showed fine results. However, a fine crop of burr clover came up voluntarily where I had the Yorkshire Hero peas frozen, and these all showed fine production of nodules when plowed under.

The Canadian peas made a splendid growth and show many nodules, though not as large or numerous as those on the Yorkshire Hero peas.

One block of my orchard which I planted to burr clover in November last is now (May) up about 18 inches high, and very strong and heavy tops, and roots full of nodules about the size of wheat kernels.

The Hairy Vetch is growing owing to late planting, but the roots show plenty of nodules, and these vetches make a more tender vine and leaf than the peas, and it decomposes very rapidly when plowed under, which is a desirable feature, especially as the pea vines or burr clover if left too late become tough and ropy, and will not rot before time for cultivation season begins, and will be a source of much inconvenience.

The cow peas I turned under in October, and had a fine showing of nodules, and also good tops, but the great drawback to this legume is the fact of its being distinctly a summer crop, and its rapid growth in hot weather when we lack sufficient water to make both peas and trees grow well. I intend experimenting with this crop again this summer, but on a more limited scale.

Planting.—All of my pea crops I planted with a fertilizer drill which is an easy and effective means of sowing the seed. Burr clover, 7 lb. per acre, cost \$15 per 100; Yorkshire peas, 100 lb. per acre, \$4.50 per 100; Canadian, 60 lb. per acre, \$3.35 per 100; cow peas, 35 lb. per acre, \$3.50 per 100.

The cover crops I plow under with a disk plow, and find it superior in every respect to any walking plow, as when properly adjusted it will completely cover the green plant with finely pulverized dirt, and works well on hard soil as on light.

The use of cover crops, besides affording an ideal source of nitrogen and humus, greatly improves the physical condition of any soil, as the roots which are cut when the plant is plowed under, rot and leave a hole in the soil which is a splendid place for the following season's irrigating waters to soak down deep into the land; in fact cover crops have been called nature's subsoiler, as the cow pea has roots from 30 to 40 in. long, and an inch in diameter. The extra humus also makes the land much better able to retain moisture.

Cover crops make light soil heavy, and heavy soil light. On light soil they increase the humus and thereby secure its beneficial effects in retaining its moisture and acquiring gases from the air, and enables the soil to better retain the other fertilizers that are applied.

On heavy clay soil the large amount of green matter in cover crops, when plowed under, has a tendency to divide and disintegrate as well as to lighten the soil by its mechanical effects, and in its fermentation or rotting, induces chemical reaction that decomposes the minerals in the soil, thereby making the land lighter and more friable. These effects and the well known advantage of plenty of humus in the land have led to a very large and constantly increasing use of cover crops in the United States and its advocates are to be found everywhere. It also prevents washing.

Results.—In Riverside and Redlands about 70 per cent of the citrus orchards are in cover crops this season; at Covina about 10 per cent. In our own valley, but a great increase will undoubtedly be witnessed before planting time arrives for next season.

A friend of mine who is one of the most prominent growers in Riverside, informs me he will this year have about 70 per cent of "fancy" fruit, in place of 35 per cent last year and this great increase he attributes to the continued use of cover crops.

This certainly is an evidence of results and "are cover crops beneficial?" is a question we ought never to hear asked by any intelligent orchardist. In fact the interest manifested in this subject in my own neighborhood leads to believe that at least 75 per cent of the orange growers will plant cover crops this fall.

Another neighbor and friend informs me he has never had any "puffy" fruit when he has raised cover crops.

May the day soon come when we may all see a carpet of green in our citrus orchards during the winter months.

VEGETABLE GROWING IN ALASKA.

C. C. Georgeson, special agent in charge of the Alaska Experiment Station, has issued a bulletin on "Vegetable Growing in Alaska." The bulletin first discusses climatic conditions. In a general way there are two climatic belts in Alaska which may be broadly described as the coast region and the interior. The climate of the coast region is by far the best known. Records of rainfall and temperature at several settlements on the coast were kept for many years by the Russians, but they made no record of any observations in the interior. During the last seven years the United States Weather Bureau through the assistance of the Alaska experiment stations has established voluntary stations at more than thirty places in Alaska, and special efforts have been made to get records of temperature and rainfall at interior points.

The leading features of the climate of the coast region are cool summers, mild winters and heavy rainfall. The average annual temperature at Sitka, Alaska, is almost the same as that at Washington, D. C., due to the fact that the winters at Sitka are much milder than those at Washington. The lowest temperature on record at Sitka is four degrees below zero and it is seldom that the temperature falls to zero. The summers are cool and the maximum temperature is usually between 60 and 70 deg. The annual rainfall at Sitka is 90 in., and the heaviest precipitation is usually from the middle of August until about the middle of October. The heavy rainfall is the chief obstacle to successful farming in the coast region; first, by keeping the ground cold in the spring, and second, by inducing all forms of vegetation to prolong their growth in the fall instead of maturing.

In the interior there is a brief but warm summer season and a prolonged and severe winter. The summer rainfall is light and irrigation may be necessary in the dryer regions as in portions of the Copper River valley and the Tanana valley.

At Copper Center the rainfall for a year was eight inches; at Eagle, 12.82 inches, and at Holy Cross Mission, on the lower Yukon, 28.54 inches. At Copper Center the maximum temperature was 96 above zero and the minimum 60 below zero. At the Eagle the maximum was 87 above, and the minimum 68 below. At Holy Cross Mission, the maximum was 71 above and the minimum 55 below.

The coast soils are apt to be very sour. At the Sitka station more than a ton of lime per acre has been applied to correct the acidity and even this does not appear to be enough. Cultivation and exposure to air in time corrects the soil but the process is a slow one without the aid of lime. There are gravelly soils near the coast which do not need liming and which, with the aid of fertilizers, produce most satisfactory crops of potatoes, cabbage, etc.

There is a great variety in the soils of the interior, but they are generally of a sandy, gravelly or light loamy character. Those portions of the river bottoms which are or have been subject to overflow consist for the most part of a mixture of silt and fine sand. This is a very rich soil and when not too wet will produce anything which can be grown in that climate. Such lands are often covered with willow thickets and further back with spruce forests, and for this reason there is considerable expense in clearing. There are thousands of square miles of soil of this description along the river valleys of the interior. The soil of the uplands of the interior is for the most part thin.

Radish, turnips, kale and lettuce can be grown throughout the whole coast region and in the interior northward of the Arctic circle and nearly to the Arctic ocean in favorable seasons in picked localities.

Carrots, parsnips, parsley, peas, cress, cabbage, cauliflower, broccoli, Brussels sprouts, kohlrabi, onions, spinach, endive, leeks, beets, potatoes, and rhubarb can be grown everywhere in the coast region, and in the interior they can be grown nearly to the Arctic circle if the gardens are selected with due reference to shelter and exposure to the sun.

Asparagus, beans, celery, cucumbers, squashes and salsify can be grown in warm spots in favorable seasons if given proper care and protection.

Shelter belts to keep off the wind, thorough drainage and a southern exposure are all important features in making a success of vegetable growing in Alaska.

All Alaska soils are improved by fertilization. Barnyard manure is the best and is a scarce article. Seaweed is an excellent fertilizer for many crops.

In raising potatoes in Alaska the method of hilling up is recommended as very important. The Extra Early Ohio is given first place among varieties. The Early Rose is not of good quality when grown in Alaska. Varieties which promise to be well adapted to that country are the Garfield, Freeman, Hamilton, Early and Extra Early Triumph.

Beets do fairly well in favorable seasons on well drained lands; Alaska grown cauliflower cannot be surpassed anywhere.

The varieties of peas which have given the best satisfaction are the First and Best and the Alaska.

AFTER TREATMENT OF STRAWBERRIES.

Mr. C. E. Wightman of Mt. Vernon, Wash., gives the Northwest Horticulturist his method of handling strawberry plants after fruiting and the taking of stock for new plantings.

After the fruit is picked, the plants should be mowed off and burned, as this retards runners from forming, and also kills many troublesome insects. Top dress liberally with fine stable manure, or chicken droppings. Cultivate often and cut off runners when they begin to appear, because a crop of runners is detrimental to a large crop of berries the following spring. I spray at least four times with bordeaux mixture, adding two grains white arsenic to each gallon. The arsenic is made soluble by boiling in water one part white arsenic and four parts salsoda. Plants that are well cultivated, liberally top dressed after the fruit is picked, with runners closely cut, keep on improving with age for at least five years.

Crowns form rapidly and the plants grow to be six to eight inches in diameter, measured without leaves, and have 100 or more fruit stools which will yield from two to three gallons choice fruit from each plant. The better cultivation and care the plants have after the fruit is picked, the better the crop will be the next season.

Plants from runners can be made to bear a good crop of fruit next season by raising a crop of peas and harvesting in August. Apply a heavy dressing of well rotted barnyard manure, working it in deeply and set plants not later than September 1. Spray, cut all runners, but above all cultivate shallow, every day if possible, when the ground is dry enough to work. In this way a good crop can be obtained the first year. But for those who cannot get plants in the early fall, by September, I would recommend planting them in spring for the plants are then more mature and can be handled with less care, and considerable work saved in cultivating and cutting runners. In that case there will be but little fruit the first season. I think it a decided mistake to pick off blossoms to stop fruiting. Let blossoms stay the first year, but keep off the runners, for these detract from following berry crops.

In selecting for future plants, mark the choicest plants at picking time, then remove a number of them to a place apart from the others, into soil which has been prepared by being put in the best of condition. Cultivate until runners start, pick off all blossoms and save the runners from these plants only. Some varieties are better suited to certain localities than others. Select a few kinds for trial, setting at least 50 ft. apart, for pollen will mix within that range. Select the kind which gives the best satisfaction, discarding the rest and success is assured.

I find no difficulty whatever in producing at the rate of over 1,000 bushels of choice strawberries to the acre, but in order to do so the plants must have all necessary attention in care and cultivation, particularly a double dose of the latter. Remember, it must be very shallow and very often.

THE DAIRY.

A STONE MILK HOUSE.

Although stone is scarce in California valleys there are many places in the foothills and mountains where there is no end of such material and some of our readers there may like to do some dairy building for themselves. A Washington bricklayer, who says of himself, "I was raised on a farm and now have a farm and expect to live and enjoy its freedom the rest of my life," gives the Pacific Homestead some plain instructions which may be helpful:

Of course, if a man is not much of a mechanic he may do better by building with lumber than with stone, but as I have been a bricklayer for 30 years I can give him some pointers to follow and he won't find it very difficult to lay cobbles or round stones in barn basements, cellars, milk houses, or walling wells, and we have plenty of these stones on most of the farms in Oregon and Washington. A well walled with them is as clean as a jug, but the top part of the wall should be laid in cement for six or seven feet down from the surface of the ground to prevent mice, toads, gophers, etc., from getting into it.

Advantages of Stone.—To return to the milk house. I want to call your attention to the improvement in building with stone over building with lumber. One point is this: When you place a building of lumber in a sidehill you can whitewash the inside of the building, but it's like the old well curbing, the back of those boards will be collecting and holding poison. Who has not seen, by going into a cellar and picking up a board from the ground, a white mold on the underside of it; this means poison and malaria to the family living in that house. A stone wall and cement floor prevents such malaria coming in. Another point is: The stone building for a milk house, especially in summer, has a cooler and far more even temperature than a frame or box house.

Plain Enough for a Beginner.—I will give a plan which works well for building a milk house, for a man who may not be a stone mason, but who can learn and is willing to try.

I am going to build myself a milk house and root house together with a solid partition six inches thick of concrete between the two rooms. The inside of this building shall be 12 by 18 ft., and the walls 7½ ft., and shall allow for the milk house department whatever size will suit the wife. I shall first build a frame the size of the inside of this building of 2 by 4 studding, two feet apart, these studding to be made the proper length for my rafters when the walls are laid. Now when this frame is made and braced properly I will board up the outside with shiplap or rough boards to the height of seven and one-half feet, also put in a box for each door and window of whatever size I desire. Now I am ready to begin the wall and shall make it 15 in. thick, the frame already built and boarded to be the inside face of the wall, so I will drive two stakes at each corner to draw the lines on 15 in. from the board frame. Every rock I lay I make it solid before I leave it. Keep the line most of the time above the wall. Never let the rocks on the middle wall touch the line; if I do the wall will not be straight. After I get the wall started I build up the corners for a lead and build them plumb. The six-inch partition wall has to be connected with the outside wall, so an opening is left for it at the proper places in the box frame. I now take two 2-inch planks, 10 in. or a foot wide, 12 ft. long. Get four bolts a foot long to put through these planks to hold them and allow a 6-in. space between the planks as a box to mold the 6-in. concrete partition wall. Bore four holes for the bolts in each plank and 2 in. from each side and the other end the same. Lay this box on the ground well braced to stand and braced 6 in. apart with small wooden pins 6 in. long or place in a rock or two the proper size to hold the plank the proper distance apart. Now fill to the top of the plank with concrete. Let it stand 24 hours, then take out the bolts and raise the plank and fill in again after the bolts are fixed as before; as the outside wall goes up this partition should follow. The face of the wall on the outside may be made with rock any size not over 15 in. thick, but the remaining part between the face and the boards can be filled with smaller rock or concrete, always keeping plenty of mortar next to the boards. This size wall will require one barrel of cement to two of lime. A wall 18 to 22 in. thick can be laid with lime mortar.

A Cement Ceiling.—When my walls are up the full height and hardened properly, I will take out the box frame and have a wall as good as plastered inside and a pretty cobble stone face outside, which I think is far more pleasing to the eye than a brick wall when properly laid and mortared.

Now I will place fairly heavy hewed timbers across from wall to wall as joists. They are to be placed three feet apart and are six inches thick. I will board up this ceiling completely and place standards under the ceiling to hold it up when I shall fill in between the joists with concrete to the top of the same six inches deep, and when this has stood for two weeks the boards may be taken out from beneath with safety. An air flue to pass through this concrete ceiling and the roof should be provided for in both milk house and cellar—a box made of two four-inch and two six-inch boards will be sufficient.

The Materials.—The amount of lime and cement it will take, the proportions, etc., I will give as follows: A barrel of cement weighs 400 lb. and will lay 75 ft.

of cobble stone wall, mixed one of cement to three of sand. Lime weighs 200 lb. to the barrel and will lay 90 ft. of stone wall, mixed one of lime to four of sand. When building a 15-in. wall, use one barrel of cement to every two barrels of lime. First slack the lime in a box that will hold water, keeping the lime covered with water and stirring it whenever it boils or it will burn and be nearly worthless. Put in most or all the sand required while the lime is like milk. This will save much more hard work than by waiting till the lime gets cold and stiff before the sand is mixed in; then when you add the cement also add the three parts more of sand. Mix only one sack or a quarter of a barrel of lime at a time. Four sacks of cement are called a barrel and if any party has to have the cement shipped it will cost less in sacks, considering the cost of shippage, than in barrels. Concrete for the arches or ceiling, the partition, and the floor, is mixed one part cement, two of sand, and six of gravel; the sand and gravel should be clear of all clay and quick sand, as such substances kill the strength of the cement. First, mix the cement, sand, and gravel dry. For a cement as a coat to the top floor use one part of cement to one of sand.

I give all these simple rules for I have met so many men on farms and in the city also who don't even know how to slack lime.

MILKING AS A FACTOR IN DEVELOPMENT OF DAIRY CAPACITY.

Mr. J. Overbo, of Nicollet, Minn., contributes a very thoughtful article on the above subject to the New York Produce Review from which are taken the following selections:

To increase the secretion of milk is to develop the organs that are engaged in its production, and the development of dairy cattle is nothing but the development of certain organs. There can be no doubt of this and we can without question apply the common laws that rule all organic development to this specific case. Those laws tell us that there are two principal factors which must be present in order to develop the function of an organ. The first is sufficient supply of nourishing matter, and the second is the external influence which makes the function active, commonly termed the "use." Both are equally important, and the one cannot serve as substitute for the other, whether totally or partly, because each represents a different principle. If either one is neglected and not present or active to a normal degree, comparative decrease in the activity of the function will be sure to follow. The nourishing is the foundation for all organic development, but it has nothing or very little to do with the specialization of the functions. This is due to the other principle, the use of the organ.

The udder is the organ that is engaged in the composition of milk and whose special development is desired.

Of course every child knows the necessity of milking the cows, and I am not thinking of reminding the dairymen of that. I am going to call the attention to the milking as a factor to increase the yield, improve the cattle, enrich the milk—in short, how this principle affects the udder and stimulates its activity.

It is safe to say that the majority of farmers do not consider the performance of the milking of any importance, with regard to the secretion. The work is accomplished at irregular times, and only in order to empty the reservoir and as such is the udder looked upon. As a result no special effort is made to aid the secretory process. The result is a shortness in the period of lactation, a lower quantity and quality, and a lessened capacity in the future.

It is my belief that only very few farmers realize how entirely the degree of a cow's secretory capacity is dependent upon a perfect milking. It is, strictly speaking, perfectly right to say that it is not the feeding and breeding that has created the dairy cattle, but the milking, as if not for this food would have been disposed of in other ways without affecting and stimulating the milk flow at all. This is a very significant fact, and well worth being borne in mind, because from it we may draw the conclusion that the milking may be a source of success for the dairymen. When we consider what this principle already has accomplished, it must be admitted that it is good reason for the belief that it may do still more. It is just as natural to develop the udder by means of perfect milking as it is to strengthen the muscular system by means of exercise and work. And it is just as necessary too.

We must always keep in mind that the udder not only is a reservoir for milk, but an organ where the milk is manufactured. The ability to produce more or less is entirely dependent upon to what extent the udder is enabled to perform its function. What I want to state is, that the food does not increase the udder's secretory power. The food only concerns the milk flow

as far as it, when subjected to the influence of the udder, may be converted into milk.

The different foodstuffs, as a material for this, may probably differ with regard to their relation to the process of milk formation, and thus cause a higher or lower secretion. An increased yield obtained in that way supposes a stronger activity of the udder and we must believe it would aid its development but not beyond the effect that it may have by furnishing more favorable possibilities for a more intense function. But those would be of no value if not subject to the influence of the milking. They are only possibilities. The udder is the special milk forming organ and the extent of its capacity will, when normal conditions are present, entirely be governed by its more or less perfect milking. This is in harmony with what we can find to be the case in other analogous examples.

It is a striking fact that the development of organic functions is dependent upon the influence they receive by use. This is fully demonstrated in examples from our daily surroundings and that is probably the reason why people are so apt to overlook this important matter. When an organ is constantly kept to perform a certain function to the greatest extent of its ability, its productiveness will increase. By a perfect and thorough milking the activity of the mammary gland is strengthened.

Contrary to a great many of the feeding problems there is no doubt and no guess work concerning the value and effect of perfect milking. It is a constant factor with a constant and necessary result, and it insures therefore increase in yield with the highest degree of security.

The practicability with which applied, combined with the beneficial effect on secretion, are the advantages offered by perfect milking, and it seems to me worth consideration. Indeed, the principle of good milking is the most natural, least dangerous, least expensive and easiest applied factor I know of to develop the dairy cattle. No other effort that possibly may be made can surpass this with regard to intensifying the milk flow.

HOLSTEIN CATTLE SALES.

Mr. F. L. Houghton, Brattleboro, Vt., reports the following transfers of registered Holstein-Friesian cattle in this State:

Prince Kobe, Wm. Niles to Conrad Oerthy, Los Angeles.

Variantet De Kol, C. W. Evans to Cyrus Allen, Modesto.

Pearl of Dairy Ann Paul De Kol, C. J. Welch to Mrs. E. M. Soper, Los Banos.

Sir Skylark Ormsby Hengerveld, Geo. C. Mosher to J. H. Williams, Porterville.

THE STOCKYARD.

SILAGE FOR BEEF STOCK.

Although it is not true in California as it is in the North Central States, that "corn is and always will be the king of crops and the greatest of all cattle feeds," it is probably true that Californians do not do as much with corn as they should. An Ohio correspondent of the *Prairie Farmer* claims that corn is not expensive to raise, but as usually managed it is very expensive to handle it. On a good sized farm well equipped with teams and tools, all of which should be charged and treated as part of the capital stock of the farmer and not charged for at so much per day, the actual cash outlay for raising the corn should not exceed \$2.00 per acre.

A man with three good horses or mules and proper implements can with three months of his labor usually raise 50 acres of corn. Counting his labor at \$25 per month makes \$75 for tending 50 acres, or \$1.50 per acre, leaving \$25 to cover blacksmith bills, seed corn, etc.

A large part of the corn crop in Ohio is cut and shocked, husked and cribbed, the fodder fed out or burned and the corn either fed or marketed from the crib. See for a moment what actual cash outlay for labor alone, not counting teams and tools, is involved in all this: cutting, \$1.25 to \$2.00 per acre; husking at 4 c. to 5 c. per bu. (50 bu. per acre) \$2.00 to \$2.25 per acre; cribbing at 1 c. per bu., 50 c. per acre; total \$4.75 to \$7.00 per acre, or say an actual cash outlay for labor in handling the crop fully equalling three times the actual cash outlay in producing it.

And the worst feature of this method is that it results practically in wasting 40 per cent of the corn crop, or all that portion thereof which is represented by the stalk, leaves and husk, because it is impracticable to

provide barn room enough to store any considerable quantity of fodder except by the very expensive and usually unsatisfactory process of shredding, which results in the fodder generally being left in the field to weather and rapidly deteriorate in value, so that it ordinarily commands only 5 c. to 10 c. per shock (\$1.00 to \$2.00 per acre).

The average farmer says: "I would not cut much corn but I have to sow my land in wheat in order to change the grass." This for many years was our own excuse for putting all the corn in shock, but for several years past we have adopted a different plan and sow no wheat.

We have sought to act upon this theory with our corn crop: Get the full feeding value of one portion of the crop by adding considerable expense in handling it, and get the other portion into the cattle and back on the land with the least possible expenditure for labor of handling.

Accordingly we put about one-half our corn crop in the silo, and have found from several years' experience that we can do this at a much less actual cash outlay per acre than was involved in our former practice of cutting, husking, etc. The remainder of the crop we either consume with cattle and hogs as it stands in the field, or husk and feed the corn on pastures during the following summer, pasturing the stalks during the fall and winter. By fencing off portions of a field at a time and first turning in the cattle to eat what they will readily consume and then follow with hogs, very little, if any, of the corn is wasted and there is a large saving in the labor account.

A still greater benefit is that practically all that was raised on the field has been returned to it without a dollar of expense. With the portion of the crop which is husked from the stalk the pasturage from the stalks is worth nearly or quite as much per acre as the fodder when the corn is cut and the fodder fed during the winter and spring, and especially is this so when the labor cost of feeding the fodder is considered, and here again comes in the great benefit of returning directly to the soil without a dollar of expense 40 per cent of the crop which was raised upon the field.

While this is not so good as returning the whole crop it is a great deal better than returning nothing at all.

The ear corn fed on the pastures is also returned to the soil without the expense of hauling it out as manure. Best results cannot be obtained by feeding corn alone. It needs balancing up with some nitrogenous food, such as alfalfa hay.

HIDES AND SKINS HIGHER IN PRICE.

Hide and Leather, in a recent issue, states that hides and skins are in smaller supply in all the markets of the world. It says: It is not meant that less raw material is produced, but rather that the increase in the take-off of hides and skins has not kept pace with the enormous expansion in the productions and consumption of leather. If this basic fact regarding raw material is accepted, it is idle to expect lower prices. It may appear incredible to buyers of leather, but market conditions are a demonstration of the fact that tanners are experiencing more trouble today in buying hides and skins than in selling leather.

CALIFORNIA CROP REPORTS.

STATE AGRICULTURAL SOCIETY BULLETIN.

By J. A. Filcher, Secretary State Board of Agriculture, Sacramento.

Some time ago the United States Weather Bureau discontinued its California crop report service. The State Agricultural Society, realizing the value of this work to the farmer, has secured a corps of competent correspondents from different portions of California and from time to time will issue a summary of the crop conditions as reported by these correspondents.

The first report relates to conditions as they existed the last of May. The unusually heavy rains which visited all portions of the State the latter part of the month did some damage and some good—more damage than good. The good was to the late grain, to grasses, and to vegetables; the damage was to new-mown hay, to ripe and ripening cherries, to strawberries, and to early and heavy grain, which, by reason of the softening of the ground and wind, lodged badly. No rust reported, but damage from rust is feared where grain is heavy. Some unmaturing fruit was whipped off by the wind in certain localities, and opinions differ as to whether the better fruit likely to result from the extra thinning will or will not offset the difference in quantity.

Leaving out the question of damage, however, by the unseasonable rain, since it is too early to accurately estimate the same in this report, it can be said that the crop conditions in California as a whole are very encouraging.

In the Sacramento valley the wheat and barley acreage is a little less than last year, while the yield per acre promises to be about the same. All agree that the yield will be below the average for the last five years. The conditions vary in different localities. In the upper or northern end of the valley the crops promise a safe average; in Colusa or the central sections they are better than an average; while in the great grain county of Yolo the acreage is much less and the yield promises no better per acre than last year and much less than the average for five years. In Solano, another great grain county, the yield per acre is estimated at about 95 per cent of the crop of last year, 65 per cent of the average for the last five years, and about 90 per cent of last year's acreage. On well-drained land throughout the valley the crop is generally better; on low land it is poorer. Owing to the rains coming late, which sprouted the grain and weeds at the same time, and heavy rains later which induced an excess of cheat, the grain is very foul, so much so in some cases that it has been or will be cut for hay.

From the great San Joaquin valley the reports are very flattering. Fourteen separate correspondents from as many districts report a much better grain crop than last year and better than the average for five years. The improvement over last year is variously given as from 30 to 100 per cent in promised yield per acre, though the acreage for the entire valley is only about 80 per cent of last year and below the average for five years. Notwithstanding the fine stand of grain in the valley, the total output will be affected by the refilling of Tulare lake, as well as by the shorter average. This lake-bed contains about 300 sections of land, and as the water receded in past years it has been converted into thrifty grain fields. This past winter the excessive rains, which have otherwise stimulated crops through the valley, caused such a flow of water as to refill the lake, resulting in a loss estimated by our Hanford correspondent at \$3,000,000. Otherwise the grain crop of the valley is very much better than usual. After allowing for the loss from the filling of the lake, and the depreciations in acreage, the output of the valley will be far above an average.

In Southern California the grain crop promises much above an average yield. Our report from Orange county, which is a fair summary of the situation in the seven southern counties, says: "We had a heavy early rain, resulting in early plowing and sowing, and conditions have been favorable since; hence the grain crop is better than last year, and better than for five years. The acreage is also above an average."

In the central coast counties the crops are much better than last year, a little better than the average for five years, with a full acreage. In some sections the wheat is rated fully 50 per cent better than last year, provided it escapes damage by rust.

In the northern coast counties some sections report the crop outlook not quite so good as last year, others report it better, others about the same. As a majority of localities report the crops better, we can safely estimate the average as equal to last year. This will mean a better crop than the average for five years from a full average acreage.

In the bay counties, taken as a whole, the acreage is about the same as last year, while the yield promises to be much better. In these counties there is a decreasing wheat acreage, which, however, is offset by an increase in the acreage of barley. The barley crop is reported as very fine, while in some sections the wheat is choked by foul growth to an extent that will materially affect the yield. The crops as a whole in this portion of the State are very promising, being much better than last year, and better than an average for five years.

In the mountain and foothill sections reports vary. Crops are later than usual, and will in most instances be benefited by the late rain. While some isolated localities report crops better than last year, the returns considered as a whole from the mountain and foothill counties, justify the conclusion that the average will fall a little short of last year. These are not rated as farming counties, however, and their crops one way or another do not cut much figure in the total of the State.

Summarized, the reports from the State at large indicate a much better grain crop than last year, and a little better than the average for the last five years.

From all parts of California a good yield of hay is reported, and this condition, coupled with an increased acreage of alfalfa, would have given us probably the greatest tonnage of any crop of hay ever harvested in the State, had it not been for the damaging rains just at a time when much of the crop was cut and in the

field. Even this, however, will not affect the tonnage so much as it will the quality of that which was cut and exposed, unless there are instances where the hay became actually spoiled.

In the vegetable sections the crops are vigorous and healthy.

The grape crop is reported extra good. The correspondent at St. Helena, Napa county, a great wine section, says: "Best grape crop in the county for fifteen years." In the San Joaquin valley they are blooming late, but promise good yield. Reports from Southern California say: "Never better."

The reports on tree fruits vary materially with each locality. Apricots are reported short or a failure; peaches, medium, the freestone varieties being generally better than the clings; pears in most sections a fair crop, in a few localities almost a failure; almonds generally light; plums a fair average; prunes in most localities a good crop; cherries, except damage by rain, average crop; apples, some localities good, others fair, others almost a failure. The reports from different parts of the State show this varying condition to be true of nearly all varieties of fruit. This is due to our varying climatic conditions as between coast and interior, or between valley and mountain. In the aggregate, however, the reports plainly indicate that the California fruit crop, according to present promises, will be a good average.

FRUIT MARKETING.

A CALIFORNIA BOX-MAKING MACHINE.

The orange men and packers of Riverside, says the Press, have been very much interested in inspecting the new automatic box-making machine just put in operation at the Penn Fruit Company's house. The machine is one upon which D. C. Northrup, the patentee, obtained his patent only April 10, last, and which Mr. Northrup and C. McClure, who is working with him, have perfected and completed after just an even year's work and study. The new machine is an outgrowth and a perfection of the semi-automatic machine invented by Mr. Northrup, which has been in operation at Moulton & Greene's house in Highgrove for the past two years. The new machine, however, is a wonder compared to anything else of the kind which has ever been shown here, and is the only automatic box-making machine upon which the patent has been secured.

The springs of the machine are so adjusted that it will handle shoo of any kind or thickness and of the most uneven quality, while boxes of several different sizes can be made on it. It is so adjusted that in case anything does go wrong (the shoo sticks together or something) the machine stops at once and nothing is broken.

They had it running at eight boxes a minute yesterday, but the power today would only allow five a minute to be made. It works like clock work, keeping one man steadily employed taking away the completed boxes and stacking them, while another keeps the shoo supplied. It is estimated to run easily 400 boxes an hour, or 3,000 a day, and although it has never been operated on a higher speed, could probably do more. The cost of making them is estimated at from 20 c. to 35 c. per 100, compared with the 90 c. and \$1.00 by the old hand process.

One excellent feature of the machine is that it drives the nails on a 10 per cent slant, making it almost impossible for them to pull out or come loose.

The present machine was made at the J. J. Hanford Iron Works in San Bernardino, but it is the idea of Mr. Northrup and Mr. McClure to organize a local stock company for their manufacture.

HOW THE COST OF THE CRATE AFFECTS EASTERN PEACH GROWING.

Mr. J. H. Hale, the leading peach grower of Connecticut and Georgia, writes to the Fruit Trade Journal something about crates which throws a side light upon Eastern peach growing:

The six-basket carrier has always been a too heavy charge on the business, and now a 25 vbgkqjmf on a burden all too heavy before, has brought growers of peaches in the South to a realizing sense that we must call a halt on cost of packages or go "broke."

No doubt many who mix the culture of peaches with other farm crops, and do not keep an accurate cash account with the peach crop, have no definite idea of what it costs to grow and place a crate of peaches on the market.

My own figures covering a period of fourteen years of accurate accounting show that during the period of low priced labor eight or ten years ago it cost about \$1.10 to produce and place a crate of Georgia peaches on the New York market; and now it costs between \$1.25 and \$1.30.

As you have so well stated, hundreds of carloads the last few years have sold below \$1 and the losses on them must be made up out of those that sell above \$1.25 before there is any profit to the grower.

So close was the margin between profit and loss in 1904 that nearly 100 carloads that I shipped to seven good markets in the northeast netted me but five and two-thirds cents per crate. Now if I must give up three cents of this as an added cost of crates, there will only be that little two and two-third cents left to pay the increased price of labor that is now being demanded all through the South, to say nothing of a profit to myself.

Is it any wonder that I must have cheaper, rather than higher priced packages? Certainly the business in its present or prospective condition cannot stand 15 c. crates.

I shall this year try a lot of one-half bushel Jersey baskets with covers, and also some 20-lb. Climax baskets with wooden covers; and if these or some other cheap package will not answer, and we must stick to the six-basket crate, then it will be up to the orchardists to encourage the establishment of small crate factories in every peach section of the State. It seems to me that local capital, using local timber and labor, by making up crates in the dull season of the year, can no doubt make a crate for 10 c. or less; while the larger factories now established, who are under heavy yearly expenses and have to pay freight on crates to the point where they are to be used, probably have to get more money for the crates than these local factories would.

This crate situation is a serious one and a combination of a few extensive manufacturers now control the situation; and as they have other branches of business, which they claim are profitable without the crate trade, they are in position to demand high prices or not turn out the crates, while smaller local crate factories can be made very profitable on the crate trade alone by operating only a part of the year, and right now is the time to plan to get them in operation next fall or winter, providing that this year's experiences of shipping in some other style does not prove a success.

As to this season's peach prospects, I am of the opinion that they have been greatly overestimated. I have had many letters from all parts of Georgia the past week and all tell of a fearful drop of peaches, Elbertas having suffered worst of all. From all reports I can gather I do not believe the crop will be over one-half what was estimated after the frosts of a few weeks ago.

For two years past cotton has paid a much better profit than peaches and I am inclined to think that after this year's increased expenses in handling the peach crop, a good many orchards will be pulled up and cotton be substituted as a money crop.

THE IRRIGATOR.

IRRIGATION FOR YIELD, SIZE, QUALITY, AND COMMERCIAL SUITABILITY OF FRUITS.

By E. J. Wickson in the Report of Irrigation Investigations of the U. S. Department of Agriculture.

(Second Paper.)

Regularity of Bearing as Affected by Irrigation.

This subject has only recently risen to its proper place in the discussion of fruit-growing policies on the Pacific coast. The declaration of the principle on which regular production rests that the fruiting plant requires moisture for two distinct functions during its active season is not new, but the appreciation of its truth and practical bearing is recent. It has been forced upon the attention by investigations at the Wisconsin Experiment Station, showing that the tree, in certain cases at least, was devoting energy to the development of the fruit buds for the following year and carrying the burden of the current crop at the same time. It was known that the tree forms fruit buds in the later months of growth after its fruit may have matured, but the announcement of the earlier undertaking of this function strongly emphasizes the necessity of ample moisture supply, not alone for the current crop but for the succeeding crop. For this reason an effort was made in this inquiry to secure facts from wide observation as to the relation of irrigation to regularity of bearing. Formerly recourse was had to pruning to lessen amount of bearing wood and reduce the burden of the tree after the fruit had set. The newer idea is to supply water to enable the tree to carry more fruit to satisfactory

size and at the same time to prepare for the following year. In fact the relation of adequate moisture to the strength and effectiveness of the fruit bud has come to be widely appreciated. The following are the views of growers upon these points:

Idaho.

A. McPherson, Boise: Irrigated trees bear more regularly.

L. A. Porter, Porters: I do not think there is any difference in regularity of bearing.

Washington.

F. E. Thompson, North Yakima: Irrigated fruits bear more regularly in this locality.

J. H. James, Waitsburg: My experience is that there is not much difference in regularity of bearing.

Oregon.

Seufert Brothers, The Dalles: Irrigated trees are surer to bear because growth is later on soil filled with cold water, and the bloom is delayed until after early spring frosts are over. We never miss a crop.

J. R. Casey, Ashland: Regularity of bearing is in favor of irrigated trees.

California.

Owen Daily, Whitmore, Shasta County: Irrigated trees will bear more regularly.

George A. Lamiman, Anderson, Shasta County: Irrigated trees are more regular in bearing.

O. E. Graves, Red Bluff, Tehama County: Irrigated prunes are more regular in bearing.

Fred Scharr, Red Bluff, Tehama County: Irrigation after fruit ripens, to keep the buds growing for the next year, insures regularity of bearing.

George H. Flournoy, Corning, Tehama County: After twenty years' experience, I am perfectly assured that irrigated trees are much more regular in bearing.

W. E. Hazen, Manton, Tehama County: Apple trees will bear every other year. If they bear a full crop one year they will not bear the next. Prunes will bear regularly every year.

J. L. Barham, Manton: Irrigated trees are far more regular in bearing.

G. M. Gray, Chico, Butte County: One corner of my peach orchard that was not irrigated last year has this year less than half the crop per tree that is seen upon the part that was irrigated. This is clearly to be seen. I need no better demonstration. The maturing of the pits of the current crop, the girth of the wood, and the development of fruit buds for the following year are going on in midsummer and are a great draft upon the tree. The development of the coming buds seems first to suffer when moisture is scant. I have found that giving fruit trees and vines on valley land a good irrigation from June 15 to July 15 will very materially help both the present and coming crop.

Rio Bonito Orchard Company, Biggs, Butte County: Irrigated fruit trees are more regular in bearing.

G. W. Thissell, Winters, Yolo County: Many orchards fail to produce a good crop of fruit annually for want of sufficient water. The fruit is poor and insipid and the trees are not able to mature fruit buds for the following year. I recently visited as fine a Muir peach orchard as there is in the State—on the choicest of fruit land on Putah Creek. Trees which had been given a little water were bending to the ground with large fruit, while the trees with no irrigation had wilted leaves and peaches the size of walnuts, and yet the trees were on the best of land. The fruit was too small to cut for drying and the trees will have no fruit next year.

E. A. Gammon, Courtland, Sacramento County: Regularity of bearing is on the side of irrigated trees. Irrigated pears are not so apt to fall; the stems seem to have more life in them.

W. W. Hinsey, Fair Oaks, Sacramento County: In regular bearing there is a large difference in favor of irrigated trees.

Charles W. Landis, Folsom City, Sacramento County: I have never noticed any difference in regularity of bearing.

F. B. McKevitt, Vacaville, Solano County: Irrigated trees bear more regularly.

H. T. Fuchs, Grass Valley, Nevada County: My observation is that irrigated trees are more regular in bearing. Fruit trees and grape vines will not produce good fruit in this section unless they are irrigated or highly cultivated.

P. A. Butler, Penryn, Placer County: Irrigation insures much more regular bearing.

W. R. Mountain, Newcastle, Placer County: Many orchards are rented to Chinamen and others who object

to taking pains to irrigate after the fruit is picked. For this reason the early fruits get less irrigation than the later varieties. It seems to be a fact that irrigation after the fruit is picked is making good regular bearers of the Alexander and Hale early peaches which have been disposed to drop their buds just prior to blooming and to drop the fruit while small.

J. W. Violett, Ione, Amador County: Irrigated orchards appear to bear more regularly.

A. E. Burnham, Healdsburg, Sonoma County: I know that old Sonoma County, that boasts of non-irrigated crops, could make hundreds of thousands of dollars more from her orchards if the waste waters were properly used in July and August. The trees would live longer and bear more regularly, for the new wood and especially the buds would be strong and well matured for the coming year. I do not mean to drown the trees, but one irrigation, or at most two, is enough in this county if the ground is thoroughly soaked and, when dry enough, cultivated to mellowness and fineness.

A. Block, Santa Clara, Santa Clara County: I believe irrigated fruit trees bear more regularly.

F. M. Righter, Campbell, Santa Clara County: Regularity of bearing and plenty of moisture go together.

H. Hoops, Wrights, Santa Clara County: If intelligently applied, irrigation makes trees more regular in bearing.

W. S. Shelly, Hollister, San Benito County: I have not noticed any difference in the regularity of bearing.

W. T. Kirkham, Merced, Merced County: Irrigated fruit trees are more regular in bearing.

Dr. W. N. Sherman, Fresno, Fresno County: The olive trees along or near irrigation ditches show a marked superiority to those without access to water.

E. S. Thacher, Nordhoff, Ventura County: I had a few acres of apricots, prunes, etc., but found them unprofitable because I was not prepared to irrigate them.

C. E. Teague, Santa Paula, Ventura County: While it is possible to grow fairly good products from young orchards without irrigation it is simply out of the question when the trees get older. Many growers in this county used to think when their deciduous trees began to go back when they were 10 or 12 years old, that it was on account of old age. This was before they began to irrigate. Since then it has been demonstrated beyond doubt that the trouble was not in the trees, but in the fact that the water in the subsoil became exhausted after a number of years and the annual rainfall not being sufficient to wet the ground down to a depth of more than four or five feet the lower roots were in dry earth and consequently could not help to support the tree. It is now the universal belief that it does not pay to set out an orchard in this valley unless one has water for irrigation. It makes little difference with the deciduous trees on deep soils whether the water is put on during the winter or the summer, but most growers prefer the former, when the trees are dormant.

F. F. Stetson & Co., Los Angeles: We heartily favor irrigation, believing that the trees bear more fruit and with greater regularity—that is, there are fewer seasons with short crops.

H. D. Briggs, Azusa, Los Angeles County: With irrigation properly applied and fertilization, trees will bear every year unless unfavorable temperatures prevail. By irrigation the tree is enabled to overcome the exhaustion of heavy bearing and to fill out the buds for the next year's fruiting so that the fruit will "stick" instead of blasting.

Henry D. Engelhardt, Glendora, Los Angeles County: The irrigated tree and vine will produce fruit more regularly.

William Chappelow, Monrovia, Los Angeles County: Non-irrigated fruit trees are very irregular in bearing with us.

N. E. Chesebro, Covina, Los Angeles County: There is a great difference in regularity of bearing in favor of irrigated trees.

J. W. Mills, Ontario, San Bernardino County: Until the last two years our almond trees would only bear during the most favorable seasons. They had received some irrigation since planting, but only during the last two years have we given them water enough to keep them growing while they were maturing a crop of nuts. Both years they have grown good crops. The more liberal irrigation has made them grow large nuts and a growth of new wood at the ends of the branches (not suckers) from six inches to two feet in length. This seems to insure regular bearing, even though the temperature on three days in February and while the trees were in full bloom fell to 24 deg., 27 deg., and 25 deg. and three days following reached 28 and 30 deg. F.

I. Ford, Redlands, San Bernardino County: Trees are earlier and more regular in bearing when kept thoroughly irrigated and cultivated.

W. S. Corwin, Highland, San Bernardino County: Regularity of bearing is decidedly on the side of irrigated trees.

James Boyd, Riverside, Riverside County: Crops on irrigated trees are better in every way.

L. L. Bequette, Whittier, Los Angeles County: There is no difference in regularity of bearing.

J. B. Neff, Anaheim, Orange County: I have always had a crop of English walnuts on irrigated trees, while others have had but a small unprofitable crop.

A. S. Bradford, Fullerton, Orange County: The yield is regular when water is used, otherwise there are off years. By irrigation in the summer the formation of fruit buds for the next season's crop is promoted.

James W. Hyne, San Marcos, San Diego County: When irrigated and kept in a thrifty condition fruit trees bear more regularly.

Chester Gunn, Julian, San Diego County: Irrigated trees bear more regularly.

H. Culbertson, El Cajon, San Diego County: There is a decided difference in the peach, especially in the shy-bearing varieties and late irrigation is what produces the results.

C. A. Walter, Independence, Inyo County: There is much difference in regularity of bearing; the irrigated tree is always in trim to bear, is healthier and leafy out earlier.

These reports present a vast preponderance of observation and experience that irrigation does promote regular annual fruit bearing. There are a few instances in which the opposite view is expressed and others in which the opposing observation rests on experience in situations where trees are not helped in regularity of bearing by irrigation because they really have a greater amount of available moisture, though the rainfall may not be greater, than is available on adjacent places where the contrary observation is made. This is strikingly true in the case of Whittier, Los Angeles County, Cal., where Mr. Bequette reports regular bearing without irrigation. Whittier is, in part, a low-lying region with great depth of soil and ground water within reach of deep-rooting trees. In such a situation irrigation is naturally less likely to be profitable, because the trees are supplied by the underground movement of water and enjoy more than their share of the scant rainfall of the district. There may be similar conditions to explain the conclusions of the few others who hold a negative view.

THE APIARY.

VENTILATION OF BEEHIVES.

At a recent meeting of the Washington Beekeepers' Association there was correspondence read which brought out some points of California experience on the ventilation of beehives.

Mr. E. F. Bywater of Meridian, Idaho, wrote to Mr. Arthur Hanson of Lewiston, Idaho, as follows: I note that in the picture of your California apiary that you have a ventilating hole covered with a two-inch flume gate in each body and in each super. Some of the Canadians are asserting very positively that such ventilation is a great aid in controlling swarming. Will you please tell if you know that to be true, and how you prefer to regulate the ventilation? During our first alfalfa flow the nights are cool and of course I cannot go to a half dozen yards to close the ventilators every night. Will this ventilation in the supers make the bees reluctant to store there, or result in any less honey per colony in the supers? Also if the object is to cause a slight draft through the brood nest only. I suppose that only the ventilator in the lower super next to the hive need be open.

Why I want this information is that during the past three seasons an abundance of empty comb has not been so successful in preventing swarming as it should, and I do not want to be continually examining and making forced swarms in the extracting yards.

Mr. Hanson's Reply: In reply I shall state briefly my experience with the beehive ventilators in question and my method of using them. I had the first ones made in '92, in National City, Cal. I had been studying to get up a ventilator that would prevent the excessive hanging out of bees during the hot weather, useful while moving, easily attached and durable; it has filled the bill for me. I have had very little swarming since then and consider that the ventilators have played an important part in this; have used them a great deal to give an entrance over excluders in extracting supers by simply moving the wire screen. I practice this every summer. Have also used a rear entrance of this kind to get queens fertilized that were reared in the

upper story over an excluder, with a laying queen below. Have found them useful even in a bad case of ribbing. While busy at other work I could stop the entrance for a while without danger of smothering.

In the spring I open the front brood-chamber ventilator part way as soon as a colony becomes strong enough so that there is considerable heat generated, open up full size when they are very populous, generally speaking. I do not use the rear ventilators nor those in the supers until the weather is hot. It would be hard to lay down any rule to govern this but my aim is to arrange the ventilation for the comfort of the bees and when I see propolis used to any extent with a view of reducing the ventilating aperture I lower the slide somewhat. While these ventilators have been a great boon to me yet they may not work as well in your locality where cold nights prevail, but it would be inexpensive to give it a trial on a small scale.

You state in your letter that during the past three years an abundance of empty comb is necessary for preventing swarming. May I ask if you have given your vigorous queens room according to their egg laying capacity? My method has been to remove brood at intervals and insert full sheets of foundation in place of it. I realize that this is considerable work where many bees are kept in our apiaries.

Here are the points that I am to work for: Give the queen room according to her queen-laying capacity, to have foundation drawn out in the breeding chamber, to have few drones in the hive, excepting where being reared for breeding purposes, to ventilate the hives so as to be comfortable for the bees, and not allow the surplus arrangement to become crowded.

THE MARKETS.

WHEAT.

San Francisco, June 12.

The wheat market is very dead locally and in fact in all western markets. On the whole the situation is adverse to selling interests and quotations are largely nominal, the figures being about the same as last week. Arrivals from the interior are at a minimum and there will be nothing doing in the local cash market until the new crop begins to come in. What little trading is being done in spot wheat is confined to Port Costa, the millers being the only buyers. Advices from Portland show that the export business from the Columbia river is over for the season, and that the market there has reached about the same state of quietness as in San Francisco. In Puget Sound there are two more vessels to load and these will probably be the last of the export fleet from this coast until the shipping of the new crop begins. European conditions are about the same as last week. The markets there being depressed and weak for prompt shipment cargoes. European importers seem convinced that they have enough wheat to carry them over into the next season. Crop prospects have not changed during the last week except that later reports from the interior of California do not confirm the advices of a few days previous as to the very serious damage to crops from the rains. In Oregon crop prospects are not favorable and it is claimed that the crop will be below the average. In eastern Washington and Idaho the outlook is for an average crop. In other portions of the State a falling off of about one-quarter of last year's crop is anticipated.

FLOUR.

A rather better feeling seems to prevail in the flour market, though locally things are still very quiet. Quotations in the San Francisco market are the same as for some time past, California extras being held at \$4.65 per barrel. Siberia and Japan seem to be taking a renewed interest in flour and some orders have come in for small lots to be shipped from Portland and Puget Sound. No orders have been received from Hongkong, although conditions seem favorable for considerable business with that port. Stocks of American flour in Hongkong and other Chinese ports are running low, and, if the reports concerning the weakening of the boycott movement are correct, orders should come in quite freely in the near future. The local flour market is naturally somewhat weakened by the presence of the large quantity of surplus flour held in the hands of the relief committee. Some small shipments continue to arrive from Portland.

BARLEY.

The first of the new barley crop is expected to reach the market within a few days and considerable quantities should be coming in during the latter part of the month. In the meantime the local market has become very weak as far as the spot article is concerned, and

the demand is little more than nominal. Offerings have increased considerably owing to deliveries on May contracts, and the immediate outlook for old barley is not very encouraging. Some little speculative interest has developed in December barley though there has been no change in the price.

OATS.

Oats have been quiet and weak this week with receipts running fairly large for this season of the year. In the north prices have become suddenly firmer as a result of an extraordinarily strong demand with continued light receipts. Quotations in Portland range from \$28 to \$32 per ton. In San Francisco the prices are as heretofore with no black or gray oats in the market.

CORN.

There has been no large California corn in San Francisco for some time, the interior millers having used about all of the supply since the fire. Some sales of small round to arrive have been made during the past week at \$1.52½ per cental. The actual spot market, however, is quiet, eastern yellow being offered at \$1.37½, with few buyers. For eastern yellow to arrive \$1.40 is asked. Advices from Portland state that the market there has weakened under increased receipts and a poor export demand, although as a result of lower prices transactions have increased considerably.

MILLSTUFFS.

The general run of millstuffs continues in very light supply and, while the demand is not very heavy, the market is well maintained. Some small shipments are coming in from the north, being attracted by the higher prices offered here. Even in Oregon, however, the supply is very limited and, under a fairly active local demand, Portland millers find that their stocks are becoming very small. On the San Francisco market bran is held at from \$20 to \$21 per ton, middlings \$26 to \$29 per ton, and shorts \$21 to \$22.50 per ton. Rolled barley is held at \$26.50 to \$27.50 and cracked corn at \$30 to \$33.

HAY AND STRAW.

Hay has been reaching the market a little more freely during the past week, owing to improved conditions at the railroad yards. The total arrivals last week amounted to 3,140 tons as compared with 2,300 tons for the week preceding. The city has, however, been so thoroughly cleaned of hay that in spite of this increase the situation remains strong. Owing to the recent heavy rains, but little of the new crop is in shape for marketing, and the local market will be forced to depend on the old crop for some days. During the week one schooner load of new wheat hay from Contra Costa county was marketed, and although it was not thoroughly cured it showed up bright and clean and found a ready sale. San Francisco dealers anticipate that the new crop arrivals for the next two weeks will sell at good figures. After the season is in full swing much lower prices are naturally looked for. The scarcity of good storage space will be an important factor and may result in overloading the market when otherwise arrivals might easily be cared for. Prices for old hay remain as before while prices for new hay are not yet definitely fixed.

HIDES AND SKINS.

The hide market continues on the same high plane and prices are well maintained notwithstanding a rather quiet leather market. In San Francisco the hide business is returning to something of its old regularity and shipments are being regularly received. California tanners have been in the market to a certain extent and hide stocks are kept closely cleaned up. Some shipping to Eastern points is reported though the coast demand is large enough to take up about all the supply except in a few special lines.

WOOL.

The wool situation continues in fairly good shape with prices favoring sellers. The northern wools are now about cleaned up and arrivals at Stockton are reported to be dropping off. Humboldt and Mendocino wools are now held from 16 to 18 c. Middle and southern counties range all the way from 10 to 14 c., while other varieties are selling from 9 to 11 c.

BAGS AND BAGGING.

The bag situation has hardly changed since last week, although the feeling seems to be slightly weaker. Apparently buyers are not altogether convinced that there is an actual scarcity of bags and the idea now seems to be that prices can hardly go higher than the present quotations. Still it can not be denied that the situation is a strong one. First quality bags are now held at 9½ cents.

BUTTER, CHEESE AND EGGS.

Butter prices have been a little uneven during the past week, there being a stiff advance at one time and an easing off later. Good quality butter is, however, in good demand, and the market for the best grades has been well cleaned up during the week. Cheese has stiffened up considerably, an advance of from ½ to 1 c. being noted on nearly all grades. Supplies are not particularly heavy, though about sufficient for present requirements. Eggs are very firm and all desirable offerings are being taken promptly at prevailing prices.

POULTRY.

The demand for poultry continues poor and prices are largely nominal. Except for large fat hens and full grown young roosters there is practically no demand and the call for these is being easily filled. Hens are quoted at from \$4.50 to \$5.50 per dozen and full grown young roosters are from \$5 to \$6 per dozen.

VEGETABLES.

The vegetable market continues to show considerable activity and most varieties are in pretty fair request at prevailing prices. Asparagus and rhubarb are selling freely and prices are well maintained. New potatoes are going into consumption rapidly at slightly lower prices than last week. The demand is good and supplies are well cleaned up. Onions are also firm, though the supply is quite liberal. Green corn is coming in and is meeting a ready sale at from 15 to 20 c. per doz. A supply of tomatoes from Mississippi arrived early in the week and is now on sale. Some tomatoes from Fresno county came in earlier and were sold out at from \$2 to \$2.25 per box. Garden peas of good quality are offering at \$1.50 per sack. Cucumbers and string beans were weaker owing partly to the quality of the lots offering.

FRESH FRUITS.

As was to be expected damaged fruit has been coming in to the market quite freely as a result of the rain. Damaged cherries have been particularly plentiful and their sale has dragged badly. White cherries of good quality have been taken by the canners in liberal quantities. Strawberries and raspberries have been firm, but loganberries are weaker. Currants and gooseberries are in large supply and prices are generally lower. Apricots, where the quality is up to standard, are firm at about the former prices. Clyman plums are coming in in better shape and are being well received. The peaches so far offering have not attracted buyers to any great extent, though the receipts were disposed of at fair prices. Advices from the interior show that much damage was done by the late rains and by hail storms. In portions of the San Joaquin valley the apricot crop is proving a failure while in others apricots are in fine shape. In Tulare county green apricots are selling at \$35 per ton. In Stanislaus ripe peaches are reported and shipping will begin at once. In the bay sections silver prunes are dropping badly, but the peach crop promises to be up to the average. Cantaloupes are just beginning to make their appearance.

DRIED FRUITS.

The principal interest in dried fruits centers in the coming crop and there is very little movement of spot stocks. Apricots for future shipments are being dealt in sparingly at from 12½ c. for choice to 14½ c. for fancy. There is but little trading in prunes owing to light supplies and light demand. There is no movement of prunes in the east where prices range from 7½ to 8½ c., which prices also are quoted in San Francisco. The raisin market continues firm though at the present time there is practically no movement.

CITRUS FRUITS.

Oranges and lemons are both scarce and prices are generally firm. Fancy navels are bringing as high as \$3 a box, though a few second quality navels have sold as low as \$2. A few Valencia oranges are now offering. Lemons are quoted all the way from \$1.50 to \$2.75 according to quality. Mexican limes are scarce and some have changed hands as high as \$5 per box.

PATRONS OF HUSBANDRY.

STATE LECTURER'S NOTES.

To the Editor: Congratulations on the Pacific Rural Press looking like itself again. There is not much news concerning the Patrons of Husbandry this month. We are glad to learn that Santa Rosa Grange which, it was feared, would suspend owing to the earthquake, has resumed its sessions. Well, come to think of it, it had to, for are we not to be their guests next October?

And how could they entertain the State Grange if they were no longer "keeping house"? Hail to their courage and success to their efforts!

John Tuohy, the venerable lecturer of Tulare Grange, writes encouragingly. They meet regularly, and always have a good program. They are trying to organize a mutual fire insurance company, but the State officials are slow in responding to their requests. He thinks that a good canvasser might add to their numbers. But efficient canvassers and organizers are rare. The National Grange Bulletin has this to say on that subject:

"The work of extension in Wisconsin, Minnesota and Iowa has been pushed with reasonable earnestness during the latter part of the winter and good results have been secured. It was January in all these States, and February in Minnesota, before any work was actually done, so that only about one-half of the organizing season was available. In Kentucky the work was begun about the first of January and will continue during the entire summer. It is expected that the work in the other States named, and perhaps in one or two other States, will be taken up November 1, or earlier and pushed during the entire winter. The great lack in the work is a sufficient number of efficient organizers to take up the work. In fact this is true in all the States, and it would be surprising to the average member to know the number of new Granges that would be organized in half a dozen of the strong Grange States if half a dozen organizers should devote their entire time to this work during a single winter. There is an unlimited field for successful organizers, although grand results are being obtained in some States at the present time.

A brother, Charles B. Hoyt, of Concord, N. H., is meeting with good success, having organized five new Granges in Wisconsin, and a Pomona Grange at Medina, in that State. It is to be wished that he might some time reach California, and try his hand. But the National Grange officers are not yet ready to help the Golden State.

We are urged to fall into line with other States and arrange for two important events in June—Children's Day and Memorial Sunday. Should any Granges observe these occasions I should be glad to learn the particulars and success, that they may be published.

Knowing how anxious the master of our State Grange is to have the order re-established in Southern California, I send notices to five prominent papers there asking those who are or have been Grangers to send me their names and addresses. So far only two persons have responded. More may do so later.

J. W. WEBB, Lecturer State Grange.

Modesto, Cal., June 6, 1906.

SAN JOSE MEETING.

San Jose Grange, Patrons of Husbandry, met in regular session last week at the home of S. P. Sanders, Cupertino. The Grange will continue to meet at the homes of the members until the lodge hall is repaired.

The committee on fruits and markets reported that a 2% and 2¼ basis were offered for prunes, but the growers were advised to hold their stock until 2½ c. was brought. The Campbell Fruit Union has arranged to sell its dry fruit through the agency of a firm in Oakland.

The American Society of Equity will meet in Chicago the 12th and 13th of this month. An effort will be made to equalize the price of products the year round. David Lubin, of Sacramento, will be the Grange's representative from this State. The Farmers' County Insurance Company received the indorsement of the Grange at this time, when many of the insurance companies are trying to evade paying losses. The Grange deplored the delay in Congress of the passage of the pure food bill.

The various measures now before the State Legislature were discussed. The matter of re-establishing lost land titles was especially indorsed.

The prune report is about the same, not much hold-over fruit being reported.

HONEY COMB IN A LEMON TREE.

The busy bees in the vicinity of San Diego had found their hive too small for them. They cast about for a new place to build their comb, and the leaf on a branch of a lemon tree was chosen. Around this leaf comb after comb was constructed by myriads of workers until it rounded out into a miniature shark's fin, being almost perfect in shape and symmetry.

George H. Moebius, a professional pruner, found the comb in his work, and carefully cutting off the limb on which it was attached, brought it to Mr. Jasper at the Chamber of Commerce.

HOME CIRCLE.

THE LAGGARD.

Seven ships of the line!

Brave as ships could be!
They circled there in a crescent fair
To conquer the world for me!

But Sunday, Monday and Tuesday fled,
With their sails all gleaming bright,
To race a race with the flying sun
For the star-set goal of night.

And Wednesday and Thursday were so
fleet

That the wind could never tell
Whether two ships there were he sped,
Or whether two shadows fell.

Friday and Saturday, wing-and-wing,
Like white ghosts floated last,
And I curved my hand to hail to them,
But swift as a thought they passed.

Dim in the west; hull down, and gone—
And only dreams were mine!
I had lost them all, beyond recall,
Seven ships of the line!

—Elsie Cassaigne King.

DEAR HANDS.

Roughened and worn with ceaseless toil
and care,
No perfumed grace, no dainty skill had
these;

They earned for whiter hands a jeweled
ease,
And kept the scars unlovely for their
share.

Patient and slow, they had the will to
bear,
The whole world's burdens, but no power
to seize

The flying joys of life, the gifts that
please.

The gold and gems that others find so
fair,

Dear hands, where bridal jewels never
shone,

Whereon no lover's kiss was ever pressed,
Crossed in unwonted quiet on the breast,
I see, through tears, your glory newly
won,

The golden circlet of life's work well
done;

Set with the shining pearl of perfect
rest.

HIS GREAT SORROW.

Andre held the envelope up to the light
and regarded it critically.

"It is ze ordaire from zat Chicago
house," he said, "for which I haf—Oh!
w'at you say?—hostled."

Our American slang had always been
a source of wonderment to him and he
used it with the same enjoyment per-
sonally that it produced on his auditors.

"But the other letter, Andre?" said I,
noticing that he tucked a second missive
slyly aside.

He blushed like a schoolgirl as he re-
plied: "Zat ise from my Yvonne, but I
open it not till ze fine ampulla feenished
and success is mine."

Andre de Beaumont's pottery and plas-
ter work had been the fashion ever since
our women's club made him a fad by
taking up both himself and his work—an
Alsatian, having come to our city a few
years before after a most romantic life
of adventure all over the world.

In far-off Alsace he had left a peasant
sweetheart, one Yvonne St. Romier,
whom he was to claim when fortune fa-
vored him! But the silver threads were
showing now in Andre's dark hair and
the time was not yet come.

My brother Paul conceived a great
liking for Andre from the very first, and
had him often at our house, where we
spent many pleasant hours, entertained
by Andre's playing and singing of the
songs of his people.

At present he was engaged in experi-

menting on a marvelous green-tinted am-
pulla, which if a success meant his for-
tune, and being one of his oldest friends,
I was to be the first to view the wonder,
now cooling in the pottery kiln.

Together we went into the workshop
where the kiln stood, and Andre began
breaking down the plaster that held the
brick door. At last it fell a crumbled
mass, under his steady blows, but he
seemed afraid to look within; success
might still be as far away as ever.

I laid my hand on his arm. "Courage,
mon ami," I said.

Reaching down he drew out the vase,
almost reverently, gazing speechlessly at
its beauty and perfect green coloring,
with streaming eyes. Success was An-
dre's portion at last.

With a bound he was back in the front
shop with Yvonne's letter in his trem-
bling fingers.

He had read but a line when his face
grew deathly white and he crushed the
letter into my hand.

"Mon Dieu! ma'mselle!" he cried.
"Read! Yvonne, she is dead!" and he fell
into the chair before the fire, burying his
face in his hands.

Poor Yvonne, her neighbor wrote, worn
out with long waiting, hoping against
hope, had died with Andre's name on her
lips, blessing and commending him to the
Blessed Virgin with her last breath.

Andre rose unsteadily, seemingly
grown a feeble old man in the past few
moments, as he tottered toward the work-
shop.

Pausing before the beautiful ampulla
he raised his hand and would have struck
it to the floor had I not grasped his arm.

"Andre!" I screamed.

"Ah, mam'selle," he said gently, "w'at
is zere now zat should live when Yvonne
she haf gone?"

"Andre, dear freind!" I cried, kneeling
beside him on the dusty floor and grasp-
ing his arm, "this great sorrow must not
crush you, when at last after years of
work and self-sacrifice success is in your
grasp. Let it be an influence in your life
for good, that its bitterness may leaven
your whole future life work. If Yvonne
could speak to you now I am sure she
would advise you as I am doing."

I could not see his face, but his great
frame shook with sobs.

"Dear Andre," I continued, "you and
I are entering life's afternoon, but I
loved and lost once like you. He sailed
away while I awaited his return, till one
Christmas eve, nearly twenty years ago,
I learned, just as you have done, that he
was killed far away on the other side of
the world. I have never loved since or
married, for my heart lies buried in far-
off Japan; but my great loss taught me
life's secret—to live for others' happiness,
making their lives so complete that no
one can fill your place, when the time
comes to leave all earthly things behind."

He pressed my hand but made no re-
ply.

"We sail for Jamaica next week, Paul
and I. Come with us, cher ami, and
among new scenes and people begin your
life anew."

The room was dark now except for the
light of the blazing logs, and I lighted
the lamp and drew the curtains across
the windows. Outside the crisp winter
air was full of holiday cheer, the voices
of merry shoppers and clank and din of
the street coming softly to our ears.

"Come to-morrow, mam'selle," he said,
"and you shall haf my answer."

Seeing that he wished to be alone, I
bade him good night and went away,
leaving him alone with his great sor-
row.

On the next day it was nearly noon
before Paul and I reached Andre's shop.

A light snow had fallen, making every-
thing look cold and cheerless about the
place. The curtains of the front room

were tightly drawn, the lamp burned
dimly on the table, while only the charred
logs remained in the little fireplace.

We called Andre's name, but the echo
of our voices was the only reply, so we
hurried into the work shop in the rear.

Andre was there kneeling before the
empty kiln, against which his arms rested
supporting his head. Clasped in his
hands were the letter of death and the
little wooden crucifix, the gift of Yvonne
long ago, while the beautiful ampulla,
the crown of his worldly ambition, lay
about him crushed into a thousand frag-
ments.

Paul drew me back gently.

"We sail alone, Minna," he said. "Poor
Andre has gone."

It was all too true. Just as success
and happiness were in his grasp, though
far from home in a foreign land, Andre's
spirit was wandering with Yvonne in the
sunlit valleys of the beautiful Rhine.—
Milwaukee, Wisconsin.

DOMESTIC HINTS.

Rice Pudding With Stewed Apples.—
Put a breakfastcupful of rice into a pie
dish that will hold a full quart of milk,
pour over the milk and bake in a moder-
ately hot oven two hours. Do not put in
any sugar. Have some nicely stewed ap-
ples to serve with the pudding. Peel and
core four large apples, put them in a
saucepan with half a teacupful of water
and two heaped tablespoonfuls of sugar
and a little lemon peel or cinnamon.
Cover close and let them cook until ten-
der; ten to fifteen minutes should suf-
fice.

Almond Custard. — Half a pound of
shelled sweet almonds and three ounces of
shelled bitter almonds scalded and
blanched and pounded in a mortar, with
a little rose water added. Stir slowly
into a quart of cream or rich milk, in
which is dissolved a quarter of a pound
of loaf sugar. Beat ten eggs very light
and stir them into the mixture, add some
powdered nutmeg and a teaspoonful of
powdered mace and cinnamon mixed.
Boil in a double boiler until it is quite
thick, pour into a large bowl and stir un-
til cool. Serve in small cups with cream
or beaten whites of eggs.

Roast Neck of Veal Stuffed.—Take a
piece of veal weighing about five pounds,
lay it on a pastry board, and with a
sharp knife cut a pocket between the
meat and the bone. Make a stuffing with
a thick rasher of rather fat bacon, a
tablespoonful of finely chopped parsley,
the same of chopped onion, a little lemon
peel and majoram, well seasoned with
pepper, and a teacupful of breadcrumbs.
Mix the stuffing with one whole egg, fill
the pocket with the stuffing, sew it in
with coarse cotton. Have ready a baking
tin, with plenty of hot fat, lay in the veal,
bake in a sharp oven for one hour and
a half, basting frequently. Take up on a
hot dish, pour a nicely made butter sauce
over, and serve.

Nougat.—Boil a pound of sugar with a
gill of water until a little dropped into
cold water is brittle. Cover the bottom
of a shallow and greased tin with nut
kernels, strips of cocoanut, bits of figs,
etc. Stir into the boiling candy a table-
spoonful of lemon juice and pour over
the nuts and fruit in the pan. Let it get
cold, then cut into squares or strips.

Potato Pudding.—Collect the cold po-
tatoes from two or three meals and
bruise them through the colander with a
wooden spoon. Beat up eggs to the pro-
portion of one egg to three ordinary-sized
potatoes in a cupful of milk. Beat up
with the potatoes to a thick batter and
add sugar to taste. Bake in a quick oven
and eat with marmalade.

HINTS TO HOUSEKEEPERS.

Milk restores the taste which has be-

come vitiated by constant tasting of dif-
ferent foods. After much tasting the
cook would do well to take a drink of
milk, and thus restore the accuracy of
her palate.

There is nothing more soothing in a
case of nervous restlessness than a hot
salt water bath just before retiring.

If you have a jardiniere of ferns be
sure to give them plenty of water. A
fern that has become thoroughly dry once
or twice is practically ruined; at least it
will never have the same old strength
again.

An easy way to keep the silver bright
is to immerse in sour milk for a time.
Wash and polish.

It is a fad to have sofa pillows combine
as many shades of one color as possible
without introducing a foreign tone. Vari-
ous shades of red which harmonize well
are excellent for a couch.

Puffiness under the eyes can sometimes
be helped by the following massage
treatment: Use both hands, place the
finger-tips directly beneath the eyes,
press gently around the outer corners and
upward, following the contour of the eye.
Try this movement fifty times a day.

If the cheeks are hollow it is because
the muscles have become weak. To
strengthen them, wet with cold water and
rub gently and deeply round and round
with a soft Turkish towel.

A "nerve" pillow is something which
physicians are said to recommend, and
which can easily be made at home. One
needs only to gather or buy a quantity
of dry soporific herbs, such as hops and
catnip leaves, bayberry and sweet fern,
adding to them sweet grass, balsam pine
and as many sweet smelling, sleepy
things as one can think of. Dry and
powder and mix all together. Then fill
your "nerve" pillow with the summer-
wood sachet powder thus formed. Stuff
the pillow with down or cotton batting or
feathers, and either scatter the powder
thick through the filling, or, what is bet-
ter, make flat sachet bags and fasten
them securely to the inner seams of the
pillow.

Bananas fried in the fat remaining in
the pan after sausages have been fried
make a very nice dish to serve with
the sausages.

Use cold boiled sweet potato for baiting
rat or mouse traps, and you will find it
much more effective than cheese or bacon
rind, or any of the time-honored baits.

To remove the stains made by iodine
soak the stains in cold water for half
an hour, and then cover thickly with
common soda.

If oatmeal is soaked over night in water
it requires only about one-half the time
to cook.

When a lamp is not burning keep the
wick a little below the top of the tube.
This helps to prevent oil from working
over the burner and reservoir.

FEEDING THE BABY.

It is a bad plan to bring the baby to
the table and let him sample the various
things on it. Sometimes grandma or
grandpa pleads that he may have a bite of
something sweet, and loving relatives
have been known to administer dainties
to baby on the sly, to his ultimate dis-
comfort. Indigestion in the first days of
a baby's life is often due to some dainty
thus offered, or to a meal of some starchy
food, as cracker or toast, water, sugar
and water, or cow's milk, which the stom-
ach cannot digest, and spoiling and pois-
oning is the result.

Colic or inflammation may follow, and
then some grave disorders, as inflamma-
tory diarrhea, cholera infantum, or dys-
entery. In the summer the latter often
proves fatal in a few days, or even a few
hours. It is a good rule not to give any
solid food to a baby until he has teeth
to chew it with.

AND THE OTHERS.

I pity that poor Mrs. Jones;
She works herself to skin and bones!
Of course, in my case, I prefer
To be my own help, as it were.

Old Mrs. Johnson talks so loud
Whenever she is in a crowd!
To make my conversation heard
I have to shriek with every word.

The Livingstons are drinking beer!
I saw some taken there—dear, dear!
We have a case; oh, yes. But that
Was ordered just to make me fat.

My! Hear the Perkins' baby bawl!
They must neglect the child, that's all!
Now, when our little fellow cries
'Tis merely for the exercise.

Miss Browne does love to gossip so;
She's talking there with Mrs. Roe.
I can't quite catch it all—can you?
I guess I'll find out—"How de do?"
—Puck.

CHAFF.

"I assured her I could support her in the style she was accustomed to."
"Well?" "She said she was looking for something better than that."

Office Boy — Please, sir, my grandmother died. Boss—So did mine, and I'm going to the game.

"Can't I sell you a painless corn cure, madam," said the peddler. "No, you can't!" snapped the woman of the house. "I have no painless corns." Then the door was shut with a sudden slam.

First Congressman—You say there wasn't a dry eye in the house? Second Congressman—Not one. But the throats were something fierce.

"Josh's letter from the city sounds like he was homesick," said Mrs. Cornossel. "He ain't homesick," replied her husband, emphatically. "He's broke."

"But didn't you promise when we were married that I should smoke in the house whenever I pleased?" "Yes, but you never please by smoking in the house. You displease—me."

Mother—What do you say when you get a piece of pie? Johnny—That depends upon the pie.

Judge—If, as you say, you found this woman so violent and headstrong, even during the engagement, why did you marry her? Abused Husband (meekly)—I—I didn't marry her. She married me.

She—The professor tells me that kissing is most injurious. He—So it would be to kiss the professor.

He—I was an intimate friend of your late husband. Can't you give me something to remember him by? She (shyly)—How would I do?"

She—So you loved and lost, did you? He—No; she returned me all my presents.

"Our cashier," said the bank president, "has recently acquired a half interest in a yacht." "Well," rejoined the vice-president, "I hope he won't become a full-fledged skipper."

Daughter—I am so sorry that George stayed so late last night, papa, but I showed him my picture post-card album, and he said it was quite an education. Father—Very good. Next time he stays late you can show him my last quarter's gas account; that will educate him a bit more, I think.

FASHION NOTES.

Scalloped linen ruching is a novelty. Aigrettes flourish on most of the new hats.

The Longworth turnover collar is a new one.

The prettiest spring accessory is the marabou boa.

Old-fashioned striped stuffs have a great showing.

A lovely new brown is of an exquisite chestnut hue.

All shades of purple, gray and some shades of blue are becoming to elderly women.

Fashion has the scarf habit. Never were so many beautiful, filmy scarfs seen. Prettiest of all are printed chiffon affairs. Roses, violets and soft tinted flowers like hydrangeas are the favorites, and with them are mingled pompadour loops and ends of ribbon printed in pale tints. Spangled scarfs are also much in evidence. The vogue of gold and silver tinsel extends to these decorative pieces, and Syrian scarfs thickly sewn with gold and silver beads and sequins are the most popular of the collection.

The rage for narrow valenciennes lace has filled up the summer dresses and bubbled over on the hats and parasols. Wide ruffles of chiffon and lace will not be seen on parasols this year. Instead they will be trimmed with row after row of val gathered on to form frothy looking bands. As on the waists, embroidery may be added. This is a safe bit of fancy work to indulge in between now and summer.

The plain shirt waist of the spring has gone back to tailor made simplicity. New models in linen and flannel are cut wide on the shoulders and made with inverted plaits, perhaps held by buttons. Such a shirt has plain leg-o-mutton sleeves and is worn with a high stock and a white linen collar.

BECOMING COLORS.

The tint of the orange is becoming to the brunette with a fair complexion.

For the blond the delicate yellow of ripe corn is beautifying.

Bright green is becoming to the pale but clear skin, but not to a high or muddy complexion.

Violet is allowable only for a face quite free from yellow tints.

Blue is remarkably becoming to fair skins, but only the darkest shades are favorable to brunettes.

Creamy white is almost universally becoming, and the introduction of cream lace makes an otherwise impossible color wearable.

Black is flattering to a blond, but if she be not fair enough to look well in black an admixture of her own especial color is permissible.

Usually the soft toned grays look well with yellow or brown hair.

Browns are becoming to the clear skin crowned with golden or brown hair.

Red is becoming to either blond or brunette, so that the skin be fair enough or dark enough and provided it is just the right shade of the hue.

APPROPRIATE GARNISHES FOR VARIOUS FISH AND MEAT DISHES.

Slices of lemon for fish and raw oysters; also for roast veal and calf's head.

Red beets cut in ornamental shapes for cold meat and boiled beef.

Currant jelly for game and also for custards and bread puddings.

Fennel for mackerel and salmon, whether fresh or pickled.

Carrots cut into ornamental forms for boiled beef, either hot or cold.

Use the tiny sprigs of celery tops for salads and cold meats.

Sliced eggs, showing both the white and yellow parts, are nice for chicken salad.

Spots of black pepper alternating with red on the fat side of the boiled ham, which should be uppermost.

Parsley is the garnish most universally used for all kinds of cold meats, fish, cheese, etc.

Horseradish for roast beef and for fish in general. When used for fish slices of lemon alternate with the little heaps of horseradish.

VINEYARD.

To the Editor: I have just returned from a trip to Fresno, during which I drove through some of the principal vineyard districts. I found in several of them a considerable amount of mildew, but only in those vineyards which had not been sulphured or in which the sulphur had been put on improperly. I think, therefore, it would be useful if you would publish the following directions for sulphuring:

Now is the time to sulphur every Muscat vineyard in the Fresno region if it has not already been done. Mildew destroyed a large proportion of the grape crop of the State last year, and the Muscat vines were attacked more severely than they have been for many years. It is no exaggeration to say that the raisin output of Fresno county was diminished from 15 to 20 per cent last year by the work of the mildew. All this loss can be completely obviated by a proper and timely use of sulphur.

The sulphur should be put on early in order to destroy the mildew before any damage is done. In a year like this, following a year when the mildew has been particularly bad, it is best to sulphur the vines for the first time when they have made a growth of from six to ten inches, and to sulphur them again at or about the time of blossoming. If these two sulphurings are done properly, they will nearly always be sufficient in Fresno county to completely control the mildew for the whole season; indeed, if the sulphuring were done properly and regularly, one sulphuring just before the blossoming would nearly always be quite sufficient in the hot, dry air of the San Joaquin valley.

In order to sulphur the vineyards properly, it is well to understand exactly how the sulphuring works. The sulphur destroys the mildew by means of the fumes which it gives off when the air is warm enough. These fumes, however, only act at short distances; the sulphur on one leaf is almost without effect on the mildew on another leaf, even though the two leaves are close together. It is absolutely necessary, therefore, to place the sulphur in such a way that some of it touches every part of the vine. The amount of fumes necessary is extremely minute; therefore, our endeavor should be to put as minute a quantity of sulphur on as practicable, provided some gets onto every part of the vine. For this reason the distributing of the sulphur by throwing it on the vine by hand is the worst possible way, because in the first place it is almost impossible to make the sulphur touch every part of the vine in this manner, and ten or twenty times as much sulphur is used as is necessary to do the work properly. Distributing the sulphur by means of a perforated can is little better.

The best way is to use some form of bellows. The small hand bellows, sometimes used, do the work very well, but they are very fatiguing and troublesome. The "Knapsack" dust sprayers, made by Vermorel in France, and Strawson in London, are the best machines at present in use. They cost from \$10 to \$15 landed in California, but will more than save their cost the first year, both in saving of sulphur and in efficient work. The Leggett Bros. dust sprayer, made in New York, is also a good machine, though not quite so convenient to us as the other mentioned. If none of these machines can be obtained, the work can be done

very effectively by the use of a small sack holding four or five pounds of sulphur. This sack must be made of a material which will allow the sulphur to be shaken through without the use of too much muscle, but at the same time, which will prevent the sulphur coming through except as a very fine, impalpable cloud of dust.

The time of application is even more important than the method. Unless the sulphuring is followed, within a week, by one or two hot days, where the shade temperature rises at least to 85 deg., little good is done, and the sulphuring should be repeated. The best time of day to apply the sulphur is in the early morning, when the leaves are wet with dew and before the afternoon wind has sprung up. A gentle breeze is no objection; in fact, it helps in causing the sulphur to penetrate into the interior of the vine. A heavy wind, on the contrary, blows most of the sulphur away.

FREDERIC T. BIOLETTI.

Berkeley.

AGRICULTURAL REVIEW.

Alameda.

POTATOES ARE GROWN WHILE YOU WAIT.—Chico Enterprise, June 6: Potatoes grown while you wait. That is the kind of industry that has been started by two Alameda men, B. F. Slyter and J. J. Gosset. It is claimed by the promoters of the scheme that they can put new potatoes on the market at any time in the year, while now but one crop can be had. The process by which these potatoes are grown is the invention and patent of W. D. Darst, who has an experimental station at Great Falls, Montana. Darst is to the East what Luther Burbank is to California. He has experimented with the process and found it to be a success. The secret of the rapid growth of these potatoes, which are vineless, is contained in a chemical compound, known as "potatine." It comes in the form of crystallized powder. This powder is placed in a gallon of water, which is allowed to stand for six to eight hours. This fluid is placed in 1000 gal. of water. The seed potatoes are then placed in the liquid and allow to stay until thoroughly saturated. They are then ready to plant. The chemical action does not affect the potatoes. The seeds are planted in a foot of sawdust, about two feet apart. Layer upon layer can be planted and all that is necessary to care for the potatoes is to water them once every two weeks. In 60 days new potatoes can be had and in 100 days they are full grown. It is claimed that 6,000 bushels can be harvested from one acre. For \$4.50 enough "potatine" can be bought to plant seed for 3,000 bushels. Messrs. Slyter and Gosset have built a small bin. Their idea is to introduce the process to the farmers. They have exclusive agency for Alameda and San Francisco counties. They intend, however, to grow potatoes for the market.

Butte.

SELLS MULES FOR A ROUND PRICE.—Gridley Herald, June 8: Martin Haugh, of Gridley, sold five mules to a firm of buyers who are picking up mules for Los Angeles use and received for the bunch \$1075, or \$215 each. The mules were of all ages ranging from 4 to 17 years, but all were fat and sleek. Mr. Haugh says mules are too valuable to keep around for the purpose of plowing grain fields.

Sacramento.

BEEKEEPERS TO ORGANIZE.—Sacramento Union, June 6: The beekeepers of Sacramento and surrounding counties will hold a meeting at 1 p. m. on Saturday, June 23, at Sacramento, for the purpose of forming a Beekeepers' Association.

tion for the protection of their interests in the sale of their product and the purchase of their supplies.

The circular says:

We realize the fact that the commission men have been extracting from us more money than they should, and in most cases have been very slow in the payment for consignments. In organizing we will place ourselves before the business world and sell to the trade in large quantities for cash, as the Central Beekeepers' Association of Southern California is doing, of which association we will be a branch. We are also paying too much for our supplies by buying individually at retail prices, whereas, if we are organized, we will be able to buy collectively and at wholesale prices. Beekeepers are asked to be present if possible. If not able to attend, please write to B. B. Hogaboom, Elk Grove, Sacramento County, California, and give your ideas.

San Bernardino.

BIG FARM FOR SMALL RANCH.—San Bernardino Times-Index, June 7: M. O. Hert traded to M. S. Ratcliffe a 340 acre farm belonging to J. N. George, in Martin county, Indiana, for a 10-acre orange orchard in Colton. The farm is valued at \$15,000.

MANY CATTLE SHIPPED.—Chino Champion, June 8: The Chino Land and Water Company has been shipping a train load of cattle a week to the Cudahy Packing Company, Los Angeles. The average trainload is about 350 animals. The company receives over the Salt Lake many animals from Utah. These, when fattened, are reshipped over the same road to Los Angeles. The local supply is shipped by the Southern Pacific. Many a farmer could just as well own some of those steers that are bringing big checks from Los Angeles every week. Ten acres of alfalfa would do it.

San Joaquin.

PURCHASING MULES.—Sacramento Bee, June 9: Agents of the revolutionary leaders in South America have been purchasing mules in this vicinity for service in the army. A thousand pack animals have been shipped to Port Costa, awaiting transportation to Guatemala on the British tramp steamer Indradeo.

CHEESE SHIPMENT.—Lodi Sentinel, June 9: The milk receipts for the past month at the Woodbridge cheese factory were over 100,000 lb., which paid the patrons at the rate of \$1.06 for every 100 lb. of milk hauled to the factory. For every 10 lb. of milk that goes through the process, one pound of cheese is manufactured. San Francisco, Stockton, the nearby and mountain towns are the markets for the output. The wholesale house of Peter Musto in Stockton handles nearly 3,000 lb. per month.

Santa Barbara.

MAMMOTH BLACK CALLA.—Santa Barbara Independent, May 31: A black calla, one of nature's freaks, is on exhibition here. Mrs. Elizabeth Gilbert was the original grower of this colored plant, which is more of a deep purple than a positive black. The blossom shown measured 33 in. in length and 16 in. in width; the stamen is 31 in. long and resembles a great tongue. From the end of the stem to the tip of the blossom the height is 64 in. This plant is a curiosity to scientists and is one of the largest callas ever grown in this vicinity.

Santa Clara.

CALIFORNIA CHERRIES.—San Jose Mercury-Herald, May 29: Express Car C 57 from San Jose, May 17, was sold in Boston May 24 for \$4960. This car contained 2233 10-lb. boxes. This is an average of \$2.23 per box or over 22c. per lb. This is the highest price ever received for a car of cherries containing this number of boxes.

Siskiyou.

WILL OPEN UP 320,000 ACRES.—Lodi Sentinel, June 7: The Redding Land Office has received notification from Washington that 320,000 acres of irrigation and forest reserve land in the Klamath section in this county will be thrown open to entry and location on September 3. It is valuable agricultural, mineral and grazing land and a big rush is expected.

Sonoma.

WOOL SALES DAY, TUESDAY, JUNE 12.—Healdsburg Enterprise, June 9: The annual spring wool sales day, according to advices received from Cloverdale, has been set in that city for Tuesday, June 12. The clip is reported to be very good. Sales already made are averaging from 20 to 25 cents. It is expected however that at the sale the ruling price will be about 23 cents. In the Healdsburg section shearing is not yet finished, and therefore no sales have so far been reported. At the spring sale last year the price paid ran up as high as 29½ cents. Many of the growers in this section contend that there is no reason for a reduction over last year's prices and will hold awhile before selling.

Solano.

SHIPPING PLUMS.—Sacramento Bee, June 2: The past few days have seen quite large shipments from Vacaville to Eastern markets of Tragedy plums, the earliest shipments ever made from here. Other fruit, with the exception of apricots, is being shipped in large quantities.

Stanislaus.

FINE ALFALFA.—Modesto Herald: There are on exhibition in Modesto some samples of especially fine alfalfa. The plants are six and one-half feet in height, very heavily leaved, and the stalks are fine and free from unnecessary wood. The alfalfa was grown on the ranch of Z. E. Drake, about four miles north of Modesto. The first crop was cut some time ago and for the tract of 40 acres averaged 2 2-5 tons per acre. The alfalfa had not been irrigated for the first crop, and for the season of 1905 had been irrigated but three times. The checks on the land are low and large, several acres in each check. The whole piece can be irrigated in ten hours or less. Notable in this connection is the fact that on lands adjoining this tract, the soil of the same character, quality and depth, the alfalfa is very poor, and one ton per acre will be a good big yield for it. One piece, in particular, will not give half a ton per acre. And Mr. Drake states that this latter piece was irrigated five to seven times last year—every time the water could be secured. In consequence, it has been



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"drowned," and the other light crops in that vicinity are directly attributed to the same cause. And in several instances the owners of the alfalfa attribute their failure to lack of sufficient water.

NEWSPAPERS AND SQUIRRELS.—Modesto Herald: Now about squirrels: Four or five years ago, the Herald told, basing the statement upon the experience of certain farmers in the valley, that the obstruction of squirrel holes with newspapers—ramming newspapers into the holes—was not only an immeasurably cheaper but a far more effective method of eliminating ground squirrel than any other yet devised. We are now advised by W. T. Oden, one of the oldest and most experienced farmers in this valley, that he has for several years employed this medium for the elimination of squirrels—employed it not only here but in other counties in the valley—and has found it the most effective of all. That it is economical, is apparent on the face of the proposition. It is theorized that the rustle of the paper when the squirrel approaches it to make egress, frightens the rodent and that he retreats and starves to death in his underground burrow.

MOVEMENTS OF SHEEP.—Stanislaus News: The following traveling permits for sheep have been issued in Merced county: Moy & Waltz—to Chico, 4,500; to Banta, 4,500; to Stockton, 8,500. Jen Ornanas—to Fresno, 3,400. Miller & Lux—to Fresno, 3,783. F. T. Selner—to Stockton, 2,000. J. A. Mandonco—to Stockton, 3,300. J. J. Elgarigas—to Plumas, 3,600. H. G. Kelsey—to Stockton, 9,300. Miguel Garralcla—to Stockton, 2,000. J. F. Pedreira—to Stockton, 1,800. The following lots were inspected for shipment: F. Siminario—to Los Angeles, 2,600. Moy & Waltz—to Fresno, 450; to Riverbank, 107. The inspector states that all the sheep inspected have been found in good and healthy condition.

Sutter.

GATHERING GRAIN BAGS.—Sutter Farmer: The farmers are carefully saving all the grain bags for the coming crop and buying up all the second hand bags they can, as they object to paying 10 c. or more for the regulation bags this season. The bulk of the crop in this section will be barley and new sacks are not necessary if fair second-hand bags can be secured. Some of the farmers are contemplating building granaries and dumping the barley direct from the harvester, thus saving the bags for the time being at least. Most of the ground barley will be stored on the farms loose in the granaries this year.

WILL PLANT GRAPES.—Sutter Inde-

pendent: The prospects of the Northern Electric Railroad being built down through the rich section southwest of Yuba City have enthused the wine grape growers in that section and they promise that if the road is put through, the grape men will plant at least one thousand acres of grapes in easy reach of the road and will build a winery at some convenient point. At present there is about 200 acres planted to grapes in the Harkey Corners and Oswald sections. The proposed increased acreage will give the railroad a large income from shipments of both grapes and wine as well as being a means of giving employment to many hundreds of people.

Tehama.

VINA RANCH TO BE SUBDIVIDED.—Red Bluff News: There is a report that seems well-founded that Vina, the big Stanford ranch, will be cut up and sold for the rebuilding of the Memorial Church and other buildings at the Leland Stanford University that were injured in the great earthquake on April 18th. It is with a sentiment of regret that all will see this great ranch change hands, but at the same time if it is merged into a form that will redound to the welfare of the university, and also to the benefit of humanity, the fact will meet with approval.

A NEW WHEAT.—Oakdale Leader, June 9: H. S. Frymire, with M. J. Nightingale, brought a bunch of wheat from W. W. Hall's ranch, near Hickman, a few days ago, which was six feet and six inches in length. The seed was imported from the Philippines, for which Mr. Hall paid 10 c. a pound. He has 30 acres sown to this new variety of wheat, which from present indication will bring a large yield. The stalks are large and strong and, notwithstanding the rank growth, it was not blown down by the late storm as were other varieties of rank grain. The heads are not so long as the Australian, but are thick and plump. The long beard gives it the appearance of barley when well matured.

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Tehama.

WOOL SALE.—Red Bluff News: The Red Bluff wool market opened Thursday and a dozen buyers attended the sale under the auspices of the Tehama County Sheep and Wool Growers' Assn. About 1,200 bales of the spring clip were sold at prices ranging from 21 to 24c. per lb., and the estimated total this year is 3000 bales. Some growers received more than the market figure, for they had fed their sheep during the months when feed was scarce and the wool consequently had attained a greater growth. There is little doubt that the Tehama county wool this spring was cleaner than ordinary and some had been somewhat stained from the fact that the first warm weather had caused the grease to run; the cooler weather following caused the grease to color the fleeces to a perceptible degree. The Red Bluff wools sold Thursday and the buyers are as follows: Cone & Kimball Co.—G. W. Eaton, 14 bales; Jos. Lawrence, 28 bales; Thos. Cockburn, 15 bales; G. C. McCoy, 47 bales; T. H. Smith for Chas. S. Moses & Co.,—Stanford Ranch, 207 bales; Cone Ranch Co., 182 bales; Cone & Ward Co., 135 bales; J. Henriques, 14 bales; Jas. Fitzpatrick, 55 bales; Barry Bros., 129 bales; F. B. Findley & Co.,—Capt Leo L. McCoy, 85 bales; Anton Nunes, 25 bales; Money Hickman, 45 bales; Robt. L. Mitchell, 8 bales; W. H. Conard, 36 bales; Black & Osborn, 13 bales; T. J. Flinn, 24 bales; Black & Osborn, 24 bales; Black Bros., 31 bales; R. C. Rosenberg—Flanagan Bros., 11 bales; W. J. Meadows—T. S. Swain, 24 bales; S. Koshland & Co.—W. H. Conard (mohair), 5 bales.

Trinity.

CUTTING HAY WITH AUTOMOBILE.—Redding Searchlight: U. G. Day has hitched an automobile to a mowing machine and is cutting hay on the 200-acre meadow land lying along Ruch creek, five miles from Hayfork. Dockery's meadow is a mile long and a third of a mile wide. The bottom is good and the automobile makes good time—far better than two draft horses could make with the mower. The owners have not figured up the cost, but are satisfied that harvesting on good level land can be done more cheaply in Hayfork valley, where grain and feed are high, with an automobile than it can be done with the mower drawn by horses. What was begun as a joking experiment has proved to be a matter of business.

Tulare.

NEW CITRUS ASSOCIATION.—Porterville Enterprise: Preliminary steps were taken toward the organization of the Tule River Citrus Association by the election of directors. This association is composed of citrus growers at Globe, South Tule and Pleasant Valley, who were members of the Porterville Citrus Association. In order to better facilitate the handling of the fruit by hauling it to Porterville to be packed, a packinghouse will be built about six miles east of Porterville. The new association will be a member and ship through the Tulare County Citrus Fruit Exchange, and will handle during the coming season about seventy-five cars.

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PLENTY OF APRICOTS.—Alta Advocate, June 8: In some parts of the county the apricot crop is a failure, but in the Sultana country it is in fine condition, and the crops will bring big prices. E. Tout has sold 40 tons of green apricots at \$35 a ton, B. F. Tout has sold 80 tons, Mr. McDermott 30 tons and Mr. Sharman 20 tons. In the region of Sultana grapes are also in good condition. The Thompsons and Malagas are especially in fine shape, but the Muscats have mildewed to some extent.

ELKS ARE FAT.—Visalia Courier: Walter Fry, forest ranger from the Giant Forest, recently visited the haunts of the elk, which were taken to the park last fall, and stated that all of the herd which he saw were in fine condition. At least one calf was made out with the herd, having made its appearance since they were placed in the park, and he was of the opinion that there were three or four of them.

Ventura.

HOLDING APRICOTS.—Watsonville Pajaronian: Apricot growers of this county are in clover, for buyers are falling over one another in their eagerness to get the fruit, green or dry. Nine and nine and a half cents per pound is being offered for the fruit dried, against seven cents last year. Fruit growers are coy and are fighting shy of contracts. It is certain that the price will go to ten cents or better before the season is out. The crop this year is very short. The old crop is cleaned up through natural channels and because of the San Francisco disaster. This is making the price gilded. In the Ojai valley there will be in many cases pretty full crops. This section also produces prime fruit. The Piru section will come out with a half crop. About Springvale there will be little fruit, the same in Simi and in Ventura canyon. Apricot pits are also in great demand. A few years ago these were considered as waste, but last year they brought \$5 a ton. This year they will reach \$8. The pits are used in Germany largely, taking the place of almonds in candy-making.

APRICOT PITS SELLING HIGH.—Alta Advocate, June 8: Apricot pits are selling in Ventura this year for \$15 a ton. This is the largest figure received for them at this place. The demand for the pits comes from Germany, where they are used as a substitute for almonds in candy. A prussic acid is also obtained from them.

Yolo.

LARGE HARVEST OF HAY.—Sacramento Union: Winters has just harvested the largest crops of hay for many years, some cuttings of both alfalfa and grain yielding more than three tons per acre. The recent showers have been of great benefit to the late sown alfalfa and orchards. The first car of green fruit for the season was forwarded June 2d, ten days later than last season. Daily shipments of beans and squash are now being forwarded to market. The fruit crop is lighter than usual, but of better size, and prices are higher.

Yolo.

HOLD SPRING CLIP.—Sacramento Bee: The Davis Wool Growers' Association held a sales day Tuesday. A motion prevailed to pattern after the Marysville association. All the members were not entirely satisfied with the plan, but the buyers refused to bid on any other basis. The sales resembled a farce, and the association was greatly disappointed. Only two buyers were there and they formed a combination of their own. Arrangements were made to continue storage. Eighty-five bales were placed on sale, but only eight were sold. The failure of the Marysville and Davis associa-

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tions indicates that the growers will be compelled to cast about for a plan, combining the various associations of the wool-producing sections of California, which will enable them to protect themselves.

Yuba.

CORNERS PEAR MARKET.—Marysville Democrat: The buyers for the local fruit packing establishments have made the discovery that when it comes to dickering for Bartlett pears they will have to deal with one man, who has the pear situation in hand, Hayward Reed, of Yolo county. Reed has secured the Bartlett pear crops from the Jackson orchard near Yuba City, the Thresher tract near Gridley, the Harkey orchard in Sutter county, the Kerchem & George orchards close to this city, besides the fruit on several smaller tracts. He also controls many acres of pears in Yolo county. Last season Reed had the same corner on this particular fruit and realized a neat sum through his enterprise, receiving the unprecedented price of \$65 per ton for the fruit. This year the Bartlett pear crop will be as slim as last season, and should command a good price. The cannery people are determined to beat the market down, despite the scarcity, and are combining to that end.

SHEEP IN STORM.—Wheatland Four Corners: The Blackford and Hartley sheep, which were started for the mountain ranges last week, were caught in the storm near Grass Valley, and considerable trouble was experienced. R. Hartley, in charge of the band, had considerable difficulty in keeping the sheep moving when the snowstorm was encountered, but comparatively few of them perished. Ralph returned to Wheatland Saturday night and reported that the flocks were then in an inch of snow, but since the weather has settled and cleared no further trouble is anticipated.

GOVERNMENT WHITEWASH.

Some time ago an autograph letter under date of December, 1871, from U. S. Grant, then President of the United States, was published, giving the formula for this whitewash to a friend of his in California, and adding that he had whitewashed the White House all over with it. We quote from this letter:

Half a bushel unslacked lime, slack with warm water, cover it during process to keep in the steam; strain the liquid through a fine sieve or strainer; add a peck of salt previously well dissolved in warm water, three pounds of ground rise boiled to a thin paste and stir in boiling hot; half pound of powdered Spanish whiting and a pound of glue which has been previously dissolved over a slow fire, and add five gallons hot water to the mixture, stir well and let it stand for a few days, covered up from the dirt. It should be put on hot. One pint of the mixture will cover a square yard, properly applied. Small brushes are best. There is nothing that can compare with it for outside or inside work, and it retains its brilliancy for many years. Coloring matter may be put in and made of any shade, Spanish brown, yellow ochre or common clay.

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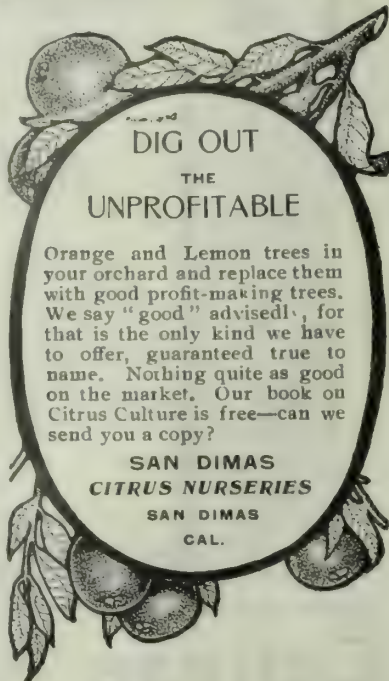
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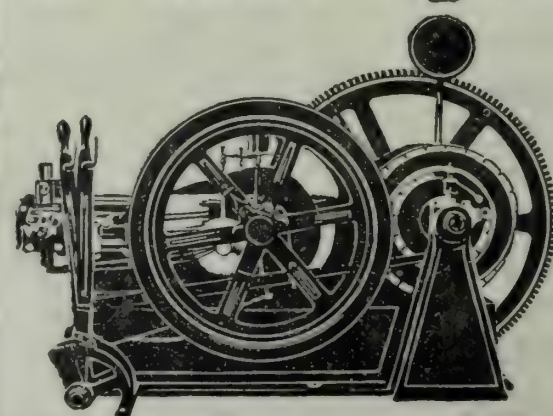
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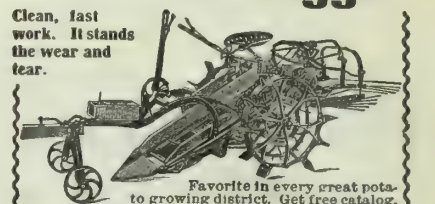
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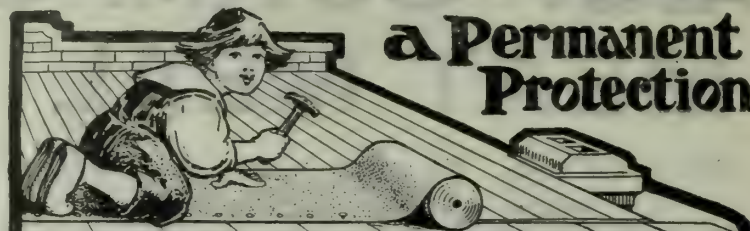
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Vol. LXXI. No. 25

SAN FRANCISCO, SATURDAY, JUNE 23, 1906

THIRTY-FIFTH YEAR

THE EARTHQUAKE LINE.

In an earlier issue we gave a popular tracing of the line along which disturbances by the earthquake were noticeable and noted the relatively small area of the State which was affected. Demonstration of this fact is desirable, for the information of our distant readers, who are apt to think from the sensational reports which represented the whole State in an unsettled condition. We have such a demonstration in the form of a preliminary report by a commission of scientific men appointed by the Governor of the State to determine the facts in the case. The accompanying map of the State shows that the disturbance prevailed only through a small fraction of the State, comprising a narrow strip along the sea coast and the immense interior regions, where the greatest agricultural development is being realized, were untouched. To one who knows the State well it will also appear that probably nine-tenths of the length of the earthquake line lies in the mountains where settlement is scant and it was only in traversing some of the small coast valleys that any notable injury was imposed upon rural communities. It was a great misfortune that the metropolis sat upon the coast hills and filled land below them and that some of the smaller cities and towns were near the line as it traversed the coast valleys. It was in such places and not at large in the State that the deplorable losses were experienced. That the State at large was not affected can be seen by a glance at the map upon this page, and this is the main purpose of our present reference to the subject.

It will also be found interesting to define the phenomenon for the more accurate knowledge of all readers and so draw upon the statement prepared by the commission to which reference has been made. The line of disturbance begins at the north at the mouth of Alder creek, near Point Arena, in Mendocino county, and extends southeasterly nearly parallel with the coast line to a point about two miles below Fort Ross, a distance of 43 miles. Here it passes outside of the shore line and is again met with at the point where Bodega Head joins the mainland. Thence it appears to continue southward through Tomales bay and Bolinas lagoon. Beyond Bolinas lagoon it passes outside of the Golden Gate and enters the shore again at Mussel Rock, eight miles south of the Cliff House. From this point it is traceable continuously along the valley line occupied by San Andreas and Crystal Springs lakes, past Woodside and Portola, over a saddle back of Black mountain,

thence along Stevens Creek canyon, passing to the southwest of Table mountain and Congress Springs to the vicinity of Wrights, on the narrow-gauge railway between San Jose and Santa Cruz. From Wrights it continues on in the same course through the Santa Cruz mountains to the point where the Southern Pacific railway crosses the Pajaro river near Chittenden. From the crossing of the Pajaro the line extends up the valley

such lines, and that the main line traced from Pt. Arena to Mt. Pinos is continued with the same general straight trend past San Fernando and along the base of the remarkably even fault-scarp at the foot of which lies Lake Elsinore. But, leaving the southern extension of the line out of consideration as somewhat debatable, we have a very remarkable physiographic line extending from Pt. Arena to Mt. Pinos which affords every evidence of having been in

past time a rift, or line of dislocation, of the earth's crust and of recurrent differential movement along the plane of rupture. The movements which have taken place along this line extend far back into the Quaternary period, as indicated by the major, well-degraded fault-scarps and their associated valleys; but they have also occurred in quite recent times, as is indicated by the minor and still undegraded scarps. Probably every movement on this line produced an earthquake, the severity of which was proportionate to the amount of movement.

The cause of these movements in general terms is that stresses are generated in the earth's crust which accumulate till they exceed the strength of the rocks composing the crust and they find a relief in a sudden rupture. This establishes the plane of dislocation in the first instance, and in future movements the stresses have only to accumulate to the point of overcoming the friction on that plane and any cementation that may have effected in the intervals between movements.

Concerning the effect of the disturbance upon structures of various kinds, the commission draws some preliminary conclusions which are suggestive in the preservation of public and private property.

Modern class A steel structures with deep foundations appear to have been relatively passive, while the made ground in their immediate vicinity was profoundly disturbed. Thoroughly bonded and well cemented brick structures, on similarly deep and solid foundations seem to have been equally competent to withstand the shock, except for occasional pier-like walls not well tied to the rest of the building. The weak points in wooden frame structures were in general the faulty underpinning and lack of bracing, and chimneys entirely unadapted to resist such shocks.

With these faults corrected, frame buildings of honest construction would suffer little damage beyond cracking of plaster in such a shock as that of April 18, save on the made ground.



of the San Benito river, across the eastern portion of Monterey county, and thence follows the northeastern side of the valley of the San Juan river and the Carissa plains to the vicinity of Mt. Pinos, in Ventura county. The line thus traced from Point Arena to Mt. Pinos has a length of 375 miles, is remarkably straight, and cuts obliquely across the entire breadth of the Coast Ranges. To the south of Mt. Pinos the line either bends to the eastward following the general curvature of the ranges or is paralleled by a similar line offset from it en echelon; for similar features are reported at the Tejon pass and traceable thence though less continuously across the Mojave desert to Cajon pass and beyond this to San Jacinto and the southeast border of the Colorado desert. The probability is that there are two

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THE WEEK

Higher heat and drier air to drive away the fungi which have been too free with our plants and trees this spring; a heavy travel to the State of those who believe the present is just the time to make a good start in California; a general movement from various parts of the State of those who believe conditions are favorable for new people to start even with the old timers in metropolitan investment and business—all these, added to the local activity and enthusiasm, create a widespread spirit of confidence and courage in rehabilitation which is working wonders. And then there are other tokens of strength in the situation such as the arrangements at Washington by which the United States Government will accept San Francisco bonds as security for a part of the surplus funds in the strong box at Washington, and the deposit of ten or twelve millions in the San Francisco banks to be loaned for rebuilding. This action by the general Government adds indirectly to the available funds and to general confidence so that idle millions will come from all directions for purposes of restoration. All such things are assurance that the desolation by the conflagration will be overcome as rapidly as, in the nature of things, such a thing can be overcome and forgotten.

The convention of promotive organizations held in Napa last Saturday under the auspices of the California Promotion Committee was fortunate in its widely representative character and in its cordiality, courage and confidence. Many notable addresses were made, the keynote of which we would like to bring to the hearing of our most remote reader. The chief purpose of honest and conscientious promotive work was defined by Mr. Andrea Sbarboro in this simple way:

Our State can produce anything that is grown in the most favored countries of the world. It can easily furnish profitable occupation and pleasant homes to 20 or 30 million people, and yet our population does not yet reach the two million mark. To furnish correct information to the people of the United States and throughout the world of the resources of our State, the California Promotion Committee has scattered millions of pamphlets which are being read by several million people, so that the name of California is today in the minds of the people of the civilized world. This will eventually help to fill up our State, and be one of the great powers which will assist in rapidly rebuilding the metropolis of the State, the great city of San Francisco, making it larger, stronger and more beautiful than before, and at the same time make more prosperous all localities and industries throughout the State.

This has a good progressive and cordial ring to it. Certainly there never was a better time to begin participation in the development of this blessed heritage.

Another notable declaration at the Napa convention was that of Mr. Colvin B. Brown of San Joaquin county. It is a plea for realizing one of the most significant teachings of recent experience. He said:

The flames which licked up the business part of San Francisco amalgamated the people of an entire State. In that crucible of fire sectional jealousy was, for a time at least, destroyed. San Francisco is to be rebuilt because there is sufficient business now waiting to engage its activities, and because of the faith of its business interests in the prosperity of the State. The recent disaster did not affect our mines and our forests, our orchards and vineyards, or waving fields of grain. Our great harbor is intact. We still have the finest combination of winter sunshine, of mountains and of valley, of seashore and fertile fields, of any similar area

in the world. We who are gathered here today are engaged in the work of making these things known. Each is common to us all, and San Francisco is our common market. The Yosemite valley belongs to no one county. Mount Shasta and the Sierra range, the magnificent sweep of the coast, and our peerless harbor are the heritage of all our people. The green and golden orange groves, the orchards and the vineyards, the mines and the forests are California's. What San Francisco people need is that the State shall be prosperous; and, while each one of us is working to enhance the material prosperity of his own particular community, he should at all times refrain from doing so at the expense of his neighbor. There will indeed be a silver lining to the cloud which fell upon San Francisco if hereafter all of us who are engaged in promoting our own communities will have none but kind words to say of others.

It is good to think deeply of the humanity in this proposition and to reach the conclusion that the warmth of an honest heart is to remain with us as the only reminder of the raging fires of our refining.

It is currently reported that Antoine Ladue, a farmer in the south of France, believes that trees can and should be educated to an extent that will enable them to protect themselves against freaks of the weather. He intends asking the State to offer a prize—toward which he will himself offer a substantial contribution—to be awarded to any one who discovers some method whereby trees will be made wiser. He has observed that the early days of March are always warm and sunshiny, and that just as regularly, some two or three weeks later, there follows a fall in temperature when the mercury often drops below the freezing point. But the trees in his orchard as soon as they feel the first outburst of warmer weather, assuming that spring has come to stay, put forth their buds, which get nipped by the succeeding frosts and thereby much fruit is lost. Year after year they get caught in the same fashion, both young trees and old trees. They do not profit by experience. Mr. Ladue believes trees have intelligence and can be taught to know more about such things, and their habits improved thereby. All this is very interesting, but it does not seem to have occurred to Mr. Ladue that the foolishness of the trees is something for which men are to blame and not the trees themselves. He says: "Nature has failed lamentably to teach trees how to avoid being bamboozled by the weather." This is not true: nature has taught them how to do it and has given to each plant wonderful adaptations, but man has been striving for years to develop new characters which suited him and has forgotten to associate also hardiness which nature always teaches a plant, according to its environment. Mr. Ladue should have a prize to teach men how to handle plants for hardiness as well as for other characters. Man needs wisdom more than trees need it.

It rather looks as though some State bureaus in different States do not like to have the United States Geological Survey come into their commonwealths and take away their scientific jobs. In Congress the other day a member from Iowa said:

The Geological Survey was established to care for the territories, leaving the States to make surveys for themselves. It gradually spread to the States and the director, without any authority of law, established a system of contributions where if a State would put in a specific sum, he would, out of the appropriations, put in an equal amount. He said that this had resulted in the rich States thus buying the national appropriations away from the poorer States and as a result Massachusetts, Connecticut and Rhode Island are all surveyed, while the Western States, for which the survey was founded, have had little done. The appropriations should not be increased until we have passed such legislation as will compel the director to fairly distribute the work over the country.

We are not authorized to say anything in defense of the policy of the Survey, but we can frankly declare that it seems to us that the Survey was in danger of impeachment because it was doing too much for the West. We supposed the attention paid to the older States was a very good policy and undertaken to justify

the whole country in paying for the work, because they were really getting a share of it. It is simply an acknowledgment of ignorance to claim that the Survey is not working for the West. It is doing work which no State could undertake, without such cooperation as now prevails, and with which California is profoundly satisfied. Possibly enough has not been done for the Central Western States and the best way to get less is to discount the Survey. The work in the territories and the newer States of the farther West is a monument of the value of applied science which the arid and semi-arid regions are proud.

QUERIES AND REPLIES.

SERIOUS SHOTHOLE DISEASE ON PEACHES.

To the Editor: I send you a sample of some peaches and foliage taken from my orchard of Tuscan clings. The fruit as you will notice is affected by some disease or insect. On some trees 10 per cent of the fruit is affected. I wish to know what is the trouble and what remedy to use to protect the fruit and destroy the trouble.—GROWER, Healdsburg.

The injury to your peaches is due to the activity of the shot-hole fungus, which seems to be more destructive and ruinous this year than ever before. It is the cause of the winter blight of the peach, concerning which there was a statement by Professor R. E. Smith, in the Pacific Rural Press of May 12th. It is either the same fungus (or closely related to it) which causes the leaf-holes in the apricot and the spots on the fruit which practically destroy its value for commercial purposes. It is now doing serious injury to the peach trees in the foothills and elsewhere, causing the leaves and fruit to drop and the branches to gum badly, even in places where the winter attack was not so destructive as described in Professor Smith's article. A very effective treatment is fall spraying with the bordeaux mixture to prevent winter injury, and possibly a spring treatment may also be required to protect the summer growth of the fruit. There is no application that can be made at this time to save fruit injured as yours is shown to be by the samples which you send, but it is believed that thorough fall and winter treatment will prevent such a manifestation as you are now suffering from. The fresh outbreak of this disease so unusually late in the season is due to the late rains which in connection with heat promote all such troubles. A hot dry spell usually knocks them out for the season.

COVER CROPS IN ORCHARDS.

To the Editor: I would very much like your opinion on the subject of sod culture for citrus fruits. For a steep hill side and shallow soil it would seem an ideal system. I have often noticed and wondered at the fact that trees close to a flume and which receive practically no cultivation, do just as well as trees that are thoroughly cultivated, in fact they usually show rather extra good results. This also applies to trees set in lawns. I presume that trees in sod would require more water. I am much inclined to try the experiment on a small scale and will ask you whether you think Bermuda grass would be the best to grow in the orchards, if not, what grass is there that will make a sod and not grow too high?—ENQUIRER, Porterville.

The question of sod culture or continual cover crops for citrus fruits has not been demonstrated in California. Something has been done in the continuous growth of leguminous plants by means of irrigation sufficient for the plants and for the citrus trees also, and the use of such plants is vastly more rational than the attempt to grow any of the grasses, because a deep rooting leguminous plant not only deepens the soil by its root action, but adds nitrogen to it from the atmosphere, and this no grass can do. If you wish to experiment with the proposition at all there is nothing better which you could use than alfalfa, and Arizona experience is that if alfalfa is grown, with water enough so that the trees do not suffer, and is mown from time to time, allowing the cut clover to remain upon the soil, not removing it for hay, the trees are benefited by the lessened heat in the soil, and by doing away with the heat reflection from the cultivated surface. We would not think for a

moment of introducing Bermuda grass in an orchard, or any other place except waste land which can never be cultivated, because it is practically impossible to extricate Bermuda grass without more expenditure than the land is worth for agricultural purposes.

WIRE WORMS IN SEED BEDS.

To the Editor: Last February I planted some seed for nursery stock, which was attacked by a little reddish-brown worm about one inch long and the size of a pin. I think it is called the wire worm. It bores into the kernel thereby destroying its vitality. I found all the way from two to one dozen in a seed. They seem to attack all kinds of seed. I had three varieties planted, viz.: apricots, peaches and almonds, and all are destroyed. Do you know of any remedy for preventing damage or destroying the worms in time for next spring's planting?—AMATEUR, Santa Clara county.

You are certainly dealing with wire worms, as you imagine, and they are a very difficult pest to subdue. The ground is evidently full of them from previous cultures which were to their liking. Applications of nitrate of soda are believed to be distasteful to them, but one has to be very careful in using this substance, because it is also destructive to plant growth if used in excess. The best treatment which you can give the land is to apply air slacked lime and keep it in a thorough summer fallow, not allowing anything to grow upon it during the current season and working it over as thoroughly as you can afford to. This cleaning process will probably give you comparative freedom from wire worms next year.

THE RYE GRASSES.

To the Editor: Where can I procure Australian rye grass seed? I should also like to know if perennial rye grass and Australian rye grass are the same—FARMER, Placer county.

Australian rye grass and perennial rye grass are the same thing. At one time rye grass seed came largely from Australia, grown from an early introduction of perennial rye grass, or English rye grass, which is another name still for the same plant, into the colonies, but recently the seed has been brought either from England or from Australia as is most convenient, and sold either as Australian rye grass or as perennial rye grass as customers desired. There is probably no difference in any respect in any recent sowings of the plant, although thirty years ago when it was first introduced it was supposed there was great virtue in getting the plant after being acclimated in Australia, but when some people, thus impressed, found that they were getting Australian rye grass with the shipping tag of an English seed dealer upon it they became shaky on the whole proposition. The largest growers of perennial rye grass seed in California are Vierra Bros., Moss, Monterey county, Cal., and they can probably furnish it in any quantity desired.

PROBABLY NEGLECTED TREES.

To the Editor: I send a few samples of trees. I wish you would look them over and see what is the trouble with them. There seems to be some trouble with the roots as they were partly dry when planted. The people here all seem to be sure that it was a disease on the trees when taken from the nursery and I wish to have your opinion about it. I suppose you can tell whether they were diseased or not in the nursery. They started to leaf out, but they seemed to die back entirely.—PLANTER, Stanislaus county.

Too much time has certainly elapsed to enable one to tell whether these trees were in trouble in the nursery or not. The presumption, however, is that they were not, because they are fair looking trees and seem to have made quite a satisfactory growth from the bud. The presumption is that the trees suffered after taking from the nursery and the trouble is not in the root, for that is still healthy and the trees have failed because of the death of the top. This is probably due to exposure and drying out. The root being in the moist soil was enabled to restore itself by absorption of moisture, but was not able to furnish sap to the top which, being

in the air, continued to dry to its death. The fact that one of the trees shows a good-sized new shoot low down indicates that this tree was more protected in some way than the others and was able to maintain a certain amount of life in the top to take sap from the root when it became active. We do not find any indication of disease on the trees.

SMOOTH BARLEY FOR CHICKEN FEED.

To the Editor: Your reply to my question about smooth barley is very interesting. Do you think such barley would make a good substitute for wheat as chicken feed? The latter grain is so high in price that any cheaper grain, provided it were nearly as good, would be very welcome to a great many in this vicinity.—FARMER, Livermore.

Your smooth barley would undoubtedly be first class for chicken feed; just as good as wheat, probably. That fact did not occur to us when we answered your previous

CORN FOR IMPERIAL VALLEY.

To the Editor: I want to plant 100 or 120 acres of Indian corn on my ranch in the Imperial valley. The country is new and in the absence of an experiment station we have nothing to guide us. I should be glad if you can give me some help in this matter. I should like to know the best variety to plant, the best time and the best method of planting, cultivating, irrigating, etc. Does Eastern corn deteriorate after being planted in our hot interior valleys for one or two years? Where can I get good seed corn? There seems to be very little for sale in California.—FARMER, Redlands.

Although very fine specimens of Indian corn are grown in particular locations in California the crop as a whole is not a large one in this State, nor are our valley situations generally adapted to it. We would not think for a moment of planting such a large area of Indian corn as you propose in the Imperial valley without making preliminary test on a small scale, not only to determine the general suitability of the crop, but which variety is best. You can probably get enough different varieties of corn grown in Southern California for this purpose from the seed dealers of Los Angeles. Of course, if you can also get a number of varieties which are prominent in the East for trial you may get some very important results, but so far as we know, seed corn of these varieties is not available in this State.

WALNUTS IN BERKELEY AND BEYOND.

To the Editor: Will you inform me if soft shell English walnuts can be successfully cultivated in California as far north as Berkeley? Are they subject to disease? What are the necessary climatic conditions? Would fog or ocean breezes prevent or interfere with their ripening? And can you refer me to any literature on the subject?—READER, Berkeley.

English walnuts can be successfully grown not only as far north as Berkeley, but northward, in proper situations, as far as the State of Washington, possibly farther. The trees grow fairly well and bear good nuts in Berkeley, and thus far have not manifested blight, which is quite a serious trouble in other parts of the State, but English walnuts enjoy rather better growing conditions than we have in Berkeley and better and deeper soil and a little higher summer temperature, and for this reason you will find very much better trees across the hills in Contra Costa county than in this immediate district. There is no up-to-date publication on the English walnut in California at present available. The best literature on the subject is found in the articles appearing in our columns.

PEAR BLIGHT AND RIB GRASS.

To the Editor: I send you a twig of an apple tree which is blighted. Is it what is known as pear blight? So far it has not injured the trees, and I never noticed it before. Also, what is the name of the plant of which I send the head and leaves?—SUBSCRIBER, Lake county.

The apples have the pear blight. The plant you send is sometimes called rib grass or plantain. It is held to be of some forage value in your part of the State.

ERINOSE OF THE WALNUT.

To the Editor: We have on our ranch about a dozen English walnut trees 12 or 14 years old. This year they are very full of nuts, but many of the leaves are in the condition you will see from the enclosed specimens. Can you tell me what it indicates, and whether it is necessary, or possible, to do anything to protect the fruit, such as snipping off the curled leaves, or should we let them alone? I send an insect I found on the tree.—GROWER, Geyserville.

Your walnut leaves have the trouble known as Erinose, the spots being the work of a minute mite. Fortunately, this injury is very slight, and it is hardly worth while to follow up your practice of picking off the leaves. The insect which you send is the larva of the ladybird and is not at all connected with the spots upon the leaves.

HORTICULTURE

NOCTURNAL TRANSPLANTING OF TREES AND SHRUBS, WHILE IN FULL VEGETATION.

To the Editor: A question that has been rather perplexing to many people interested in horticultural pursuits has been the successful transplanting of trees and shrubs in the spring or early summer while either beginning to leaf out or even in full vegetation. For instance, some who do not have their ground ready in time, or on account of the weather, find themselves with trees, shrubs or vines, properly heeled in a ditch, but all in leaves, encounter so many failures in transplanting in that condition, that in most of such cases the transplanting is put off to the ensuing winter; taking their chances that such trees or shrubs might safely pull through during the summer. Well, now let me tell your readers that the nocturnal planting of such trees and shrubs, while in full vegetation, succeeds admirably if done with care and under certain conditions. My experience in that line has fully demonstrated to me that by the end of 24 hours after such transplanting took place, the trees did not show at all, or very slightly at the most, that they had just been transplanted. Here is the way to proceed:

In the first place the ground around the trees to be removed (and anything said about trees in this chapter applies likewise to shrubs and vines) should be made moist, by having water applied to it, to make the trees come up more easily. Then the holes where the trees are to be set should be kept in readiness, the ground made moist by watering, keeping on one side enough of the surface dirt to be used about the roots. The transplanting takes place at night, between 10 P. M. and 2 A. M., for ordinary nursery stock that had not been disturbed, but with trees either heeled in a ditch or taken up from where the trees had been already transplanted in the spring, the transplanting might be done between 9 P. M. and 4 A. M. In planting, the soil should not be tramped with the feet, but the earth made to settle about the roots through copious waterings. After the operation is entirely over, the foliage of the trees should be duly sprinkled with water, such sprinkling, with certain plants, being renewed every morning for a week or so. I never sprinkled but once deciduous fruit trees that I so transplanted.

As to when through the summer the transplanting should be done, no precise time can be set for it; one has to be guided by the existing condition of the trees or plants to be removed. With fruit or ornamental trees the transplanting should not be done before half of the new growth on the trees has become woody, otherwise if too tender it would be apt to wilt and never rise again. This is the very reason why one should not be in too great haste in doing the transplanting, never minding if getting close to the hottest part of summer, but being sure that the lower half of the new growth be in a ligneous state.

Last summer I transplanted on the night of July 3, just on the eve of the hottest spell of the summer, an apple and a cherry tree which had been planted in nursery row in the spring while 3½ feet in height, and when they had formed already a head with limbs of new growth about one foot in length; also a peach tree two years in the nursery, three feet in height and newly branched. The transplanting, everything being in readiness, took place at 11 P. M., the trees being duly watered and the foliage sprinkled all over with water. The apple and cherry trees were taken up with the earth sticking to the roots, the peach tree with the roots bare. About an inch of the tips of the apple and cherry trees wilted, but 15 hours after the transplanting they all straightened up, the trees looking as though they had not been transplanted at all, and never wilted afterward, even making a small growth before winter. As to the peach tree, the tips also wilted some, but

never straightened up, and furthermore many of the leaves dropped off, but in the course of two or three weeks a new growth started all over the tree and before winter the tree had grown a very pretty top. I shaded the body of the trees with two shakes; a mastic made of cow dung and pipe clay mixed and kneaded well together may very well be used by coating with it the whole stem from the ground up; such coating may also be applied in spring to trees newly transplanted to prevent the ravages of bores.

I did more transplanting at night on the 22nd of August, with the thermometer at 90° in the shade during the day, having found four apple trees that had to be replaced; they had been planted in the spring, but were killed by borers. I took up four trees planted in the nursery in the spring, therefore newly rooted, two with earth sticking to the roots, the two others with the roots bare. The tips of the four trees wilted down, one to one-half inches. Those of the trees transplanted with earth straightened up within 24 hours, the tips of the two others not recovering; otherwise it was impossible to tell that the trees had just been transplanted.

I have at this writing a few vacancies to fill, but I will wait till after the Fourth of July to fill them, preferring nocturnal planting in midsummer to spring planting, principally with kinds liable to be injured by borers.

It would not do, however, for nocturnal transplanting to order trees from a nursery or get them from a distance; they should be already on one's place, ordered through the winter or before the time trees bud out. In garden, orchard or park, this new way of transplanting trees, whether fruit or ornamental, deciduous or evergreen, and shrubs and vines, could be resorted to with advantage. It may also be used with profit by the florist, as it would permit him to transplant successfully delicate plants. Take chrysanthemums, for instance, which are often removed from one place to another, or cultivated in the field to be afterward planted in pots either to put them away before winter, or for exhibition at fairs in the fall. This novel but practical method of transplanting would help considerably in having them taken up and removed in all their beauty. As to evergreen plants, they would stand transplanting at night and in midsummer with as much ease as deciduous kinds; but they, too, should have the new growth somewhat woody, surely not in a herbaceous condition.

FELIX GILLET.

Nevada City, Cal., June 15, 1906.

WHAT A LARGE CITRUS ACREAGE HAS DONE.

We are always shy of expressing an opinion as to what return can be expected from investments in fruit planting because it will be much or little according to local conditions in the man, the soil, the variety and the culture. We are, however, always ready to print careful statements of what has been done in individual cases because the intending planter can figure from them at his own risk and have only himself to blame if he goes astray.

Mr. J. H. Williams has what the "Enterprise" calls "Porterville's Model Orange Orchard," and this is what Mr. Williams says he has done with it:

In 1895 I bought 40 acres of land one and one-fourth miles east of Porterville, on which I planted 20 acres of Navel oranges and 20 acres of lemons. In 1896 I bought 80 acres adjoining this orchard, and planted this land as follows: Forty-five acres to Navel oranges, 20 acres to lemons, and 10 acres to grape fruit.

In 1901, after this plant had come partially into bearing, I found that the market for grape fruit was very unsatisfactory. I therefore budded the grape fruit to Navels, and the following year, for the same reason, I budded the 20 acres of lemons to navels.

In order to arrive at the correct figures in considering the returns for my plant, it will be necessary to eliminate the grape fruit and lemons, and consider only that part planted to Navel oranges.

I find that the running expenses, i. e., plowing, cultivating, pruning and irrigating, including the cost of water, average \$37.50 per acre, per year, for the first four years; or until such a time as the trees arrive at the age when more attention has to be paid to pruning. From that time on, I find the running expenses have increased with the growth of the trees, and they average, from 1900 to 1906, \$71.12 per acre, per year. This does not include the cost of picking, and hauling to the packing house. These two items cost me eight and seven-tenths cents per box.

My first receipts from the plant came in 1898-9, when I received from my first setting of 20 acres of Navels, \$642.05. In 1899 and 1900 my second setting of 45 acres of Navels produced a few boxes, and these with the increase from my older grove, brought \$1,420.85.

From this time on my output has steadily increased (with the exception of one year), as follows:

Returns for season of 1900-1.....	\$ 4,859.21
Returns for season of 1901-2.....	12,033.43
Returns for season of 1902-3.....	20,668.77
Returns for season of 1903-4.....	25,877.87
Returns for season of 1904-5.....	19,806.38
Returns for season of 1905-6.....	27,882.37

The entire sale of citrus fruits from my 115 acres in 1905-6 amounted to a trifle over \$30,000.

Relative to the budding over of grape fruit, referred to above, I would add that these buds bore no crop until November, 1903, when a small crop, possibly 350 boxes, was taken from them. They have increased their crop steadily since that time.

All the work done on this property has been "day" work. No contract work has entered into the operation of the plant, and the results shown have been accomplished on about 72 acres of land. A comparison of this acreage with the net returns of 1905-6 will show a net return of \$388 per acre.

THE MARSHALL STRAWBERRY AT THE NORTH.

Mr. Frank V. Arnold, of Vancouver, Washington, says the Oregon Agriculturist, is making a specialty of raising Marshall strawberries for market and has made a decided success with this variety. The Marshall has long enjoyed the reputation throughout the United States of being one of the best of all strawberries for home use. It is very large in size, brilliant crimson in color, symmetrical in form, but the best feature of all about it is its superb quality. The berry would create immediate demand anywhere by its appearance and fortunately it tastes even better than it looks. One decided advantage which the Marshall has over such varieties as the Magoon is that it bears its fruit on strong stems which keep it clear up above the ground, and as a result Mr. Arnold was able immediately after the rains to put clean berries on the market at a time when most berries showed pressing need of washing.

The Marshall appears, however, to be rather particular both about the soil it grows in and the methods of the man who raises it. On Mr. Arnold's place and with his thorough methods it bears splendid crops and he can well afford to make the variety his specialty. The Marshall is a mid-season variety, a few days earlier than the Magoon.

PLANT DISEASES.

HOW TO MAKE THE BORDEAUX MIXTURE.

The bordeaux mixture in its various strengths is the sovereign cure or check for plant diseases and every plant grower should have the formulae for it constantly at hand. If you do not keep your copies of the Pacific Rural Press regularly on file you should cut out this column and put where you can always find it. The following comprehensive statement is from Bulletin 194 of the New Jersey Agricultural Experiment Station:

Bordeaux mixture derives its name from the place of its discovery, Bordeaux, France. It consists of copper sulphate, which is commonly called blue vitriol or blue-stone, fresh lime and water.

Formulae used—Several strengths of the mixture are used under different conditions:

I. (2:4:50)	Copper sulphate	2 lb.
	Quick lime	4 lb.
	Water	50 gal.
II. (3:6:50)	Copper sulphate	3 lb.
	Quick lime	6 lb.
	Water	50 gal.
III. (4:4:50)	Copper sulphate	4 lb.
	Quick lime	4 lb.
	Water	50 gal.
IV. (6:6:50)	Copper sulphate	6 lb.
	Quick lime	6 lb.
	Water	50 gal.

Formula I is used for very tender foliage, as peach, plum, greenhouse plants, tender seedlings, etc.

Formula II, which is one-half stronger than the preceding, has about the same use, but for slightly less tender leaves.

Formula III is the formula for general use on apples, pears, asparagus, grapes, tomatoes, melons, strawberries, etc., during the growing season.

Formula IV is the strongest formula that is often used. It is considered best for potatoes and cranberries. It may be used on grapes, on peaches, apples and pears before blossoming, and sometimes on other crops. It was once more commonly used, but, except as here noted, it is generally being displaced by Formula III.

How to Make Bordeaux.

First method, made from stock solutions and tested;

the following method is the one that I consider best:

1. Suspend in a barrel of water one pound of copper sulphate for each gallon of water. It will dissolve in a day and will keep indefinitely if covered to prevent evaporation. Stir before using.

2. Slake good stone lime, after which cover it with water. It will keep indefinitely. Stir before using.

3. Put five cents' worth of yellow prussiate of potash (potassium ferro-cyanide) in a small bottle (about four ounces) and fill with water. Label poison.

Put as many gallons of 1 in spray tank as you desire pounds of copper sulphate.

Fill the tank nearly full of water.

Add milk of lime (2) till you think you have about enough, pouring it through a strainer. Stir, and then put in a drop of 3. If this yellow solution changes to a dark brick color, add more lime and stir. Continue to add lime till a drop of 3 keeps yellow when it hits the mixture.

To make formulas I and II, add as much more lime as was required by this test. For formulas III and IV, add a half more lime.

Second method, made from stock solutions, but not tested.

1. Same as No. 1 above.

2. Weigh the lime. Measure out as many gallons of water as there are pounds of lime. Slake the lime with as much of this water as is needed. When slaked, put into a barrel or tank with the remainder of the water. Stir very thoroughly before using.

Put in spray tank as many gallons of 1 as you desire pounds of copper sulphate. Fill tank nearly full of water, and add as many gallons of milk of lime as you desire pounds of lime, pouring through a strainer.

Third method, no stock solutions.—Weigh out the copper sulphate, dissolve, put in tank and fill nearly full of water. Slake the lime, dilute with some water, and add to the mixture, pouring through a strainer.

Fourth method, stock solutions for small gardens:

1. Dissolve the copper sulphate in water, using one-half pound to the quart. Keep this in a large jug, bottle or glass kerosene can. Shake before using.

2. Combine the lime and water in the same proportions (one-half pound a quart), using part of the water to slake it, and add the remainder later. Keep in a covered pail, jug, or bottle. Shake or stir before using.

For formula I, use four fluid ounces of 1, eight fluid ounces of 2, and six quarts of water.

For formula II, use six ounces of 1, twelve ounces of 2, and six quarts of water.

For formula III, use eight ounces of each to six quarts of water.

For formula IV, use twelve ounces of each to six quarts of water.

It is always better to determine the amount of lime to use by the test given in the first method. Add nearly all the water to the copper sulphate, then strain the lime into it. It may also be prepared according to the third method, reducing the amounts proportionately.

THE IRRIGATOR.

IRRIGATION FOR YIELD, SIZE, QUALITY AND COMMERCIAL SUITABILITY OF FRUITS.

By E. J. Wickson in the report of Irrigation Investigations of the U. S. Department of Agriculture.

(Third Paper.)

Qualities and Commercial Characters of Irrigated Fruit.

The desirability of irrigated fruits, for qualities which appeal to the fruit eater and for characters which win the fruit trade, has long been in controversy, and the prejudice against irrigation from these points of view has been most outspoken. This prejudice still exists in the minds of those who have not had opportunity for careful comparative judgment and no experience to distinguish between properly irrigated and excessively must come from the tree which has moisture continually present during its growing period in the amount required for perfect development of its fruit. Too little water for such perfect growth would injure the fruit and too much water would also injure it, and although the injuries proceeding from lack and from excess might be different, they would all render the fruit defective. But there have been prejudices against irrigated fruit which have been slow to disappear even among fruit growers, who might be presumed to have the best opportunities for speedily reaching sound judgments on the matter.

The first striking character of irrigated fruit to attract attention was unusual size, and such size was often

found to be unmatched by richness and flavor. Medium-sized fruit was better to eat. The general conclusion then was that water artificially applied made a fruit fine to look upon but not otherwise desirable, and from this single observation arose the quite general opinion that the farther it departed from largeness the better the fruit; therefore the smaller the fruit the richer in sugar and the more refined the flavors and aroma. It is difficult to replace this opinion by urging theoretical considerations of the actual need of the plant for a continually adequate moisture supply, nor do the determinations of sugars and essences by fruit analysts nor the awards of exposition juries convince all whom they reach. It seems desirable then to cite general experience of those who judge fruits by ordinary sense methods or by commercial standards in order to determine whether such experience reinforces the conclusions reached by those who approach the problem along lines popularly distinguished as "scientific." This was the motive in the inquiry upon which this report is based.

The attempt was made to secure the results of the experience of fruit growers, some of whom could give comparative judgment and others of whom perhaps had grown only irrigated fruit and could speak positively from experience as to its suitability for various commercial purposes. Although the writer was aware of the general change in the minds of growers toward the use of water even in regions of considerable rainfall, he must acknowledge that the declaration of the benefits of irrigation in developing desirable qualities in fruit is sharper and wider than expected and there can be no question as to the impression and influence which will follow the publication of the testimony here presented.

Idaho.

A. McPherson, Boise: Irrigated fruits are the best in every respect.

L. A. Porter, Porters: Irrigated fruit is superior in every way. In fact, without irrigation it is hard to always get moisture enough to bring the fruit to perfect maturity, hence it lacks in size, flavor, and general appearance. I consider it almost impossible to produce perfect cherries, peaches, or pears in an unirrigated orchard. They always lack the size, color, and rich flavor that comes to a perfectly irrigated fruit. I have noticed that young unirrigated trees bearing few fruits will mature them, while in a year or two, while the trees are more heavily loaded, the fruit will be small and lacking in flavor.

W. G. Whitney, Payette: Irrigated fruits are much larger, more juicy, and much nicer looking.

Washington.

E. H. Libby, Clarkson: Our fruits are all irrigated. On the higher lands, from 1,500 to 2,000 feet above our level, the apples are about half the size of ours. That fruit rightly irrigated and thoroughly cultivated is fully as good as a like variety grown without irrigation is the experience of the writer, which has extended over much of the United States and Canada.

Jason Whinery, Spokane: Irrigated fruits are better in every respect if the land is dry and the rainfall short. Some years there is no need for irrigation here.

F. A. Huntley, North Yakima: I consider properly irrigated fruits superior in every respect. I find irrigation in July to stimulate and prolong the growing period. Nonirrigated sections often lack sufficient moisture in midsummer to mature the fruits.

F. E. Thompson, North Yakima: Irrigated fruit is larger and better in appearance and as good in flavor as unirrigated.

Chas. S. Simpson, North Yakima: Irrigated fruits are better in every respect than unirrigated.

J. H. James, Waitsburg: Irrigated fruits are a great deal better in size and nicer in every respect.

Oregon.

S. A. Miller, Milton: Irrigated fruits are larger and the flavor is usually as good, sometimes better. This is especially true when the nonirrigated fruit does not get sufficient moisture.

R. H. Weber, The Dalles: I have noticed that irrigated fruit is apt to be larger than that grown without irrigation; flavor, aroma, and general appearance would, however, be in favor of the latter.

Seufert Brothers, The Dalles: Irrigated fruit is 100 per cent better, but water must be used with judgment. Do not irrigate on extremely hot days; do not swamp your land and cause it to bake.

J. R. Casey, Ashland: Irrigated fruit is much nicer in every respect.

California.

W. E. Whitmore, Whitmore, Shasta County: J. H. Whitmore, at 2,000 ft. elevation, on a slope facing southwest and on a little flat at its base, raises very fine table grapes of various kinds, but is extremely careful

to give very little water. P. Guttman, altitude 2,600 feet, has beautiful Muscat and Black Hamburg grapes, but as he kept water on nearly all of the time they were about as sweet as a lemon. Properly watered, he found they improved in flavor.

Owen Daily, Whitmore, Shasta County: Irrigated fruits are much larger, better flavored, and finer looking.

George A. Lamiman, Anderson, Shasta County: Irrigated fruit is double the size and is beautiful in color and splendid in flavor, while nonirrigated is rather dry and insipid and lacking in color.

Fred Scharr, Red Bluff: Properly irrigated fruit will be one-third larger. Nonirrigated fruit will be more aromatic and better flavored, but the large size the market calls for must be secured even at the expense of quality.

O. E. Graves, Red Bluff: Irrigated prunes are much larger.

Mrs. Emma E. Yager, Manton, Tehama County: Irrigated fruits mature better, and if properly irrigated are fine in flavor and appearance.

W. E. Hazen, Manton, Tehama County: Irrigated fruit is larger and has better flavor and general appearance. Irrigated apples color better.

J. L. Barham, Manton, Tehama County: Irrigated fruits are far better than nonirrigated in every way.

George H. Flournoy, Corning, Tehama County: My experience is that irrigated fruit is superior in every respect.

G. M. Gray, Chico, Butte County: Irrigated fruits are at least 30 per cent better in all respects.

Rio Bonito Orchard Company, Biggs, Butte County: Irrigated prunes are better in every way. Irrigated peaches are larger and handsomer, but in flavor and aroma they are inferior in freestone peaches and to a less degree in clings.

L. F. Moulton, Colusa County: Irrigated fruit is much larger, equally as fine in flavor and aroma, and excellent in appearance.

C. A. Thomas, Woodland, Yolo County: The character and quality of our fruits are improved by irrigation. The almond in every way is benefited, and adjacent orchards show the advantage of irrigation over nonirrigation with equal cultivation.

Edgar J. De Pue, Yolo, Yolo County: We are irrigating 500 acres of fruit trees. We have found that the fruit on trees along the ditches which received more water than the average was of better quality, and matured and kept better than that from trees which had less water.

G. W. Thissell, Winters, Yolo County: There is no comparison in size and quality between irrigated and nonirrigated fruit when the trees need water. If there has been a series of wet years, some orchards will need no irrigation, but others on different soil will require irrigation at the proper time.

F. B. McKeivitt, Vacaville, Solano County: Irrigated fruit is larger, equally handsome, and has the same aroma, but the flavor is not so fine as the unirrigated.

Foster Brothers, Dixon, Solano County: Irrigated fruits are far superior.

E. A. Gammon, Courtland, Sacramento County: Irrigated fruit is much better in size, flavor, and general appearance.

Charles W. Landis, Folsom City, Sacramento County: The irrigated fruits have better size, flavor, aroma, and general appearance.

T. J. Wagoner, Rough and Ready, Nevada County: Irrigated is more than twice the size of nonirrigated, and the amount of the crop is twice as great. The nonirrigated fruit lacks in flavor.

H. T. Fuchs, Grass Valley, Nevada County: Irrigation improves both size and flavor if it is not overdone.

Felix Gillet, Nevada City, Nevada County: My experience is that in the mountains vastly finer fruits and nuts are grown by regular irrigation to the amount available by the natural retentiveness of the soil. In some soils several good soakings, especially in June or July, may be enough, though more frequent irrigation, say once a week for ten weeks or more on soils not retaining moisture well, may be even more beneficial. Irrigation of both tree fruits and grapes should stop as soon as they have attained three-fourths to four-fifths of their size to allow them to acquire flavor. I have a Winter Royal pear tree, 33 years old, the largest of my collection, which bears 1,000 pounds of pears, which keep until April or May and then ripen. The fruit is medium sized and very juicy without being irrigated. A friend planted a tree of the same kind in a clover patch, where water was run continually and four or five crops of clover cut. This tree grew finely, bearing large crops of pears twice the size of mine, but ripening about December. With other pears I find that irrigation improves them very much in size and general appearance, but winter kinds seem to lose keeping quality if irrigated unless it is done moderately and stopped rather early in the season. The difference between irrigated and nonirrigated fruits, as far as size and general appear-

ance are concerned, is remarkable, though I admit that in certain rich and deep soils, naturally moist, as fine fruit can be grown without irrigation as on dry shallow soils with it. I find that nuts of all kinds are also much improved in size if properly irrigated, and if irrigation is stopped when the nuts have pretty nearly attained their size the quality will not be impaired. Filberts are immensely benefited by irrigation. Irrigation makes the peach more juicy, which is a decided gain. Compare a juicy peach with one that is dry and mealy—what a difference.

P. W. Butler, Penryn, Placer County: Irrigated fruit is much larger, of better flavor and aroma, and generally better looking.

W. R. Fountain, Newcastle, Placer County: Irrigated fruit is larger and prettier and is all right to eat.

A. E. Burnham, Healdsburg, Sonoma County: I had twenty-five years' experience in growing fruit and vegetables in Utah, where I had to depend on irrigation, and I raised as fine peaches, plums, and pears and better apricots than I have ever raised since coming here, both in size and flavor, and I had had as good as any seen around here.

John Rock, Niles, Alameda County: The character of the fruit depends upon how the irrigation is done. The use of too much water will swell the fruit at the expense of flavor.

Edward M. Ehrhorn, Mountain View, Santa Clara County: I can see a great difference in quality and flavor of irrigated fruits if not too much water is used.

A. Block, Santa Clara: Irrigated fruits are larger and better, particularly if properly fed when required. My trees are 40 to 50 years old.

S. P. Sanders, Cupertino, Santa Clara County: At the West Side drier the manager declares in favor of nonirrigated fruits on the ground of flavor, aroma, etc.

J. H. Flickinger Company, San Jose: Irrigated fruits are better in size and general appearance, but not as good in flavor.

F. M. Righter Campbell, Santa Clara County: Irrigated fruits are larger, more acid, and of superior appearance. I have not detected any difference in aroma.

H. Hoops, Wright, Santa Clara County: Irrigated fruits are larger, but they have less flavor and the general appearance is not so good. Some fruits will bear heavier irrigation than others.

W. S. Shelly, Hollister, San Benito County: Flavor and appearance are not hurt by winter irrigation and size is increased.

W. W. Hinsey, Fair Oaks, Sacramento County: Irrigated fruits are better in every respect.

J. W. Violet, Lone, Amador County: The size and general appearance of fruits is greatly improved by irrigation, and that is the principal point to be gained for the grower.

J. M. Harris, Miami, Mariposa County: Irrigated fruit has better color and finer appearance and just as good flavor as nonirrigated. All kinds of fruit must have a certain amount of moisture, natural or artificial.

Frank Femmons, Ahwahnee, Madera County: Irrigated fruits are better developed in all their qualities if water is used with good judgment.

C. A. Walter, Independence, Inyo County: Irrigated fruit is twice the size, is sweet, and of the finest flavor.

N. J. Cooley, Bishop, Inyo County: Irrigated fruits are generally larger, but if irrigated when ripening the flavor is injured, especially in the case of winter apples.

W. T. Kirkman, Merced, Merced County: In this region irrigated fruit is superior to unirrigated in all respects.

Dr. W. N. Sherman, Fresno, Fresno County: Irrigated fruit is superior in size, quality, and flavor. Irrigated trees come into bearing in one-half the time of other trees.

George C. Roeding, Fresno: Irrigated fruits average much larger and as a rule are much brighter in appearance. The flavor of fruits adapted to this section is very good and all are irrigated unless water is available by underflow.

Thomas Jacob, Visalia, Tulare County: Irrigated fruit is usually much larger and finer looking than fruit grown without water, but there is some question as to flavor.

J. V. Webster, Creston, San Luis Obispo County: Fruits properly irrigated are almost invariably larger and finer in appearance, but usually not so fine in aroma and color.

James A. Girard, Cayucos, San Luis Obispo County: Irrigated fruit is larger and better in general appearance, but the flavor and aroma are not improved. I am inclined to believe that on good soils fruit does as well here without irrigation as with it.

Elwood Cooper, Santa Barbara: Where it is possible to grow fruit without irrigation the quality is better; they are more firm and better in every way.

O. N. Cadwell, Carpinteria, Santa Barbara County: Our English walnuts need more water than we can get to finish up their growth and ripen, as the moisture

leaves the ground fast from the last of July to September 15, when they seem to call for more. Most of our apples, pears, and peaches are poor without irrigation.

E. S. Thacher, Nordhoff, Ventura County: In high, well-drained situations, such as that of this ranch, all kinds of fruits that will grow here may be irrigated to their great advantage as to size and beauty and with no loss of flavor and aroma. Some restraint should doubtless be used when fruit is filling out, but to keep a tree in lively, thrifty growth by a continuous supply of moisture in a well-cultivated soil can only improve the quality of the fruit as well as the quantity.

H. J. Dennison, Nordhoff: Irrigation will give fruit one-third larger and more juicy.

Robert Dunn, Fillmore, Ventura County: Irrigated fruit is better in size, quality, and general appearance.

F. F. Stetson & Co., Los Angeles: Irrigated fruit is better in size and general appearance.

H. E. Chesebro, Covina, Los Angeles County: Irrigated fruit is larger, better in flavor and color.

H. D. Briggs, Azusa, Los Angeles County: Irrigated fruit is far superior, provided the water is not applied too near the ripening. With us water should not be used closer than three weeks of ripening.

Henry D. Engelhardt, Glendora, Los Angeles County: Water must be used with the best possible judgment, and when thus irrigated a tree or vine, if given proper cultivation between irrigation, will produce fruit which for size, flavor, aroma, and general appearance will doubly surpass that from a nonirrigated tree or vine.

J. A. Graves, Alhambra, Los Angeles County: For my own use I would prefer deciduous fruits grown on proper land without irrigation, but as a commercial proposition I should prefer to grow these same fruits with irrigation.

William Chappelow, Monrovia, Los Angeles County: Irrigated fruit is by far the best in every way.

W. W. Bliss, Duarte, Los Angeles County: Irrigated apricots, plums, and peaches are larger and more juicy; the pits of the peaches are more apt to split. These same fruits unirrigated are firmer, finer flavored, and contain more sugar.

L. L. Bequette, Whittier, Los Angeles County: The flavor of nonirrigated fruit is better, as it is not so watery.

J. Edson Smith, Santa Ana: I have been growing deciduous fruits for twenty years. As a general proposition, such fruits grown in Southern California, with proper irrigation, are better in size, flavor, aroma, and general appearance, both of fresh fruit and dried or canned, than fruit grown without irrigation.

C. P. Taft, Orange, Orange County: Irrigated fruits are, in my opinion, superior to nonirrigated, climate and soil being the same, except when raised on naturally moist soil where irrigation is unnecessary.

A. S. Bradford, Fullerton, Orange County: My experience has been entirely in favor of irrigated fruits. I have neighbors who are trying to grow deciduous fruits with no irrigation, and hardly ever have any fruit. They wonder how I always have fruit in abundance and so fine. The secret is in the use of water. Irrigated fruits are very much finer, larger, and handsomer, and the flavor is excellent—none better.

J. B. Neff, Anaheim, Orange County: Irrigated fruits are usually much larger and finer in appearance.

C. J. Merryfield, Colton, San Bernardino County: Irrigated fruits are larger and of finer appearance, and as good in flavor as can be had.

W. S. Corwin, Highland, San Bernardino County: If properly irrigated and thinned, the irrigated fruit is larger, better in flavor, and in general appearance.

I. Ford, Redlands, San Bernardino County: Nonirrigated apples have high color, but in a dry year particularly are very much smaller and of poorer quality.

W. E. Atwater, Riverside, Riverside County: Fruit from irrigated trees is larger and more juicy, but when over-irrigated the fruit lacks flavor.

Edward L. Koethen, Riverside: Our fruit is all irrigated, and apricots from nonirrigated trees are small as compared with ours. Olive trees will not bear here unless irrigated. Orange trees would die.

James M. Hyne, San Marcos, San Diego County: Irrigated fruit with me is larger and more fully developed, with flavor fully as good and in fact more luscious.

H. Culbertson, El Cajon, San Diego County: In our soil all the good qualities of fruits are improved by proper irrigation. I mean by proper irrigation the amount and frequency necessary to keep the tree in a thrifty condition so that at no time does it show lack of water. The soil may be oversupplied with water, when both flavor and aroma may be seriously affected. On our dry soils, without water, peaches will have a

bitter flavor about the pit that is never found with irrigated. Apples without irrigation are small, thick-skinned, tough, and altogether undesirable, while if well supplied, say four inches per acre per month, will give good-sized, thin-skinned, tender and juicy, good-flavored fruit. With oranges the more regular and proper the supply of water the better the quality; very little water will not produce sweet fruit. Improper irrigation of oranges is doing much against the reputation of California oranges.

Chester Gunn, Julian, San Diego County: Irrigated fruits are larger and of as good flavor if properly irrigated, but when heavily irrigated, just as ripening, they are apt to be hurt.

C. J. Johnston, San Diego, San Diego County: Properly irrigated fruit is always superior. Size, flavor, aroma, and general appearance are almost under control of the grower who has irrigation water.

The foregoing testimony certainly establishes beyond question the quality and commercial standing of irrigated fruit through more than a thousand miles of distance along the Pacific coast. In this distance the conditions range from fairly wintry to strictly semitropical and from fully arid to quite humid, judged by the annual rainfalls in the different localities. In all these wide ranges there is the evidence of extended experience that irrigation improves fruits in all respects, provided water is supplied at times and in amounts which trees under the different circumstances require for the best discharge of their fruit-bearing function. Obviously there are conditions under which irrigation is unnecessary, and there is irrigation practice which may tend toward the development of some desirable characters and the loss or reduction of others, but these facts do not militate at all against the wise use of water. The cases in which preference is expressed for nonirrigated fruits are manifestly those in which the natural moisture, conserved by thorough surface cultivation, is adequate. When this is the case, an excess of moisture by irrigation is liable to work injury by enlargement at the expense of quality, and growers are quick to detect this, but the other end of the scale, where quality is lost because the moisture is inadequate to the development of fair size, is more apt to be overlooked. The bent of the tree seems to be toward the attainment of size in its fruit. If it is sharply arrested in this by drought the fruit is tough, acid, and scant of perfume. If the moisture is excessive, so that the tree has free course to indulge its bent for size, it fails to develop quality.

THE STABLE.

CONDITIONING A HORSE.

There is nothing that makes or mars a horse like condition, says a Colorado writer for the Breeders' Gazette. He may have speed and stamina, but without condition he can show neither to advantage. A thirty-dollar horse in condition will give you a better ride or drive than a \$300 one without it. Men who have been in training know the immense difference between the exuberant feeling of perfect condition as compared with that of ordinary good health.

Most roadster horses in this country possess sufficient speed to do 15 miles an hour without distress, but very few of them are conditioned to do it. A horse with 2:40 speed—a speed which I believe to have been inherent in horses for the last hundred years—is not going three-quarter speed at a four-minute clip, but can be eased one minute and twenty seconds in every mile from his extreme clip, which is a very moderate one to begin with. When a horse does even six miles in 25 minutes we begin to think him a little bit out of the common. I am free to say you will find more horses in Britain that can do 14 or 15 miles an hour than in this country, even with the handicap of heavy traps, macadam roads and less attention to shoeing and correct balance. There is more attention, however, to exercise and the feed is heavier.

In these remarks I only wish to touch on the subject in so far as it affects the man who cares in the main for his own horse, such as the farmer and the farmer's son.

The conditioning of a horse should begin before his breaking, which should never be undertaken with a horse either too fat or too thin; but he should be a bit above himself and in as strong muscular condition as possible. To reach this condition he must be well grained and he may run part of the time on thin pasture and part of the time in a dry lot and should be gradually accustomed to being without food for periods equal to those when he is put to work. It should be the same with his hay which he should receive at night and only of such quantity and quality as he will eat up clean.

When you hitch, do so an hour before his feeding time, when he will be empty but buoyant. As soon as he has walked out of the yard let him go along the best gait he is capable of for half a mile, not more, and stop him before he is winded. Get down and rub him over and wait till he has thoroughly recovered his wind, then start him back and let him again go as good a clip as he is capable of. Do not whip him if you can help it and especially do not tap him if you are compelled to use the whip; hit him so he knows it is not flies on him, but better pull him up. When you get back turn him in the grass lot; he will cool himself out as well as you can do it. This horse having been used to plenty of grain should not stock if treated in this way. As soon as you think he has cooled properly catch him and give him his grain. I always have water in the lot where I turn them, no matter how hot they are.

Do not drive him again for three or four days. There will be some soreness though it may not be apparent. Let him walk it off. Your object must be to accustom your horse to normal recovery from his exertions, to put him through a gradual hardening process and to keep him outside enough so that he may always have exercise. As a rule a horse that will not take exercise in a lot by himself will not make a good roadster, though there are of course exceptions, and a very few will take too much.

Increase the distance you work your horse very gradually as he shows fitness for it and when you begin to drive him long distances I should prefer to stop and hitch him rather than let him walk much. Let him stand till he blows out, say 10 minutes. If you walk the average horse after a smart trot of four miles and he is winded he will walk slovenly and get into that habit. I prefer to take him out occasionally and let him do nothing but walk whilst he is fresh and develop smartness in this as in the trot.

A horse, however, must learn to recover his wind while still going a good pace, if he is to make a good roadster, and he will learn to do this if you give him a chance and ease him with judgment. If you do walk your horse walk him down hill or on good roads, not where he has to pull hard. In about 60 days a horse that has been broken the year before should begin to carry a pretty good road gait for from five to seven miles with a break in the middle, but watch his wind and do not urge him when he is blown. He should at the end of the journey and getting into town with other horses take some interest and have a good spurt left in him—what the old post boys used to call "a trot for the avenue."

This is a good time to be careful and not spoil a good horse and only try to pass horses a good bit slower than he is so he can do it easy and is encouraged. You have not got condition yet to wear them down if they are faster than he is. Say your horse takes you to town seven miles in 40 minutes, not very fast, but keep him there for two or three weeks till he is doing it easily; rate yourself and him over the road. You will find that he works easier and faster over some parts. Study him and let him out gradually. On reaching town do not put him at once into a stable on a board floor. Hitch with a cooler on him, do an errand or two and drive him round three or four blocks to the stable.

I have left the feeding to the last because I believe this is pretty near the whole thing. Many of the best horsemen will tell you that hay, oats and a bran mash once a week are all a horse needs. I do not think so. Race horses get grass and even then there are only a few men who can keep them on an edge for a length of time. A fractious horse will work well on barley and a plug may be stimulated by beans and oats. A few grains of corn among his feed will tempt a shy feeder.

If you horse's bowels are working regularly and he is not costive and at the same time he does not get too fat, there is no danger that you are over-feeding him. Fullness of muscle is what you want.

Assuming that a horse has been gradually accustomed to a concentrated ration for a year or more I prefer to feed him four times a day—in the morning as soon as convenient, at 11 a. m., which makes him ready to go immediately after dinner; his hay and a small feed at 5 p. m., if I return so soon, otherwise a feed on the road, and his last feed about 8 p. m. With a gross feeder use a lighter bulkier feed than with a shy one. For the average horse I like to bring my grain up to 45 lb. to the bushel and when required lighten it by the use of more oats and bran. I do not use much corn as it sweats horses, but rye, wheat and barley are all good and make a variety. The first two may be used as one-fourth of the feed each to two parts of barley or oats. I mix my feed as I feed it as I think a horse requires, making it stronger or lighter at any meal. To a 1,100lb. horse I feed about 14 lb. of grain

and 10 to 12 lb. of the best hay—rye and barley in the morning, oats at noon, oats and wheat at 5 p. m., rye and barley and two quarts of bran at night with a handful of alfalfa. I use crushed pure flaxseed all winter as a laxative and to clean the skin a little glauber salts and alfalfa as indicated. If a young horse needs toning up I use strychnia. In summer I depend on grass or cut green feed.

Here I believe is the crux of the matter in bringing horses into condition and keeping them there without getting stale. I was never so situated as to want my steady horse full of bran mash. I may have to go for a doctor or a friend may drop in and want to drive 40 miles. I do not want to take medicine Saturday nights except when I do not want to go to church Sunday. Keep your horse regular all the time by seeing he drinks enough water. In very cold weather take the rock salt out of his manger and feed him a big teaspoonful of salt in his morning feed and try to keep water by him all the time, summer and winter.

Having once got your horse into condition do not, if he gets a little lame or you do not need him, suddenly take his grain all away from him. It is cruel to the horse and it is extravagant. It costs money and takes a year to get a horse in condition. I prefer a horse that can do some work on the farm so that if his legs or feet seem to need a let up, he can still be well cared for.

THE STOCK YARD.

THE KIND OF STEER TO SELECT FOR A FEEDER.

The ability to select stockers and feeders intelligently is one of the first and most important lessons for the stockmen to learn, writes Prof. H. W. Mumford of the University of Illinois in the New York Tribune. Profits in steer feeding come not so much from skill in feeding and management as from intelligent buying and selling. The possibility of profit resulting from an increase during the fattening period of the value per pound of the initial weight of the animal is as great as is that resulting from the method employed in the feeding and management. It is seldom possible to produce at a profit gains which do not increase the value per pound of the animal. Hence the importance of intelligent buying, or the selection of feeders and stockers of good quality.

Fancy Selected Feeders.—Relatively very few of this grade of stocks and feeders find their way to market. Breeders in any of the cattle feeding sections fortunate enough to own thinnish steers of such quality usually hold them until as prime bullocks, or sell them at home to feeders at good, strong prices, avoiding the expenses incident to shipping. Fancy selected feeders must not only possess the characteristics of choice feeders, but they must be uniform in color, must give unmistakable evidence of being high grades of some one of the beef breeds, and they are almost invariably better fleshed than feeders of the good to choice grades. Fancy selected stockers and feeders are to the stocker and feeder class what prime steers are to the beef cattle class—the best grades within the class and practically above adverse criticism.

Choice Feeders.—Steers of this grade will, like those of the fancy selected grade, under proper management, develop into choice and prime steers. It would seem wise, therefore, to consider in detail their desirable characteristics.

It may be said, then, that we demand in choice stockers and feeders, first, the ability to finish as choice or prime steers; and second, the ability to make economical gains in flesh and fat. As far as our present knowledge of the matter goes we look for indications of these tendencies in the form, quality and constitution.

1. **Form**—The general form should be low set, deep, broad and compact, rather than high up, gaunt, narrow and loosely made. Stockers and feeders should be low set or on short legs, because animals of this conformation are almost invariably good feeders and capable of early maturity. They should be deep, broad and compact, because this conformation indicates good constitution, capacity for growth and for producing ultimately a relatively high percentage of the most valuable cuts. Select feeders with broad, flat backs and long, level rumps. They should possess straight top and underlines, which should be nearly parallel; should be low at the flanks, thus forming what we have spoken of above as good depth, for the barrel of stockers and feeders as well as the dairy cows should be roomy. An animal which is too paunchy, however, is objectionable to the butcher.

Secure as much smoothness of outline as is consistent with low flesh, being especially careful to avoid too great prominence in hips, tail, head and shoulders. Avoid rough, open shoulders, sway backs and large, coarse heads with small eyes set in the side of the head. Short, broad heads and short, thick necks indicate strong

tendencies toward beef making. A large, prominent and mild eye is to be desired. The mild eye denotes that the animal has a quiet disposition, which all feeders know is so desirable in a steer intended for the feed lot. The lower jaw should be heavily coated with muscle; the muzzle, lips and mouth should be large but not coarse.

2. **Quality.**—It is well to distinguish between what might be called (a) general quality, and (b) handling quality.

(a) By general quality is meant general refinement of external conformation, as seen in the head, horn, bone, compactness and smoothness of outline. General quality is affected by nothing so much as by breeding—in fact, the two are very closely associated. Good quality is seldom found in a plainly bred steer, but is generally characteristic of a well bred animal. The desirability of general quality cannot be too strongly emphasized. While it is a characteristic that involves many points and is difficult to describe, its presence or absence is quickly discerned by the trained eye of the intelligent buyer. It is this characteristic in the stockers and feeders more than any other that we depend upon as indicating that the animal has within it the possibility of making a prime steer.

(b) Good handling quality indicates that the possessor is a good feeder. It shows that the animal is in good health, or thrift and capable of beginning to gain as soon as an abundance of food is supplied. We speak of cattle as possessing good handling quality when the skin is mellow and loose. A thick, mossy coat of hair of medium fineness and a moderately thick skin are also desirable.

3. **Constitution.**—The points indicative of good constitution have practically been covered under form. Good constitution is indicated by a wide, deep chest, by fullness in the heart girth, depth and breadth of body and good handling quality. While we want refinement of form and bone, otherwise spoken of as general quality, we do not want that refinement carried to the point of delicacy. Too much refinement means delicacy or a lack of constitution, and no animal lacking in constitution should find its way into the feed lot. In the interest of uniformity in the finished product it should be observed that high grade Herefords can usually be put on the market with the fewest number of days of full feed and suffer most from carrying beyond the point of ripeness; that Shorthorns and Aberdeen Angus grades, while a little slower to mature, are in fully as strong demand in the market as are grade Herefords; and that Aberdeen Angus and Galloways may be carried longer on full feed than other breeds of beef cattle without indications of bunches or rolls of fat, which are so strongly discriminated against in our markets.

After all that may be said, however, as to breed, the important consideration is to see that the steer should be a high grade of some one of the beef breeds, and that the selection of the individual should receive more attention than the selection of the breed.

The question of age should not be overlooked. A thrifty young steer of good weight and in good flesh is to be preferred to an older, stunted steer. It should be said, however, that a stunted steer of any age or weight is a profit spoiler in the feed lot. Uniformity in color of feeders is desirable, but the mistake should not be made of getting uniformity of color at the expense of more important characteristics. It is possible to secure good colors, reds and blacks, in steers of very poor quality and containing very little beef blood. If it is a question of choosing between a combination of good quality and correct conformation, and good colors, take the quality and conformation, and let some other party have the colors. The writer has sometimes thought it is a disadvantage rather than otherwise that most registered beef bulls are so prepotent in transmitting their color markings. A one-eighth blood Hereford may have Hereford markings, or a one-eighth blood Angus the color and polled characteristic of the pre-Angus and have little beef character.

THE MARKETS.

WHEAT.

The wheat market all over the United States continues firm, although without any great volume of trading. Locally, the new crop is now too near to admit of any great interest in spot wheat. There is some little speculation on wheat to arrive, though as yet the new crop is hardly near enough to encourage this sort of trading. There is some little demand for wheat in Southern California and shipments are coming down from Portland. Exporters' wants are limited and shipping interests could probably lay their hands on all the wheat they might need in case any business should develop. In Europe buying is quiet as everybody is waiting for the grain fleet from Australia and the Pa-

cific Coast States to arrive. About 50 vessels are due to reach the United Kingdom and the continent during the next few weeks. Crop prospects in California are a little uncertain, owing to the doubt as to just how much injury was done to crops by the late rains. This week's advices from the San Joaquin valley are to the effect that the damage was less than that given in earlier reports. Large tracts of wheat in Fresno county and elsewhere which were reported as flat on the ground will, it is understood, be saved with comparatively small loss. In Oregon and Washington the crop outlook has not changed since last week. The rains of the early days of June have proved beneficial to spring sown wheat in those States and on the whole the outlook is said to be excellent.

FLOUR.

The flour situation on the coast is about as heretofore though the market is somewhat firmer with a tendency to higher prices. This seems to be due to the firmness in the wheat market rather than to any improvement in the demand. Buyers, whether for export or for domestic purposes do not seem disposed to do any extensive trading at present prices. The promise of increased orders for export seems to have been checked by higher prices and so far there have been no sales for the Orient except small lots which went at the old prices. Shipping to the Orient in small lots continues from Portland and Seattle, but there have been none from San Francisco during the week. A few small lots have, however, cleared for Central and South American ports. The export season for this year is considered over for all coast ports except Seattle, from which place eight or ten thousand tons are yet to be shipped. In San Francisco prices are now held at from \$4.70 to \$5.10 for extra family grades.

BARLEY.

The barley market has been weaker during the past few days under the influence of large crop prospects. Shippers are now figuring on a 400,000-ton surplus for export purposes. Some little business has already been done on new feed barley. Prices are still very indefinite with growers holding at \$1 per cental. Some sales have, however, been made at 97½ at Stockton. Quotations have generally been held at from \$1 to \$1.07½ in San Francisco with practically no business being done. As a matter of fact, there is but little interest manifested in the new crop, though all dealers are talking low prices. Reports indicate that the growing crop is not only very large, but of unusually fine quality. At the northern coast cities the situation is very firm with stocks very low. In the Portland market, feed barley is selling at \$24 per ton and would be higher except for the fact that corn is still being largely used for feed purposes.

OATS.

The oat market is easy with no receipts. The crop outlook throughout the West is generally poor and the situation should firm up as soon as new oats come in. Eastern oats have advanced and, as it will be several weeks before any new crop oats come in, prices may advance at any time. Stocks all along the coast are very light.

CORN.

Locally there has been no change in the corn market for several weeks. The situation here is entirely dependent on the East, though very little interest is manifested. In Chicago the corn market has been somewhat unsettled with futures generally a little lower, owing to improved crop prospects in the Ohio valley with cash corn on about the same basis as heretofore.

MILLSTUFFS.

The market for millstuffs is a little easier, though prices are quotably unchanged and the demand about as heretofore. The greater activity at the flour mills has helped to supply the deficiency in millstuffs and the supply is now adequate for the demand all along the coast. Locally, the total volume of business is not very large, but in Portland considerable trading is being done.

HAY.

During the past week there has been a steady increase in shipments of hay to market, as the Southern Pacific Company is gradually getting into shape to handle business. During the week 3,400 tons were received as compared with 3,148 tons for the week preceding and 2,300 tons for the week before that. Except for the fact that the San Francisco market has been absolutely bare for a month past, present arrivals would have been heavy enough to depress the market. As it is, all arrivals have been readily absorbed and even a continuation of the present situation would hardly over-

supply the market in the near future. Arrivals by water have fallen off, indicating that the bulk of the old hay stored in the bay warehouses has been marketed. Good new wheat hay is now coming in from Contra Costa county, and in the near future arrivals of new hay should come in freely. Old crop hay is expected to rule from \$2 to \$3 higher than the new for several weeks.

WOOL.

Wool continues to be firm even at the high prices being realized. The last of the wool held by the Sutter and Yuba Wool Growers' Association was sold a few days ago at prices ranging from 18 to 22 c. These prices are not quite so high as those realized the week previous, but on the whole the situation has not changed. Advices from Boston state that trading in the wool market is comparatively quiet on the general run of offerings, though there has been a renewal of interest in the new clip. Fresh arrivals have been bought quite freely and the outlook is for increased business shortly. Receipts for Boston for the week amounted to 4,362,000 lb., while deliveries amounted to 3,750,000 pounds.

HOPS.

The hop market continues to be in pretty fair shape with prices as before quoted. There is now considerable activity in both the new and old crops and the situation is generally considered as favorable to sellers. Good quality hops of both 1905 and 1906 crops are held at from 10 to 12 cents.

BUTTER, CHEESE AND EGGS.

The butter market shows but little change, though the situation is probably a little firmer for creamery goods. Packing stock is fairly steady. Cheese prices have eased off a little under the influence of free arrivals. The liberal storing of cheese has, however, had a good effect and arrivals are being taken care of in good shape. Eggs have been dull notwithstanding comparatively limited arrivals. Some little surplus, which accumulated a few days ago, was sold at concessions. At present, however, the market appears to be more steady and it is believed that the present slightly lower prices will have a steadying effect on the market.

POULTRY.

The poultry market continues in a most unsatisfactory shape. This market seems to be the last of all the produce markets to revive from the demoralizing influence of the fire. This is doubtless due to the wholesale destruction of hotels and restaurants and to the generally unsatisfactory condition of the present methods of cooking. Practically all of San Francisco's cooking at present is on the short order basis, and naturally there is very little chance for the use of poultry. As in the previous weeks, the only demand of any consequence is for large stock.

VEGETABLES.

New potatoes are arriving in larger quantities and although the quality is good and the demand steady, the market is a little easier. There has been but moderate arrivals of onions and these under an average demand for local use and a good inquiry for shipment by rail have been quickly closed out of first hands at satisfactory prices. The top price for new potatoes is now \$1.25 per cental. The demand for old Oregon burbanks is largely confined to seed purposes and prices for these are very easy. Summer vegetables, including string and wax beans, cucumbers, summer squash and green corn, are weaker under free arrivals. Green peas are held firm owing to large purchases by canners at 1 c. per pound.

FRESH FRUITS.

Except on a few varieties which are just coming in, the market for fresh fruit has been generally weaker. Watermelons are beginning to come in from Coachella valley, the first arrivals selling at 6 c. per lb. Thompson Seedless grapes are now on the market at \$2.25 per crate. Apricots are in rather limited supply and first quality fruit is firmer at higher prices. Apricot cutting is now in progress in Kings county, where the crop is reported as very light. In the Sacramento valley buyers for the canning plants are holding off and so far very little fruit has been contracted for. Some small lots of peaches have been sold for future delivery at from \$50 to \$60 per ton, though growers are generally asking \$60 for first-class fruit. Cherry prices for good fruit have advanced, the bulk of the crop going to the liquor men for maraschino purposes. There is a renewal of interest in the shipments of fresh fruit, though the failure of the cherry crop and the cool weather of the last few weeks have kept the shipments far behind those of last year.

DRIED FRUITS.

The dried fruit market shows a continuation of the previous situation. Small quantities of dried peaches are still held in the interior, but holders are not disposed to part with them at present. Prunes remain on a 2½-c. basis and some small lots of the growing crop have been contracted for on that basis. The prune outlook is for a fairly good crop in most sections. In this city trading in all lines is very restricted, owing to broken assortments and small stocks.

CITRUS FRUITS.

Oranges were in very light supply early in the week and prices went higher; later several cars came in and the market was to a certain extent overloaded. The demand fell off and a portion of the fruit was sold at considerable concessions. Lemons also eased off, though quotations on the latter were not materially altered. A small shipment of grape fruit arrived this week, and as it met an active demand, prices have ruled firm.

BEANS.

Not much interest has been taken in the bean market this week. Prices on most descriptions are lower, though the change has not had a stimulating effect so far. The crop outlook is good and at least a normal yield is expected in Southern California and in the San Joaquin valley.

NUTS.

Nuts are in light supply in San Francisco and only a limited amount of interest is shown. The growing crop is attracting some attention, though there is as yet but little evidence on which to base estimates. In the Livermore valley and in some other sections the almond crop is reported to be a failure.

THE GARDEN.

WHAT TO DO WITH THE SNAILS.

California is a great place for snails in a wet winter because the warm weather gives them a long growing season. Gardeners are hard pressed to keep them down. Perhaps making game of them would make them so desirable that they would be made scarce, as are other desirable things.

"From the epicurean point of view there are snails and snails," says the Manchester (England) Guardian. "Those of Burgundy have long been famed for their exquisite flavor and delicacy. Nowadays, however, that district contributes but a very small proportion to the world's output, the principal reason being because of the treatment of the vines with phosphates. The Department of Jura is the center of the industry, and Basses Alpes and Cote d'Or and Provence follow next in order. The variety held in highest esteem by connoisseurs are the large white kind, those of the gray hue coming second best; and it is very interesting to observe the snail gatherers in the dew of the early morning pick up the slimy creatures off the ground, which is literally covered with them, and pack them into receptacles. When first brought in they are placed inside specially constructed baskets, and there they remain without food for about a whole week. They are subsequently placed in a mixture of vinegar and water, and sometimes salt and water, for about 12 hours, to be removed at intervals for cleansing purposes. They are now ready for the cook, who, with the aid of innumerable other good things, contrives to concoct the dishes so dear to the heart of the Frenchmen. It may incidentally be noted that escargot designates the large and more luscious variety, limace and limaçon denoting the other varieties, which, though smaller and without such an exquisite flavor, yet are in demand.

"Some of the large farms of Jura produce an enormous quantity of snails. The cultivated species are usually gathered in April, May or June, when they are consigned to the towns in perforated cases, while those which are artificially reared are gathered in August, September and October. Fields are given over to the creatures exclusively, who laugh and grow fat, as it were, on clover, cabbages and other nourishing greens. It may be remarked that, if properly prepared with a paste or sauce of garlic, or fine butter, they are succulent enough; but, of course, one must, for the time being at any rate, endeavor to forget the slime from which they cannot be dissociated.

"In Switzerland the people who originated the dish were the monks, and it is significant that snails were first tasted during famine times. Later on they bought large quantities from the inhabitants of the Rhine valley, and as the taste 'grew on them' they came to consider the dish a delicacy. With the exception of one or two establishments, however, the industry has not assumed any importance in that country. The fields

which are given up to the propagation of the snails in Switzerland usually lie at the edge of a wood, sheltered from the sun. The soil is well limed and sanded, and round the land is built a wall, perhaps two feet high, the inside and top of which are washed with vitriol to prevent the 'stock' from escaping. When it is said that a plot about two square yards is sufficient to accommodate 1,000 snails one can pretty well judge the capacity of a large farm. They are collected about the beginning of August after they have laid their eggs, which, in some of the larger species, are as large as peas, and then placed in a special field where, in wet weather only, for they are torpid when it is dry, they fatten on nettles, bran, cabbages and field hemp."

EASTERN COMMENTS ON CALIFORNIA FLOWERS.

The delight of the Easterner with the wonderful freedom of growth of flowering plants in California is a perennial pleasure to the old resident of this State and we doubt not the comments of Janet Hay in a recent issue of the Floral Life will find many appreciative readers in our circle. She writes of "Pacific Coast Floral Glories," which term is in itself an indication of her spirit. She writes first of an outbuilding originally designed by man to be a gas-house for the private manufacture of that useful material, but it had been transformed by nature into a thing of glory. Imagine a building about 12 ft. square with a peaked roof and with its four sides and top one mass of color, such a mingling of tints, gorgeous purple and gold, and a blush of pink as if the roses were blushing at their own beauty. A huge vine of wistaria, of that delicate mauve purple, had rushed up one side and hurled itself in a mad luxuriousness to the side beyond where it intertwined with the threads of the rose branches. The rose had been started on the other side of the building, but it, too, had quite burst its bounds, and had spread over the sides and roof, with its mass of lovely green foliage and its spatter of luscious Gold of Ophir blooms. [It was the Beauty of Glazenwood, not the Gold of Ophir.—Ed.] If one has never seen this rose it is hard to picture them as they hang, semi-double, with their back curled petals, gold, bright and burning at the heart, next the orange stamens, and paling to a delicate, lovely sunset pink at the edge, and such masses of them, literally thousands, as thick as they can hang, and peeping out between the graceful delicate tassels of the wistaria, making a most royal color of combination, and a most intoxicating blending of perfumes.

As if nature had not done enough in thus covering the ugly outlines of the old building with this superb blanket of glory, man had, in time past, set at the foot of the wistaria a border of gorgeous deep red geraniums, which burned like the fires of an altar of some devotee at the shrine of the beauty above, and over all the brilliant sunlight of California, flooding a sky of a blue known in no other part of the world.

On first coming to Southern California from the East, one feels that the world has suddenly commenced to show itself in superlatives, the flower world, I mean, for though one sees many new plants, still it is the immense size which our back home favorites attain here that seems the most amazing. Think of a lovely delicate lavender heliotrope stretching its fragrant blooms on a sturdy bush to the very roof of one's piazza, and spreading over a wide surface perhaps six or eight feet. The heliotrope likes to do that here, and does it when it gets half the chance.

The lantana, we grow in pretty jardinières and are delighted when it throws out nice thrifty branches two feet long with their dainty red and yellow flower bunches; well, in a door yard just below us here are several huge shrubs of this plant, five or six feet high and bushy and covered with flowers, and some of the plants of pink and white, a color in them I have not been familiar with.

Not far from us in a yard where a fuchsia holds possession of one-half the front porch, and hangs its purple and red bells from even the roof corner, and the callas—we saw a hedge of them on a drive a few days ago with blossoms the size of huge soup plates, at the tops of stalks at least four feet high. Speaking of the calla, my sympathy goes out to that poor, tried soul, the wife of a pioneer, who 'way back in the early days came toiling with her husband over the miles and miles of dreary desert on a prairie schooner, to seek a home in this wonderful new land, and among her most choice possessions was a feeble calla that she had loved and nursed through many a scorching summer and frigid winter in her eastern home. Other things she had left gladly behind but her beloved calla she must bring, and when she reached California at last and saw the callas growing thriftily out of doors as hedges, and spreading so that they are almost a nuisance she pitched hers out over the wheel of the wagon with a sigh of regret at her insistence. As a dividing hedge between

town lots in front yards, the callas are used very extensively in Los Angeles, and they serve the purpose nicely as they require only an occasional bath from the hose to keep them clean and cheery for the joy of all passersby.

Another plant which grows here into a high bush is the marguerite. We see it at home in the florist's windows in the winter, a hot-house relative of our common field daisy. Here it of course stays out all the year, and I have seen them like immense balls perhaps fifteen feet in circumference, and covered with the pretty white flowers.

We who are so proud of the summer growth on our bed of General Grant geraniums at home, should see the geranium out here, where it thrives with almost no care, and is often used to screen unsightly back yards, where it gets to the top of the highest fence on a jump, and sometimes pokes even into second story windows. One in our town yard has skipped lightly up the side of the highest branches of a lemon tree, and stretches its red flower heads to a level with the topmost tip of the lemon's glossy leaves. All you have to do is to stick a slip in the ground, water it a few times, and then go on about your business and nine times out of ten it will begin blossoming even before it has made a root, and in a short time you will have a fat, sturdy little plant that keeps right on growing until its stalks become sometimes as thick as one's wrist.

If you will be so encouraging as to point the hose at it occasionally, and sometimes snip off the old flower heads, the geranium will amply repay your thought by doing itself proud in great healthy leaves and clusters of huge blossom heads. I found one big bush just bursting with lovely ruby heads of bloom part way up the tiny canyon that begins its winding way mountainward directly back of our home. Sometime a bird had perhaps dropped a seed when the soil was moist from the winter rains and now the lovely plant was singing its floral song of praise to its great Creator.

Here where the cactus grows wild on the sand of old river beds you will see some ancient veterans stretching ungainly branches like dilapidated scare-crows, but a little later, when summer comes, the ugly angles will be vivid with color.

From a trolley window the other day, I saw a lovely pink rose pushing its blossoms out from the top branches of a live oak tree in front of a handsome home, where roses romped over arbors, or stood like young trees, gay with bloom, on the beautifully kept lawn. May is the month when one finds them in their glory here, but when we came in November we found many lovely clusters on the bushes, for like the poor, "they are always with you." The Banksia, the thornless rose, loves to ramble over porches and pergolas, and repays a little care by its wealth of tiny, though lovely white blossoms, while just now, in the early spring, the Cherokee is spreading abroad its great white petals over yards and yards of fence, and makes a garden spot of every place where its gets foothold. Unlike many other roses it blooms but once a year, but it is so lovely then, one can forgive its reticence for the remaining ten months.

THE FIELD.

DRY FARMING.

There are two or three methods of dry farming, says the Oregon Agriculturist, which vary in detail, but all have the same end in view, and that is the saving to the fullest possible extent of all the moisture which falls upon the land for the use of the crops. The methods of doing this vary with soil and climatic conditions. The two most essential things are, first, to have the soil and subsoil in such condition that it will quickly take up as far as possible all rain which falls and will hold this moisture where it will be available for plant growth; and second, to prevent as fully as possible evaporation from the surface of the soil.

The Campbell system is the one which has been most written about. The peculiar feature of the Campbell system is the sub-surface packing of the soil. A machine invented by him has a large number of wheels which sink into the mellow soil after it has been deeply plowed and thoroughly harrowed. The action of the wheels is to firm together the soil at a depth of two inches or more below the surface. The moisture will rise to the top of this firmed surface and be available for the growth of the crops on the land. After the firming has been done the surface is made as loose as possible so as to form the well known dust mulch, through which the moisture does not rise. The Campbell system is especially adapted to countries in which the soil tends to dry out when it is mellowed.

The grain raisers of the drier portions of the Pacific Northwest have long practiced a dry-farming method of summer fallowing the land one year and by keeping the surface clean and mellow, holding the moisture over for the following year's crop.

More attention is given to dry farming in Utah at the present time than in any other portion of the country. The Campbell machine is not used there, to any extent, apparently. The farmers there find that good crops can be obtained in districts of light rainfall by plowing and subsoiling the land and then harrowing it in the most thorough manner. If there is a depth of eighteen inches of soil which has been thoroughly mellowed and the surface is harrowed many times, large yields of grain are obtained where the rainfall is so small that by ordinary farming methods a crop of four or five bushels of wheat is all that could be expected.

In raising crops of grain by dry farming methods it must not be forgotten that the growing plants suck the moisture out of the soil and throw it off in the air. Hence the dryer the country in which crops are raised the less seed must be used. In Utah yields of thirty bushels of wheat per acre have been reported when only one-fourth of a bushel per acre was sown, whereas on adjoining land seeded at the rate of a bushel and a half to the acre the crop was practically a failure.

In all dry farming countries it is usually more profitable to use the moisture of two years to raise one crop than to raise a crop every year.

In starting in with dry farming the experience of those who have made reports show that it often takes two or three years to get the land in really good condition to retain moisture. The depth reached by the moisture gradually increases for several years if the land is properly handled.

THE RANGE.

HOW TO HANDLE A WILD HORSE.

Mr. N. S. Marshall of Westbank, B. C., who has had much experience and has developed a very reasonable philosophy on training range horses, gives the Pacific Homestead an outline of his thought and practice in training a thoroughly untamed animal, keeping in mind, as he says, only the "range wild" horse, the one that never tasted hay or grain, never saw a stall or even the inside of a stable or barn, one that will try to kick your hat off, and kick the hens as they hunt and scratch for bugs near him. He may have glass eyes, bald face, white legs, and a white spot on his sides. He may be 9 years of age, 14½ hands high, and I am introduced to him in a round corral, 9 feet high and close, 22 feet in diameter, no means of escape, not even a snubbing post in the center, nothing in my hands but a stake whip—stalk 4½ feet, lash 8 feet long, silk pop.

These are the conditions under which I place the wild horse, and these are the conditions under which I place myself. My intuitiveness tells me I shall conquer, but the horse's instinct tells him he will be able to liberate himself from his environment. I know exactly what to do, and how to do it to obtain the successful result; but the horse does not even know why he is confined and has not the remotest idea as to what will be the end; he is deeply dissatisfied, wants to go to his own herd on his habitual range and watering places—only this and nothing more. Every horse under the same conditions would want just the same as this horse wishes for. Nothing remarkable about it.

Now, the horse walks around the corral, seeks for a place to escape, paws with his forefeet at the door where he entered the corral, rears on his hind legs, with his forefeet against the wall, trying to look over the top in order to jump out and run away. This is the first maneuver, practiced by all horses under similar conditions, paying no attention to the human—the man who stands in the center—except more nervous than otherwise. This is the tug of war. The battle is not to the "strong" but to the "thoughtful," and the question resolves itself to this form: What course must I pursue? The "novice" of necessity must experiment until he has gained his knowledge, but he has no time to experiment with a vicious horse. Sometimes life is too short and experiment proves fatal. The expert formulated the "modus operandi" impromptu. Just a look at the horse, a glimpse of his footfall or lash of the tail tells the story, and the expert could outline each detail almost in succession, telling you the conduct of the horse from start to finish.

The first matter to take up is the character of this horse. Determine this by his head, feet, and tail, then the "peculiarities" of his character by his feet or tail, remembering that the eye is an index to the horse's life

or his proper character; it is a sort of glass where you can read between the lines.

Of course, you cannot expect me to enter deeply in this paper into details, as it would not pay possibly to do so, as I am sketching only.

Now, granting that his character is determined, then what next? Well, sir, we must get our hands upon this horse, for if we cannot catch him he is no good to us. In all battles where blood has been spilled a treaty must be effected before peace can be established, and it is just so in this instance. How shall you go about it? I shall make a demonstration with my whip, not aiming at the horse nor even striking him, but simply exciting his energy to either run or fight—fight if vicious or run if "mild." If vicious, he will try to run first, try to jump out over the top of the corral, but when he realizes his capture he will use the tools God gave him in defense. If he tries hard to conquer you, you must punish him, but as soon as he shows the white flag, treat with him by assuring his confidence. This is done by sitting down in the center of the corral, and allowing the horse to come to your back, putting his nose on your shoulder, and possibly taking your hat off your head with his teeth, remembering at all times never to speak. The idea taught by horsemen that to be successful in schooling a colt the teacher must keep on saying "whoa boy," "come to me," "get up," etc., is wrong if not silly. Instinct gave the horse a natural knowledge of a natural language, and the horseman must either learn his language or teach him artificial signs whereby he may communicate with the horse, and yelling "whoa" or "come here to me" will not do it, as the wild horse has a very limited knowledge of language, but he can quite easily understand "signs." He studies signs like a mute.

Here is an important point never to be overlooked; never break a colt's confidence in you by countermanding your order and punishing him for the offense; be explicit at all times, using the same "language" sign or sound for the same purpose. Never change your terms by changing sounds and intonations of voice. Remember that a horse cannot tell the difference in the words "whoa" and "go"; it is all alike to him. "Jim" and "slim" are just the same, "Frank" and "plank." I know a horse that was taught to back a heavy load by the owner simply saying "back." The team was sold to a new driver, who changed the name of one horse to that of "Frank." The driver had a soft voice, rather guttural in sound; when he spoke to "Frank," wishing this horse to move, instead of moving on, both horses would back. The driver could not understand the trouble; and so it is in teaching a colt—never substitute other signs or sounds and expect proper results, because you will be disappointed. This is the reason so many men cannot catch a colt with the whip; they use the whip without understanding its language, therefore they whip either too much or too little, not knowing themselves when to whip and where, and how could they expect the colt to understand such teaching—they simply whip until the whip is worn out, or the colt is worn out. You must remember that each move or gesture is language to a colt. Standing erect or kneeling on one knee, the moving of the hand or the arm, the trailing of the lash on the ground, or a keen pop of the silk all mean business, and it is almost natural to the horse to understand the signs.

Never put your hands on a colt's nose, nor on his ears. Many colts form bad habits from a bad practice of their teacher, who wanted to rub the colt on the nose or ear before the proper time had arrived. Many horses have been taught to be hard to bridle in this way. Always put your hand on the neck, rubbing downward with the ends of the fingers. Rub the cannon and shin with your whip stick. Take up his feet. Take the hind feet up. Put no rope on him. Get on his back. Hold his tail in your hand while driving him before you around the corral. Be unanime in your expressions. Never substitute; remember this is a breach of language, and the horse will not know what you want nor understand you. Be explicit at all times. Never strike when the colt is trying to obey, as this will confound his mind and you will obtain bad results.

Never hitch a colt to a vehicle until he is ready. Hitch him the first time by the tail to a light draft, driving beside a mate in checks, then put singletree to light draft by means of a short chain and hitch colt by tugs with mate, driving in checks, always in open bridles; then when ready hitch to an open buggy, and take your Mrs. to town and come home before dark. Don't get "drunk" on this occasion for fear of an accident. Rub the colt with curry comb and brush him with a soft cloth from mouth to heels. Wash the tail and take up all his feet. Never be cross or punish except for willful negligence. Feed all the good feed he will assimilate. Use judgment at all times, and you will drive the most obedient and gentle colt that you have ever owned.

HOME CIRCLE.

TWO WISHES.

I caught a glance from Jessie's eyes,
A glint of mischief meeting mine;
She held a wishbone in her hand,
And I obeyed the daring sign.

I also held a turquoise ring
Within my mind, and hoped to say
The words that burned within my heart
To cause a change of name some day.

She held the trophy out to me,
I seized the gage ere she could wink;
And broke it short; the while I felt
The tremble of her hand, I think.

She looked perplexed, somewhat chagrined,
Then, smiling archly, made this cast:
"Since you have won, now tell your wish,
Or, forfeiting, you get yours last."

"I wished that one I love most dear
Were surely mine, and loved me true;
And that my love were near to-day,
About as near as I to you.

"And that our lives could hold no more
Than lasting joy of wedded bliss;
And that to-day a promise would
Be made and kept, sealed with a kiss.

"Now, since my wish is truly told,
To bring fulfillment on my head,
Pray tell me yours." Her eyes drooped:
"Well!

I wished your wish were mine," she said.

—Cincinnati Enquirer.

THE FARMER'S JOYS.

A man was out here, t'other day, who
traveled in a private car
And had a lot of things to say about
how lucky farmers are.
"You people here," he said, "don't seem
to know how richly you are blest;
It long has been my fondest dream 'mid
scenes like these, at last, to rest.

"You've money stored away, no doubt, so
that you need not have a care?"
"Yes," I replied, "I've got about five thou-
sand laid by here and there."
"Ah, yes," he said, "how fortunate you
ought to think yourself, my friend;
I envy you your happy state—earth's
rarest joys to you descend."

"Have you ten thousand cash?" said I.
He sadly smiled and answered then:
"I might say ten and multiply that ten by
another ten;
But as I look around me here and see the
blessings you possess
How small the joys I have appear—my
fortune shrinks to nothingness."

"I'd like to sell this place," I said; "five
thousand's all I ask, just now."
He suddenly held up his head, his look
was different, somehow.
"Five thousand for this swamp?" said
he; "why, man, I wouldn't live out
here
If anybody offered me ten times the price
you ask—per year!"
—Chicago Record-Herald.

HIS MOTHER AND DICKY.

She's a woman with a mission; 'tis her
heaven-born ambition to reform the
world's condition, you will please to
understand.

She's a model of propriety; a leader in
society, and has a great variety of
remedies at hand.

Each a sovereign specific, with a title
scientific, for the cure of things mor-
bific that vex the people sore;

For the swift alleviation of the evils of
the nation is her foreordained voca-
tion on this sublunary shore.

And while thus she's up and coming,
always hurrying and humming, and
occasionally slumming, this reformer
of renown,

Her neglected little Dicky, ragged, dirty,
tough and tricky, with his fingers soiled
and sticky, is the terror of the town.

—Tit-Bits.

STUBTOE LAND.

How would it be to steal away,
When sunny is the weather,
And leave the town, all dull and brown,
And jog along together,
Down the road in the old-time way,
By lanes and fields a-smiling,
Until we came to Stubtoe Land—
Now, isn't the thought beguiling?

It seems to me 'twould be so good
To go where nothing's hurried,
Where clanking bells and all that tells
Of strife is dead and buried;
To just forget the whistle's screech,
And things so irritating,
And where the style of clothes you wear
Don't indicate your rating.

I think—don't you—this din and roar
Just makes a fellow wonder
If all those things he used to know
Still live in Old Back Yonder.
I'm not dissatisfied with life,
And mind, I'm not fault-finding,
But how would it seem to forget, just
once,
This everlasting grinding?

How would it be to drop the mask
That we're forever wearing,
And be ourselves in Stubtoe Land—
Back of the Hills of Caring
To follow the barefoot trail along,
By lanes and fields a-smiling,
It seems to me it would be so good—
Now isn't the thought beguiling?
—Milwaukee Sentinel.

THE DAUGHTER OF THE REGIMENT.

When, after the carnage was over and
the place had surrendered, the victorious
troops of Massena, with colors flying and
the bands playing, marched into the
doomed town, Colonel Lagardere of the
Twelfth Infantry, the heroic regiment
which took such a conspicuous part in
the battle, lodged his fatigued soldiers
in the half demolished castle of Ferrara,
the huge medieval dwelling of Ferrara,
or the princes of Mollard.

Nothing is so gratifying to the victor
as to plant his tent upon the spot which
has cost him more blood to conquer.

This castle of Ferrara had been, during
the whole day, the main objective point
of attack of Lagardere's veterans, and its
capture had been dearly bought.

The Austrians, with that undaunted
courage and dogged determination char-
acteristic of their race, had defended the
ancient walls of the formidable palace
fortress for seven hours and had only
been driven from their ramparts after
the most desperate assaults.

At length the brave defenders had
been forced to yield, and now, toward
sunset, the tricolor of France waved tri-
umphantly over the parapets.

Colonel Lagardere, standing in the
courtyard of the castle, was interrogating
a few prisoners which his troops had
made, when several of his men, who had
been searching for refugees, emerged
from the basement of the castle, bearing
in their arms a child.

"Colonel," said an old sergeant, "here's
a very interesting prisoner we have just
captured."

"It is a girl," cried a soldier, "and a
beautiful girl, too. Look at her, com-

rades, a typical little Piedmontesse, with
coal black hair and blue eyes."

The Colonel took the child in his arms.
She threw her little arms around his
neck, looked at him and smiled.

She was scarcely 5 years old: yet her
plump little form shook with fear and
her wild, frightened looks told eloquently
of the terrors she had suffered during
the long hours she had remained in that
dark, cold basement, seated near the in-
animate body of her nurse, who had been
killed early in the morning by a stray
bullet which pierced her heart.

When the victorious French soldiers,
while searching for fugitives and plun-
der, found her, she was not intimidated.
Strange as it may appear, the sight of
all these men armed with swords and
bayonets did not frighten her.

Victor Hugo has said that children feel
joy and fear without knowing why. "They
have a monitor within."

"What is your name, little girl," asked
Colonel Lagardere, with deep emotion.

"Rose," she answered, "and nurse's
name is Nanette, but she's asleep now."

"Where is your mamma?" the Colonel
continued.

"Out. She went out with papa and
Joe."

Investigations were begun at once to
find out who the child's parents were,
but without result.

Night had fallen and the village had
been deserted by its frightened inhabi-
tants.

Little Rose, no doubt, belonged there,
but no one could be found who could
identify her.

Search was postponed until the next
day.

But something unexpected happened.
At midnight the village was attacked by
the Austrians. A frightful battle took
place.

Lagardere's troops were dislodged from
the castle, and on the morrow a retreat
was ordered.

The Colonel took the child along with
him.

* * * * *

Two years have passed.

The Twelfth Infantry has continued its
glorious career, greatly distinguishing it-
self at Lodi, Dego, Montenotte and Ar-
cole. Bonaparte has commended it on
several occasions in his famous orders of
the day of the army of Italy.

The regiment has a flag of honor and
a daughter.

Little Rose had been adopted and she
marches, camps and lives among her
soldier friends. She only leaves them on
the days of battle, when Colonel Lagar-
dere sends her with a scout to a place
of safety far from the firing line.

She is the idol of those stern warriors,
and all through the army of Italy she is
known as the Daughter of the Twelfth.

* * * * *

The regiment has returned to France
and little Rose has been, for the last
five years, attending school.

She is now a beautiful girl of 12. Ev-
erybody now calls her "Mademoiselle";
everybody but her soldier friends. For
them she is still "little Rose," and she
would not answer them if they called
her by another name.

On several occasions Colonel Lagar-
dere has thought of sending her to his
home that she may stay with his own
family, but she has always refused, and
besides, the soldiers have never con-
sented to part from her.

She knows no other parents, no other
brothers, no other friends than these
stern warriors; she lives among them,
and no family was ever more devoted,
respectful and loving to a young girl than
these soldiers are to their adopted daugh-
ter.

She is their pride and they more than
love her—they worship her.

* * * * *

Rose was 15 years old when her regi-
ment was ordered to cross the Alps and
enter Italy.

She marched with it as vivandiere and
shared with her beloved comrades dan-
gers and joys.

One day, in the morning, Lagardere's
soldiers occupied once more the village
of Ferrara, and once more entered the
ancient castle of the Mollards.

But it was different now. The town
had opened its doors to the French with-
out resistance; there had been no blood-
shed.

The Mollard family now lived in their
palace, and anti-French as they were,
they nevertheless offered their hospital-
ity to Lagardere and his officers.

They took their lodgings in the palace,
and, of course, brought Rose with them.

Mme. de Mollard, the proud chatelaine,
felt from the first moment the deepest in-
terest for the young girl.

She questioned her about her life, about
her parents, her ambitions and hopes.

Suddenly she uttered a cry. Rose had
spoken about her childhood. She told
Mme. de Mollard the history, so often re-
peated to her by the soldiers of the
Twelfth, of the assault of Castle Ferrara,
and how she had been discovered in the
cellar, taken out in the arms of the sol-
diers, and afterward adopted daughter of
the regiment.

"You are my long lost daughter," cried
Mme. de Mollard.

Next morning Mme. Mollard summoned
Colonel Lagardere, explained to him the
situation, and asked him to leave Rose
with her.

"Madame," replied the veteran, "God
forgive that I should deprive you of the
love of your daughter. But remember that
we, too, love her. To lose her would be
very hard for us. Nevertheless, your re-
quest being a just one, I would suggest
that we abide by Rose's own decision. Let
us consult her, and I promise that if she
chooses to remain with you she shall re-
main; but, at the same time, if she pre-
fers to come with us"—

"Oh!" cried the mother, "she will re-
main with me. I know she will."

The duchess and the colonel both spoke
to her, and, let it be said in honor of the
latter, although he loved the girl with all
the affection of a father, he did not hesi-
tate to point out to her the advantages
of remaining at home.

"What can your future be if you fol-
low us?" he asked. "On the other hand,
by staying with your mother you will find
love (the only thing we can give you) and
fortune, which we can not offer you."

Rose threw herself into the arms of the
noble officer and wept.

"This is a very serious matter," she
said at length. "Give me 24 hours to de-
cide."

Next day her mother, with all the per-
suasive power of motherly affection, had
begged her to remain.

"You are not even French," she said.
Then she added: "If you leave me again,
I shall die."

Rose looked at her mother; her heart
was won. She was about to reply, "I'll
stay," when suddenly the earth shook
with the report of a gun.

The enemy was attacking. A battle was
about to begin.

The bugles of the Twelfth called the
soldiers to the ranks.

Colonel Lagardere jumped into his sad-
dle.

"Forward!" he cried.

Rose ran to the window. She beheld
"her" regiment marching to the firing
line.

"Forgive me, mother," she cried. "I
cannot leave them when they are going to
die!"

And seizing the bullet riddled flag of
the regiment she marched with her sol-
dier friends.—Louis De Brienne in Spokes-
man Review.

CHAFF.

He—Do you think we could live on \$10 a week? She—Yes, but no longer.

The New Cook—What does your papa like for his breakfast? The Angel Child—Anything what we ain't got.

Ella—What would you do if you were in my shoes? Stella—Stuff 'em with cotton.

"Does your daughter help with the housework?" "No, poor girl, she is too tired after her physical culture exercise."

Wife—A woman's work is never done. Husband—You have anticipated me, dear; that shirt of mine lacks its needed buttons.

"Why are you burning our old love letters, Adolf, dear?" "I've just made my will. I don't want it contested on grounds of feeble intellect."

"Are you trying to make a fool of me?" "No, sir; I never try to improve on the works of nature."

"Excuse me, mum. I was goin' to try to git you interested in a face lotion that 'ud make the ugliest skin beautiful, but I see you don't need nothin' like that." "Well—er—I think I'll buy a box of it for a friend of mine."

Emma (who is a stenographer)—Is Mame very quick as a stenographer? Lizzie (also a stenographer)—Quick. She's a bird. Why, she got her last boss to propose in less'n two weeks.

Mother (teaching her child the alphabet)—Now, dearie, what comes after g? The Child—Whizz!

Rigid Devotion to Duty—"What possible comfort can you take," asked his wife, "in sitting on the pier and fishing all day for half a dozen little ring perch?" "I have the comfort of knowing," replied Mr. Kydoodle, sternly, "that I am standing out against the infamous beef trust!"

HOME REMEDIES.

Cranberries for erysipelas are used externally as well as internally.

For tender eyes make an infusion of one handful of cornflowers in a pint of hot water. Let it stand one hour. Strain and use either tepid or cold.

When a griping pain occurs in the abdomen a strong aperient should be taken at once. Pads made of hot flannels will sometimes give relief until the medicine has acted.

If you would get rid of rheumatism do that which will cause free perspiration without subsequent chilling. If you would get rid of gout, make your liver as active as possible.

Small warts on children's hands when they appear in numbers can be got rid of certainly and painlessly by keeping them constantly moist with a lotion made by adding two drams of diluted nitric acid to one pint of water.

There are five ways to cure a cold. Bathe the feet in hot water and drink a pint of hot lemonade, then sponge with salt water and remain in a warm room. Or, bathe the face in hot water every five minutes for an hour. Or, sniff up the nostrils hot salt water every three hours. Or, inhale ammonia or menthol. Or, take four hours' active exercise in the open air. Sixthly, twenty-four hours in bed is said to be able to break up the severest cold.

For heartburn nothing is better than a quarter of a teaspoonful of baking soda in a little sour milk.

When the eyes ache close them for five minutes. When they burn bathe them in hot water, as hot as can be borne, with a dash of witch hazel in it. After weeping bathe them in rose water and lay a towel wet in rose water over them for five minutes. When they are bloodshot sleep more. When the whites are yellow and the pupils dull look to your diet.

FASHION NOTES.

Women who have arrayed themselves in white for the last three summers from the tops of their hats to the toes of their shoes will continue to make the laundries rich. But this year modish persons will put the white gown over colored slips of soft-finished taffeta, cut in princess fashion. The accordion-plaited flounce around the bottom must be edged with narrow lace. Arbiters of fashion say these underbodies must be made with high necks and sleeves the exact length of those in the gown, so that, as far as the eye can see, there is an unbroken line of color under it.

When one is not wearing the flimsiest of lingerie waists she puts on the most mannish of linen blouses with a soft rolling collar, and, generally speaking, elbow sleeves with gauntlet cuffs. There are at least a dozen variations of this waist, and almost any figure may be suited. It appears in linen, pique and madras, white and colored. A good model in pique is quite plain, without so much as a tuck or a plait on the shoulders, having a wide fold down the front and a small patch pocket high up on the left side. The buttons are large pearl ones. Another in linen has two plaits on the shoulder and a very wide turnover collar. In lighter weight linen a shirt has three stitched tucks on either side of the button fold. This is the only departure from the plainness of the model, which shows the convenient little pocket. Many of the linen shirts are beautifully embroidered. The plain ones in madras are to be purchased as low as \$1.50, the prices for the others ranging from \$3 to \$10.

A great deal of attention is being paid this spring to such blouse accessories as belts and stocks. It is, after all, the details that make the perfect effect. The belt, for instance, is a very important detail, since the waistline is always important. Colored belts to match the shoes and stockings are shown.

Besides the linen belts, which are very popular, all sorts of soft leather and suede belts are worn. The pongee shades are modish, and a few white and pale colors are seen. As for belt buckles they often come under the classification of jewelry, so expensive and beautifully wrought are they. Coral, turquoise and opal matrix, topaz, tapis, and other semi-precious stones are used to embellish these lovely buckles.

The gloves of the summer bid fair to be dainty, but extravagant. Short sleeves mean elbow lengths, and in spite of all the devices for economy the long glove is a luxurious possession. However, there are certain signs that point to relief. White no longer reigns supreme. Black has taken its place for wear with all costumes, although the general tendency is to gloves that match the color of the suit. Not for many years has the silk glove been so generally used. The silk is agreeable to most people, is cool and can be obtained in a greater variety of colors than can kid, so that this new law of the matching glove is a bit easier to obey than would be the fact were it necessary to buy our gloves in suede or in kid. Qualities are really exquisite. There are, of course, the usual lightweight silks that do not wear very well.

HINTS TO HOUSEKEEPERS.

Benzine and French chalk will remove grease from matting. Scrape the chalk freely over the spot and then sprinkle enough benzine over it to moisten it. When the benzine has evaporated brush off the chalk and the spot will have disappeared.

New bread generally is difficult to cut. Dip the knife in hot water first, and you will be surprised how neatly you can cut your bread.

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decoration fill with sand. This makes them stand firmly, and they are far less liable to be knocked over and broken.

Raw potato juice will remove stains from the hands, and also from woolen material.

Try gasoline in cleaning a greasy sink. It acts like magic. Wipe the cooking stove with a cloth dipped in gasoline before applying stove blacking to it. Be sure the stove is cold and remember to keep gasoline away from fire.

After fine china is washed leave it until cool before piling one piece on top of the other. The heat may crack the glaze.

Put a sprinkle of flour on pan when frying eggs; they won't pop and will brown better.

When peeling apples use a silver knife and your fingers will not become black, as the acid from the apples unites with iron, but not with silver.

When tea stains come on linen they can be taken out even after a long time by the application of glycerine. Take a little of the best quality of glycerine and with it rub the stained parts. Afterward wash as usual.

When the cane chair seats are out of shape turn up the seats and with hot water and soap wash the cane work until thoroughly soaked and leave the chairs to dry upside down in the air, when the seats will become firm and tight again.

PATRONS OF HUSBANDRY.

TULARE GRANGE MEETING.

To the Editor: An interesting session of Tulare Grange was held at its hall on Saturday, the 16th, Worthy Master Amanda O. Swanson presiding, who, in a very impressive manner, conferred the 1st and 2nd degrees on a class of three.

A package of 200 roots of Burbank's Australian Crimson Winter Rhubarb was received, sent by Mr. J. B. Wagner of Pasadena, for distribution among the members of the Grange. Every family got some; will give them careful propagation and report their success to Mr. Wagner.

The subject of the day, "Do good roads add to the value of the farm and promote the enjoyment of farm life?" was opened by Bro. J. T. Lawson, who read a thoughtful paper on the subject. The discussion of the subject was participated in by Bros. Fowler, Shoemaker, Barber, Jacob, Frazer of Dinuba Grange, the Worthy Master and the Secretary. It was the unanimous opinion that good roads add very materially to the value of the farms and promote the enjoyment of farm life. Incidentally the discussion took into consideration the roads and the condition of the public roads of this county, the best width, the proper grading of roads, road material, working roads, the use

of oil on roads, the effects of the different roads on the feet and legs of horses driven over them; arbor trees, their varieties, their suitability for arbor and avenue, their distance apart in the row whether inside or outside the fence, and if outside the fence how far therefrom. It was agreed that, in winter time, air and sun are essential to good roads, and in this particular evergreen trees are undesirable for avenues. In this county black walnut, umbrella, poplar, balm of gilead, especially cork bark elm, make good avenue trees. Oiling of roads, bridges and culverts were all considered, as well as the National Good Road law, a State road law, and a State road engineer. All were advocated. It was agreed roads should be constructed on principles and on plans laid down by a State engineer. At the next meeting Bro. E. Barber will discuss the subject, "What progress has been made by the Government in the irrigation of arid lands?" J. T.

AGRICULTURAL REVIEW.

Butte.

GOOD PRICES EXPECTED FOR STATE PEACH CROP.—Gridley Herald, June 8: Growers of peaches should feel good over the prospect that prices promise to rule high. It is reported that the crop is not nearly as heavy as it was thought to be two weeks ago. The estimates on the crop were all too high, according to the latest figures, and when this is generally known the canners will begin bidding up for the product. It seems to be the rule that freestone peaches have much the best showing for a crop of fruit. Clings, however, seem to be scarcer as the season advances. Another good feature of the situation is that the demand for California canned fruits is growing by leaps and bounds and those who have planted fruit trees, and whose orchards will begin to bear in a few years, will be in a position to demand a good price for their product. There can be no overproduction of good canning fruit and it is a safe and sure investment to plant the trees.

Lake.

STRAWBERRIES A PROFITABLE CROP.—Clear Lake Press, June 16—A pretty good instance of intensive farming is that of H. N. Maybee, who has so far this season picked 1,640 boxes of strawberries from his little patch of one-sixth of an acre. About two hundred boxes rotted because of the rain, and the crop is still growing. These berries have all been sold locally at ten down to eight cents per box. There are several other local growers, and we would like to hear if there have been any better records than this.

Los Angeles.

BERRIES PLENTIFUL.—Pasadena Star, June 12: Blackberries and loganberries are exceedingly plentiful, but after to-day the prices are expected to take a jump upward. This is really the height of the blackberry season, for the berries are only selling at \$1.40 a crate. It is expected that blackberries will bring at least \$1.70 by to-morrow. Currants are at their best now. They are selling at 40c. per 5-lb. basket and from 75c. to 85c. per box. This week will mark the turning point in the canning season and almost all berries will cost more.

MELONS ARRIVE AND BRING GOOD PRICE.—Pasadena Star, June 14: Water-melons are coming in from Cabuilla and are bringing a good price, selling at from 60c to 75c each. Cantaloupes, also from Cabuilla, are fairly plentiful. They bring from 20 to 25c each. Sweetwater grapes from Indio arrived on the local market to-day. They fetch 25c per lb. Tomatoes are very scarce. Still there are a few here and a carload which came on Monday has been disposed of. Tomatoes bring 25c. per lb. to-day.

Riverside.

FIRES DESTROY GRAIN.—Perris Progress, June 14: Several bad fires raged in the hills in different directions this week and gave the ranchers who did not have their grain insured a bad scare. On Sunday a fire broke out near the grain fields at Ethanac. It burned over some pasture land, but by hard fighting was stopped before much damage had been done the grain fields. On the same day a fire broke out in the brush on the hills southwest of the Good Hope, and burning all day Sunday burnt over thousands of acres of brush land. It is reported that several houses in the hills were burned. Another fire started on Monday in the hills back of R. H. Long's place. From there it spread over the hills, and it was only by the hardest kind of work with men and plow teams that the grain fields were saved. The new telephone system was brought into service, and soon the ranchers all over the country were notified and 150 men with plow teams were fighting the fire plowing and backfiring until they had conquered it.

Sacramento.

CANNERS AT WORK.—Sacramento Union, June 15: The Central California Canning Co. is now running on asparagus, apricots and cherries with but 200 workers engaged. There will be a very light pack of apricots, and the prices for the untreated fruit range from \$40 to \$50 per ton. Cherries in this vicinity are about all harvested, but considerable shipments come in from the bay counties.

Santa Barbara.

FIGHTING INSECTS TO PRESERVE TREES.—Santa Barbara Independent: Willis M. Slosson, supervisor for the Santa Barbara forest reserve, has detailed eight rangers to go to the San Emiglio mountains for the purpose of making a crusade against the bark borers and the beetles, which have been doing great damage to pine trees in that re-

gion. The borers have been found to be very destructive, as they eat their way through the bark of the tree and then honey-comb the body. The method employed to check the infection is to cut down and burn such trees as are found to contain the pests in large numbers. In some instances where only the branches have been infected, they alone are destroyed. The borers and beetles are particularly aggressive during the dry season. George W. Peavy, head forester in the government service, reports that the trees at the San Marcos nursery have been growing nicely and that the trees that have been set out on the reforested area of the Santa Ynez mountains have developed better than had been expected. Less than 5 per cent of the trees set out died.

San Bernardino.

PRICE OF ORANGES IS STILL SOARING.—San Bernardino Sun: The price of oranges continues to go upward by leaps and bounds, and even the man with an orchard of seedlings is now rated a magnate, for it was reported yesterday that as good as \$2.75 per 100 lb. take everything on the trees, had been offered, and \$3 threatened in some cases. Such prices for seedlings is little less than fabulous. Growers who had received the offers were not sure yesterday whether they had been dreaming or not, and not a few of them harked back to the time, but a few seasons since, when any orchardist in the valley would have hugged himself over an offer of \$1 per 100 lb. for seedlings. It certainly has been a great year for the growers of the golden fruit.

TEN-ACRE SETTLING POND.—Chino Champion, June 15: The sugar people are building a settling pond south of the factory that covers ten acres of ground and is hoped to last four or five years. It is to hold the sediment of the lime-water used in clarifying, and when it is understood that 10,000 to 15,000 tons per year of lime rock is used, the extent of these deposits will be realized. It has already covered one 10-acre lot, and built up there a considerable elevation—aside from the thousands of wagon-loads hauled away. W. C. Milam is in charge of the work. The bank is 10 ft. high on the lower side, and 45 ft. wide at the base. The water will be carried on for irrigating after depositing its lime. The lime deposit is claimed to make good fertilizer, and will be used for that purpose. Large quantities of it have already been used with marked benefit to the crops.

Santa Clara.

TO MANUFACTURE DENATURED ALCOHOL.—San Jose Herald, June 14: Another new industry is to be added to Santa Clara county, and Agnew will be the town in which the factory will be operated. The old distillery that has stood near the place for so many years, and which has been watched carefully by the revenue officers, will again commence operations, but on a different scale. United States Revenue Agent Bert M. Thomas was notified yesterday that the distillery at Agnew, which has been manufacturing ardent spirits out of beet-sugar molasses, is preparing to go into the manufacture of denatured alcohol under the new law which allows that product to be sold free of tax for illuminating and burning purposes and for use in the arts. The bill provides that the alcohol may be denatured by the addition of 10 per cent wood alcohol, which is poisonous and unfits the alcohol thus treated from being used as a drink. It is expected that the new industry will do much



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for California, and that it will prevent the price of coal oil from rising any higher than it is at present, and may even force a lower rate. It is said that denatured alcohol may be made and retailed at a profit of 20c. per gallon.

San Joaquin.

PYRETHRYUM MAKES SUPERIOR GROWTH.—Lodi Sentinel, June 14: Flurrie brothers, three miles southeast of Lodi, are busy this week harvesting their crop of pyrethryum, better known as bu-hach powder. Two years ago they set out six acres to the weed and are now harvesting the second crop, which pays about \$100 an acre. Mr. Flurrie says the weed grown here makes a powder of good quality and strength on account of the rich sandy loam. Pyrethryum is a midseason crop, and is out of the way before the harvest of any other yield. Its cultivation is simple, resulting in good yields at splendid prices. Stockton is the principal market for Pyrethryum.

Solano.

NEW FRUIT COOLING PROCESS.—Vacaville Reporter, June 16: B. F. Shepherd, manager of the Vacaville branch of the California Fruit Exchange, is considering the feasibility of installing a Cyclone car cooling plant. This process is in operation at several of the company's branches, and is no longer considered an experiment. The fruit shipped in cars cooled in this manner can be left to ripen on the trees several days longer than under the old method, thus gaining in flavor and appearance.

CHERRY SEASON WAS BEST IN YEARS.—Sacramento Bee, June 16: Early yesterday morning a light drizzle set in at Vacaville and kept up all day. There was little damage done to fruit. The cherry crop was just about all gathered and peaches will be benefited. It will put the grapemen to some disadvantage, as they will have to sulphur the vines again, already having twice gone over them. The cherry season has been one of the best in years with a phenomenal crop, lasting in the shipping season for about two months. The price has held up to a very high figure, so that very good returns have been procured by the growers.

Sonoma.

THE CANNERY.—Healdsburg Tribune, June 14: The Russian River cannery has been running a full force packing cherries. Several improvements



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POSITIVELY CURES
SORE SHOULDER
SORE NECKS OR BACKS ON
HORSES AND MULES
IT CURES THEM ANYWAY
IN HARNESS, UNDER SADDLE OR IDLE
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FREE SAMPLE, if you send us
the name of your dealer.
Put up in 25c, 50c and \$1.00 Cans
MONEY BACK IF IT FAILS
SECURITY REMEDY CO.
MINNEAPOLIS, MINN.

have been made at the cannery. A cherry grader was installed to handle the pack, doing the work heretofore performed by hand. The grader does its work perfectly, and is on the same principle as a prune grader. About three thousand cases of cherries will be packed, and the crop will probably all be in cans **GAL THREE (narrow) RURAL PRESS** by the end of next week. Manager Snook expects a big run on fruit and will employ hundreds of people. He desires all who want employment to register at once, so that he may know the number of outside people it will be necessary to engage. He will give the Healdsburg people first chance, and until June 30th will hold employment open to them. It not sufficient help has registered by that date, he will engage people from elsewhere. He will have steady employment for several months for a large number, as after the cannery work ends, his hon yard will be ready, and following this employment will be offered in the packing-house.

Dr. S. A. Tuttle:

Dear Sir:—


I wish to say to you and the public that I have used your Elixir; have found it one of the best medicines I ever used for pleurisy, and it has no equal. For headache it is second to none. I don't intend to be without it.
H. H. CLEVELAND.

Druggists Use and Praise Caustic Balsam.

Lancaster, N. H., May 15, 1905.

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gines; revolutionizing gas power. Costs less to buy and less to run. Quickly, easily started. No vibration. Can be mounted on any wagon at small cost—portable, stationary or traction. 5, 7, 10 and 15 horse power engines in stock at Oakland. Mention this paper. SEND FOR CATALOGUE. THE TEMPLE ENGINE CO., Mrs. David Rutherford, Agent, 1396 Harrison St., Oakland, Calif. THIS IS OUR FIFTY-THIRD YEAR.

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"THE MASTER WORKMAN,"

a two-cylinder gasoline engine superior to all one cylinder engines. No vibration. Can be mounted on any wagon at small cost—portable, stationary or traction. 5, 7, 10 and 15 horse power engines in stock at Oakland. Mention this paper. SEND FOR CATALOGUE. THE TEMPLE ENGINE CO., Mrs. David Rutherford, Agent, 1396 Harrison St., Oakland, Calif. THIS IS OUR FIFTY-THIRD YEAR.

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Kendall's Spavin Cure.

Whiteford, N. C., June 28, 1905.
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Gentlemen:—I have used Kendall's Spavin Cure on Spav-
in, Ringbone, Sweeney, Gall and Sore, and it has cured
them all. Very truly yours, S. M. Clark.

Price \$1; 6 for \$5. Greatest known liniment
for family use. All druggists. Accept no sub-
stitute. The great book, "Treatment on the
Horse" free from druggists or
Dr. B. J. Kendall Co., Enosburg Falls, Vt.

Stanislaus.

FIRST BARLEY OF SEASON.—Stanislaus News, June 15: The first barley of he season was delivered at the Grange warehouse at Keyes yesterday by Blewett Bros., of Turlock. Barley harvesting will be well under way by next week, and the wheat will be ready to harvest about July 1.

CROWS HELP FARMER.—Stanislaus News, June 15: Robt. Miller of Salida reports that his vineyard was recently invaded by an army of green worms which ate the leaves off of six acres of vines. In despair as to how to rid the vines of the worms, he sent men out with sheep shears to kill them. At this time help came from an unexpected quarter, for a large flock of crows flew up from the river and cleaned out the worms in a short time.

INSURANCE FOR TURLOCK FARMERS.—Modesto Herald: A second mutual fire insurance company is being organized by the farmers in the Turlock quarter. The first of these associations, known as the Hilmar Mutual Fire Insurance Co., was organized some months ago. The new organization is to be known as the Turlock Mutual Fire Insurance Co. These associations are organized under a state law approved April 1, 1897. The term of their charter is fifty years, and the organizers must be not less than twenty-five in number and must represent property (they propose to insure) to the valuation of not less than \$50,000. The new association has in advance of incorporation obtained the co-operation of many more than the minimum number of property owners, and an aggregate of more than \$60,000 of property for insurance. They expect to increase the insurable property represented to not less than \$100,000 in value.

Ventura.

THE APRICOT AND ITS PIT.—Downey Champion, June 9: Not only are apricots booming, but the pits are sailing upward in price at such a rate that people

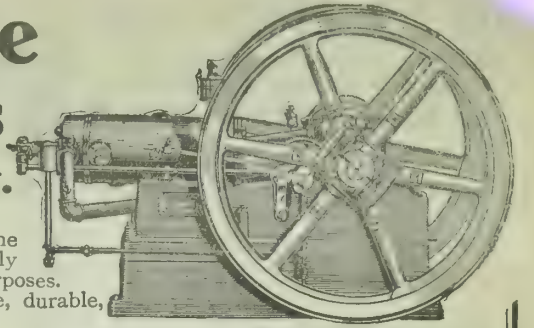
are pausing to catch their breath. Apricot pits are in active demand at the astounding price of \$15 per ton, and they will go still higher. Time was when apricot pits were considered a nuisance and were in the way at the pitting camps each year. Later, it was found that they would make a pretty good fuel, and many a housewife found this out to her sorrow, for the pits burned so fiercely that no stove was proof against the intensity of the heat and soon burned out. Then sprang up a demand from Germany, where it was discovered that a pretty good quality of prussic acid could be made from the pits. Also, it was learned in Germany that the apricot pit answered the purpose of almonds in the manufacture of candy and confections. Then the demand for apricot pits from the old country became steady, and the first thing the California apricot-growers knew they were getting \$5 a ton for their hitherto useless pits. Then the price advanced to \$7 and \$8, the latter figure being the highest obtainable until the present season. One firm or syndicate has in the past had all the handling of apricot pits and this firm, it is said, has not been able to supply the demand made by it. The result was that it promised more than it could furnish. The syndicate began to rustle for apricot pits. It offered \$9 per ton for them, and its eagerness to get them set other buyers by the ears, and now the woods are full of pit buyers.

APRICOTS PROVE A GOLD MINE.—Ventura Free Press: The man who has apricots this year has a gold mine, for apricots will demand money. At Santa Paula on Saturday buyers were offering \$40 per ton for green fruits and our informant tells us that about 300 tons were contracted for at that rate. The price offered for dried fruit has reached 11½¢. These are the best prices in years, and the advance is due not only to the shortage in crop, but to the big demand for canned goods ever since the San Francisco disaster.

Yuba.

GOOD CROP OF PEACHES.—Sacramento Union, June 14: From present prospects the canneries in Marysville will start about the middle of next month. The burning of the San Francisco plant of the California Fruit Canners' Association will make extra work for the local plant, and preparations are being made to put on a much larger force of help. Early peaches are coming into the local markets and are of good quality. The orchardists are very hopeful for the season, saying that the peach crop will be good and prices will be high. Bargains for this season's crop are being made, but the best so far heard of is that by Fred Hauss, who has an orchard at Oswald. He expects to have between 350 and 400 tons of fruit and has sold his crop to the Armsby Packing Co. of San Jose for \$60 per ton f. o. b. Oswald.

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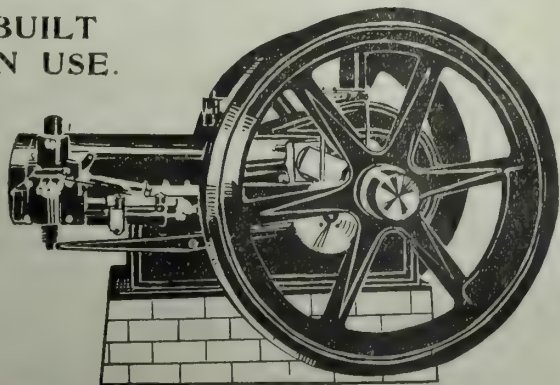
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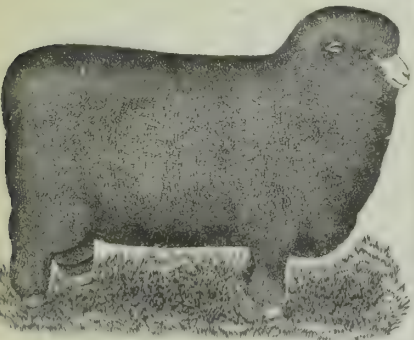
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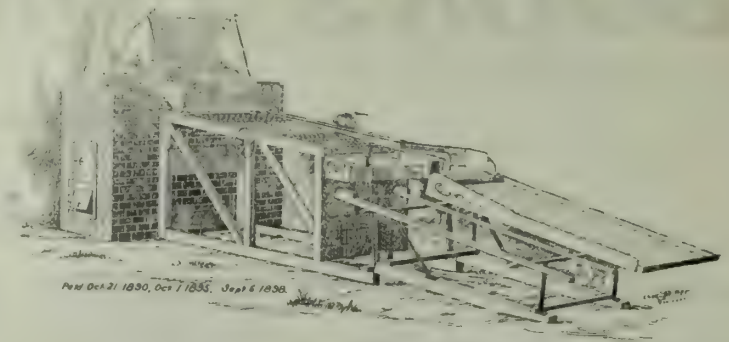
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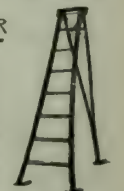
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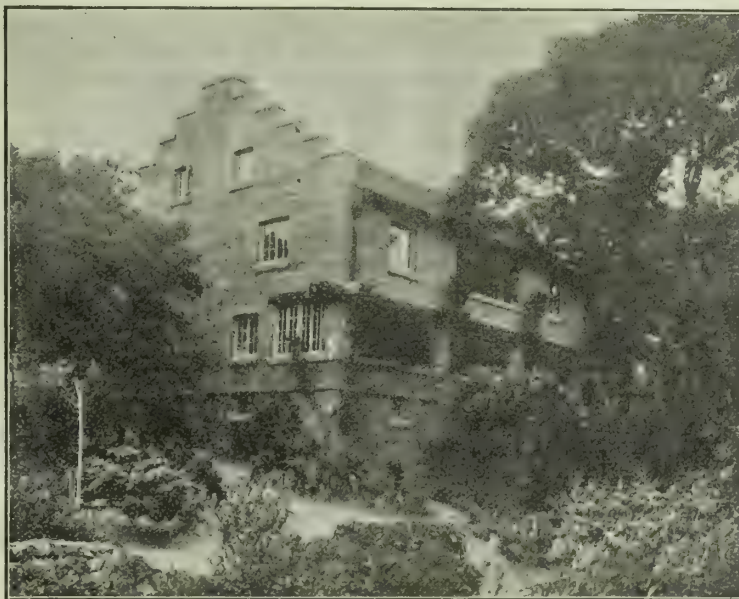
Vol. LXXI. No. 26

SAN FRANCISCO, SATURDAY, JUNE 30, 1906

THIRTY-FIFTH YEAR

OTHER BERKELEY SCENES.

We return this week to features of our immediate environment and select from a large number of Berkeley pictures a few which seem representative of different elements in the makeup of the town. It seems particularly fitting to allude to Berkeley this week because the summer session of the University has just opened and it is pleasant to note that the enrollment of pupils is about the same as last year—nearly 800. It is particularly gratifying to have this test of the stability of things in the California mind and that the distractions incident upon the earthquake and conflagration have so far disappeared within about sixty days from the appalling events that so many would gather at an extra term of instruction, for which they have to pay a fee, and thus manifest not only their mental



One of the most picturesque homes in Berkeley.

bles and of their companionship in open-air life and in the suburban schools. It has always been a supreme delight to the Berkeleyan that his children had a good place in which to grow up and that educational facilities from the lowest to the highest were almost at their doors. Since the disaster has forced additional thousands to the suburbs, new experiences have not only enforced the lessons of the old, but have added new charges to Berkeley residence as it now comes into contrast with the trying conditions of life in the reviving metropolis. Berkeley has therefore a new significance to thousands, and the town is developing and expanding notably.

One of the pictures suggests a State institution in Berkeley which is less talked about than the University and still deserves a place in the public regard, because of its intrinsic excellence and because its wards are those to whom the tenderest emotions of the human heart outflow unbidden,—the Institution for the Deaf, Dumb and Blind.



On grounds of Institution for Deaf, Dumb and Blind.

equilibrium and desire for knowledge, but have funds available which they are willing to invest in this way. It was a very fortunate decision on the part of the University authorities to proceed with their summer session preparations even while the disturbance was at its height, in full confidence that the people of the State would support them in their resolute pursuit of the business entrusted to them. The enrollment at the University this week becomes, therefore, a demonstration of the condition of things in California which is widely significant.

Several lines of Berkeley character and activity are suggested by these pictures. One is the picturesqueness of the town as a dwelling-place, which we discussed in our issue of three weeks ago. Berkeley beauty and quiet have been emphasized by recent experience, and the throngs seeking homes here are greater than ever before. Older residents always appreciated the contrast between the rural retirement of the University town and the rush and racket of the metropolis and delighted to pass from the scenes of business bustle to the quiet evening and to hear their children prattle of their joys in gardens and hillside ram-



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THE WEEK

June is closing with low temperatures along the coast and in those interior regions which are chiefly traversed by the strong inrush of ocean air on its eastward courses. Professor McAdie attributes the unusual strength and volume of this aerial movement to a persistent low barometer which is held over Nevada instead of whirling away as it ought to in the ordinary course of cyclonic affairs. This groveling disposition of the Nevada barometer is to be credited with the fluctuating temperatures and weepy clouds which this season are so grievously displacing the adequate heat and dry air which we count upon for haying and harvesting and for the early summer thrift of our fruit trees. Fortunately it is very seldom that we have such conditions to deal with in California. The earthquake experts declare that their phenomenon has nothing to do with it and probably it has enough to be responsible for without this additional burden. If, however, they could arrange a disturbance in Nevada which would break up the low barometer it might save us from interstate complications. It is certainly too bad for Nevada to act as she has done this summer.

It is possible that another count which we are to make against Nevada is the unusual rush of waters for our side of the Sierra Nevada which is flooding our valley rivers, overflowing lake bottom lands in Kings and Tulare counties which settlers were occupying in the confidence that progressive irrigation was taking enough water from the rivers to free them from farther use of a flood plain. This calculation seems to have partially failed, at least for this year there seems to be plenty of water for irrigation and for lake-filling also. Possibly we need greater respect for flood waters and their ability to reassert themselves at intervals. The safety against such flood losses as are now being experienced must be found in better engineering, greater outlay in levee-building and in adequate passage way for floods which are probably always to be apprehended. Essentially the same condition of affairs exists also in the reclaimed lands along the lower courses of the San Joaquin and Sacramento rivers. Some reclamations of years' standing have gone under this year and the water is still coming freely. It seems just the time to enforce the old suggestion that safety of investment must be found in rational and adequate treatment of the whole problem of river handling in our great valley. It is to be hoped that a proper beginning in this line was made by the last legislature and the present condition of things will strongly enforce the needs of the work upon next winter's assembly of the lawmakers.

Restoration affairs in San Francisco seem to be progressing favorably. The city is to have a good income from tax levies made before the disaster and public work need not lag for lack of funds. Help in rebuilding from the national treasury seems available to a certain extent. Judge Morrow, one of the committee who went to Washington to secure such aid, reports on his return, that after many conferences it was agreed that the Secretary of the Treasury would authorize the national banks to accept the unsold municipal bonds of San Francisco at their face, thereby giving to the city \$12,000,000 in ready cash, and that he would authorize a deposit of \$10,000,000 of Government funds in the local banks which can be loaned to property owners. To make it available, however, a corporation must be

formed of wealthy men, who can give the banks satisfactory security for the money. This security cannot be in the form of real estate mortgages, but must be in the nature of stocks or bonds. The national banks are not permitted to accept mortgages under the law, the a difficulty will be encountered in finding available securities. San Francisco ought, however, to have financiers skillful enough to furnish Uncle Sam such collateral as he requires and, as money breeds money, it is to be expected that the start with national funds will move idle money from various parts of the world to a point where it can be used to great advantage.

Affairs looking toward the regulation of the trusts seem to be progressing favorably and the courts are assuming much discretionary power in settling issues on what seems a business basis rather than upon a basis of statutory law. For example in Toledo this week a chill was given to the local ice combine when five prominent members were fined heavily and sentenced to serve one year each in the penitentiary. It is not to be expected that such men will meekly go to the cooler but rather that they would put up a hot fight for legal freedom and here is where the discretionary prerogative of the court is displayed because it is reported that the court announced that if the members of the ice trust would lower the price of ice below what it was before the trust raised the price, and would keep the price there until the public gets its money back, then put the price up to where it was when the raise was made, the court would consider request for a modification of the sentence. This seems to be a way to get the tainted money back to the people it was filched from and to make sure that no more is taken in the old way. The public is to be congratulated that the courts are working along such lines of common sense and easily comprehended justice and not hesitating to do such things even if there are no definite precedents therefor. Whether the specific things are done or not we seem to be going fast toward a rational regulation of trade and manufacturing combinations in their relations to the public which is a thing devoutly to be desired.

The busy season of Mr. N. Ellery, State Highway Commissioner, is evidently upon him for the State roads across the mountains must now receive the permanent improvements for which the Legislature provided. He has just finished the plans for a new stone bridge over the Stanislaus river, where the Sonora and Mono road crosses it and bids for the work will be received at his office in Sacramento before noon on July 17. All who wish to do this work should get information at once. There is much inspection and surveying of such roads also to be done and Mr. Ellery is now in Kings River canyon surveying the road for the Grant National Park to that place. He is also consulting engineer for the reconstruction of State buildings injured by the earthquake and that work is going forward. It is a good thing to have all these things in the hands of an energetic officer.

There seems to be an abundance of English sparrows in the park enclosing the capitol at Sacramento and an absence of song birds in the same enclosure. Some people bewail the latter fact without thinking that it is clearly due to the former. Our observation is that if you have plenty of sparrows you will have few other birds except blue jays, which delight to scrap with them, and it would be a good thing if the jays and the sparrows would clean either out entirely. But in bird life it does not seem to be true that when rogues fall out honest birds get their due, for the rogues seem simply to keep themselves in fighting trim by their battles and better birds disappear.

Speaking of the lower animal life we wonder if the cat is credited for all the good there is in her. We have read about a Hoboken amateur poultry grower who has assigned three trusty cats to sleep in the coop with

his chickens. Rats destroyed many of his spring broods, and he determined to try the experiment of putting the cats on guard. The story is that the cats sleep in the coop with the mother hens and their young, and so far they have fraternized with their unusual associates on terms of the most perfect good fellowship. Not a chick has been lost since the cats were introduced into the hennery. The home cat seems to regard highly the duty of hospitality and though our experience is decidedly against trusting strange cats with any chance at young chickens, we are inclined to believe that the Hoboken story is true. A well domesticated and wellfed cat is a very different animal from an outcast cat and probably one cat differs from another cat in disposition. Cat stories are in order.

Now that reinforced concrete is figuring so largely in the plans of those who desire enduring structures it is interesting to note that the material has its agricultural uses. Consul-General Ridgely reports from Barcelona the successful termination of the monster siphon made to carry the water of the Aragon and Catalonia irrigation canal across the valleys of Sosa and Ribabona, which will make fertile a vast tract of Spanish land. By means of this new canal the area of irrigated land in Spain has been increased by 10 per cent, while the value of the surrounding district will be enhanced by about 200 million pesetas at an outlay of thirty millions. It is estimated that the canal will bring water to over 247,000 acres now virtually barren land through lack of water. The most remarkable feature of the work is the siphon referred to. It is composed of two main tubes five-eighths of a mile in length and 12 ft. 5 in. in diameter, with a capacity of about 7,700 gallons of water per second. The tubes have a lining of steel plates three millimeters in thickness, bound round by iron hoops, the whole being covered with concrete, which preserves the metal from the action both of the water and the air, and enables any necessary repairs to the tubes to be effected at little cost.

It may interest some of our inventors and manufacturers of orange handling machinery to know that the Bureau of Manufacturers of the Department of Commerce and Labor at Washington has an inquiry from a European orange importer of high commercial standing in regard to machinery for wrapping oranges, particularly the small sizes, such as mandarins. There is said to be a very considerable opening for this machinery in Mediterranean countries.

Uncle Sam has concluded to accept the Yosemite valley and presumably will provide for its development in the way of protecting its charms and making them more accessible by good roads and trails than the State has ever been disposed to do. The acceptance of the gift, which the California Legislature at its last regular session agreed to make, was brought up in the United States Senate recently and explained that for the past 40 years the valley and the trees had been under the control of the State of California, which had expended almost \$500,000 on them. A conflict had recently arisen, he said, between the State and national authorities which had already resulted in the destruction of many trees, and the State had decided through the Legislature to recede the ground to the National Government. The importance of immediate action was urged so that the California Legislature may take steps to protect the territory if its tender is not accepted. Upon this showing the United States accepted the gift and the Yosemite valley now becomes a part of the great system of reserves which the general Government will maintain in the Sierra Nevada mountains for the good of generations yet to come.

Evidently the Orientals desire to buy wheat but to save for themselves the advantage of making flour and the resultant by-products of millstuffs which perhaps they can work off as some new kind of breakfast food on the poorer classes of their population, or of the

adjacent countries where Japan now has great trade advantages. This seems to be a fair inference from the new Japanese protective tariff which involves a raise in the tariff on wheat flour which is one of the most important in its effect upon American trade, and constitutes one of the large and growing imports into Japan. Seventy-two cents import duty on 133 lb. is a very high rate. A duty of over half a cent a pound will place this article of diet beyond the power of the masses to purchase, and must therefore reduce the consumption of American flour. The new duty on wheat will be 57 sen per 100 kin, an advance of only $3\frac{1}{2}$ sen. This will give a very comfortable advantage to the milling of wheat in Japan. Manchuria offers a satisfactory solution to the high tariff on flour and evidently this is one of the countries to be exploited by Japanese millers.

Japan has also a developing eye upon a dairy interest. The tariff on condensed milk has been increased from 1.23 yen per dozen tins to 100 yen per 100 kin. This is one of the growing imports into Japan, and at present it is imported at a very low rate, but the heavy increase under the new tariff will check the importation and the purpose is to encourage production under Japanese control. There are natural advantages in Japan, Korea and Manchuria for the development of the dairy industry, and there seems to be a purpose to give this Japanese market to Japanese who will engage in the business within this territory.

QUERIES AND REPLIES.

SWEET CLOVER IN ALFALFA.

To the Editor: I am sending you a sample of a plant growing in our alfalfa fields. Will you kindly give through the "Press" some information as to what it is and if it is of any value for feed. It grows luxuriantly on strong black alkali as well as on good soil. It does well on land where alfalfa will not grow. It is scattered among the alfalfa sown last year and we do not know whether to consider it a pest or a valuable plant for poor soils. It has the appearance of a mammoth alfalfa. It stands over six feet high and has a white bloom.—GROWER, Stockton.

The plant from your alfalfa field is *Melilotus alba*, commonly called sweet clover. It is counted a pest in an alfalfa field because it displaces the more desirable plant, and as it comes freely from seed, the evil is likely to increase unless the plants are kept cut before seeding. The better plan, perhaps, is to go through the field with a sort of sharp spud and cut off below the ground and pull out the plants as soon as they are noticed. As the plant dies after seeding, this is a good way to clean the field. This *Melilotus* is a very hardy plant; it not only grows on alkali, as you say, but it also grows on land which is too sandy for alfalfa, providing there is a chance for it to get its massive root down into a water supply. For this reason it is found growing luxuriously in the latter part of the summer on very sandy bars in the rivers. It is unfortunate that it is not better liked by the stock, as usually they allow it to grow tall and bear seed, while the alfalfa is closely cropped. There are a few growers who consider it a good plant and claim that their stock eat it readily, but generally it is looked upon as a pest. It is a good plant for bee forage, and the seed is distributed to some extent for that purpose. On the whole, however, it is generally counted a great nuisance and it is unfortunate that the commercial alfalfa seed has so much *Melilotus* seed mixed with it. It undoubtedly gained entrance to your place in this way.

NOT THE GYPSY, FORTUNATELY.

To the Editor: Recently I had occasion to walk from this place to Redding. I noticed a hairy caterpillar that was very much in evidence on the west side of the divide that had devastated the foliage not only of the trees but had invaded the gardens and dwellings along my route. When reading a New York paper of the 28th of May I noticed an article with the caption: "5,000,000 bugs to eat up the gypsy moths." Does not the subject-

matter refer to one and the same caterpillar? And if so, will not the State see to it that said pest will get the necessary attention to rid the State of the blight?—WANDERER, Cassel, Shasta county.

So far as we know the gypsy moth has not yet reached California, and we trust it never will do so. You probably saw some other caterpillar, of which there are very many native to this State, which sometimes become numerous and do the destructive work which you describe. The article which you saw in the New York paper refers to some experiments which are being tried in New England for the gypsy moth, which is exceedingly destructive in that part of the country.

ALFALFA IN ORCHARDS.

To the Editor: I must thank you very much for your answer to my questions in your issue of last week. Your suggestion regarding the use of alfalfa instead of a grass is certainly a good one. At the present time I am puzzled to know how we would get the effects of phosphoric acid and potash to the trees under sod culture. Do you think that fertilizer sown during the rainy season would become sufficiently mixed with the soil so that it would be acted on and carried down by the alfalfa roots? I am pretty well determined to make the experiment and will plant a lemon orchard next spring or this fall of about five acres on a steep hillside and sow it to alfalfa. I have also about one acre of grape fruit, three years old, that is isolated from the rest of the orchard, and which I will sow to alfalfa next winter.—ENQUIRER, Porterville.

You could make your application of fertilizer in advance of using the alfalfa, distributing it over the surface and plowing in deeply, as such culture will not only introduce the fertilizer, but will promote the growth of the alfalfa. Subsequent applications of fertilizer would depend upon the behavior of the trees. It is probable that you would desire occasionally to plow under your alfalfa and re-sow, and fertilizers could be introduced at that time if it should be thought desirable. We should anticipate, however, that the growth of the alfalfa and its action upon the soil would possibly make it unnecessary for you to use fertilizers for some time upon such young trees as yours. It is understood, of course, in your experiment with alfalfa in an orchard that you will have ample irrigation for the growth of alfalfa and trees and for the drowning of gophers, whose presence will be encouraged by the alfalfa.

KAFFIR CORN, POTATOES AND BEANS.

To the Editor: Please let me know your opinion of the two kinds of Kaffir corn, the red and the white. The white Kaffir with black chaff is considered far superior to the red in the south. Is it a success here? I have some fine river bottom land I am thinking of sowing. Please let me know where seed can be gotten and at what price. I would like to have your opinion of seed potatoes. We have potatoes ripe here now—new crop. Would they do to plant now for seed? They are the Burbanks. Have you ever made experiments with new potatoes for seed? I would not like to plant them without being sure. Some think here they would not be strong enough to bring a large potato and would not be a success. Also give your opinion of the different kinds of beans. My land is river bottom and natural moisture. What varieties would be best planted at this season?—FARMER, Monterey county.

White Kaffir corn is generally preferred to red. The red, however, is considered a little hardier and not so likely to be injured by birds, and for these reasons is preferred in some localities. The seed of both varieties is generally sold at the country stores in any quantity desired. You will not succeed very well in replanting new crop potatoes for seed. Where it is not possible to get old potatoes, the ripest of the new ones may be gathered and exposed to the sun and air, which hastens the maturing process, and it does not matter for seed purposes if the potatoes become somewhat green in color. Pink beans are generally hardiest and most satisfactory for a late crop.

WALNUT BLIGHT.

To the Editor: I have this day shipped you by express a sample of blighted walnuts and some foliage of

the same covered with some insect pests. Please identify the insects and give me the cause and remedy for the blighted walnuts. Some peaches are inclosed. Please tell me what is the matter with them.—GROWER, Walnut Creek.

The walnut branches show both upon the foliage and upon the nuts themselves the ravages of the bacterial walnut blight which is doing so much injury in the southern part of the State and which is pretty well distributed wherever walnuts are grown in California. The cause of this blight is the entrance of the germ of it, from what source no one knows. The only remedy announced so far is not altogether satisfactory, because no one has yet succeeded in saving more than 50 per cent of a full crop by the use of it. It is thorough spraying with the bordeaux mixture just before the growth begins in the springtime. The walnut leaves are also affected with an aphid, or plant louse, which gets abundant enough to do considerable injury, but is usually kept in check by ladybirds and its other enemies. Whenever the lice become too abundant they must be sprayed with kerosene emulsion, using a nozzle with which the under sides of the leaf can be readily reached by the spray.

The peaches are affected with the shot-hole fungus. This is the same fungus which produces the so-called winter blight, so prevalent in some parts of the State during the last two years. As stated in another connection on this page, it is not usual for this blight to be so active so late in the season as this, but it is really doing a good deal of harm in the State, and its prevalence is probably accounted for by the late rains and continued moist air, which is favorable for fungus growth.

SHOT-HOLE FUNGUS ON ALMONDS.

To the Editor: I mail to your address a box of almonds with bits of foliage. This foliage is from trees that have grown but little; but trees that have sent out new growth are much like the leaves enclosed,—some pale or yellow and some dropping to the ground. But the thing that we wish to know is: What is the matter with the almonds? There are many trees whose fruit is changing color and comes off with little difficulty. I find this state of things on my orchard; perhaps one tree in ten is affected in this way. My attention was called to this matter by an Orangevale almond grower, who reports that this destruction of almonds is quite general in Orangevale, and I was asked if I had any in my orchard. I found so much that I have sent these specimens to you and ask in behalf of us all what this is. We have before this had a few nuts in similar condition,—gum oozing out of the nut; but this season there is so much of it and it seems to be increasing. In Orangevale many branches for a few inches from the end are dead. It will be of great interest to us if you can give us some idea what this is and whether there is a remedy for it.—GROWER, Fair Oaks.

Your almond trees are suffering from a severe attack of shot-hole fungus. The same disease is also doing a great deal of injury to the peaches in the valley and in the foothills and its activity at this time of the year is undoubtedly due to the late rains and the continuation of high atmospheric moisture so much later in the season than usual. There is no present treatment likely to avail; in fact, as the season advances, the fungus may be expected to become dormant, but it will be necessary to undertake a fall spraying in accordance with the suggestions made in the Pacific Rural Press, of May 12, in which it appears that the fall treatment has proved very satisfactory in protecting the trees. If we are to have such moist summers as we have this year a spring spraying may also be required. An interesting statement by Prof. Smith may be found on another page of this issue.

PEAR BLIGHT—APPLE TROUBLE.

To the Editor: Under separate cover I enclose pear twigs. Are they blight affected? If so, what measures must be taken to eradicate it? The enclosed is the worst specimen I have found so far. The variety is Bartlett. That in the box is the Duchess variety, and I have a suspicion that the injury to it is by frost, as I had seven or eight years ago similar conditions which only appeared one year and which I attributed to frost.

Again, I thought it might be bud blight. The trees are on exceptionally well drained ground. My neighbor has just called my attention to another matter. He has several young apple trees (three years old) that refuse to leaf out this spring, though the wood looks thrifty and healthy. I also have a five-year-old Newtown pippin tree. In the spring of 1904 it refused to leaf out. I cut off the whole top to 15-in. stubs. About July 1 it began to grow and made 2-ft. sprouts. In 1905 it grew very finely. This spring it pushed out little leaflets at a few places along the twigs, but the leaflets never got over one inch long by one-half inch wide and gradually dried up from the edge. A whip graft on the top has leafed out nicely and a few sprouts are making on thick wood low down, but are not vigorous. The tree looks as healthy as you might wish to see, in winter time. It stands on a bank five feet above a creek. Is anything to be done with them?—READER, Mariposa county.

Your Bartlett pears are certainly affected with the pear blight, and the best thing to do in the summer time is described in the Pacific Rural Press of May 19. The injury to the Duchess seems to be somewhat different, and you may be right in your conjecture as to its cause. It will be necessary to watch the tree, because if it is the true blight, its progress down the twig will be very apparent.

We cannot tell what is the matter with the apple trees belonging to your neighbor. It would be safer to attribute it to some defect in the growing conditions than to the blight, and the only treatment we can suggest is that you have already practiced—to cut out dormant branches and to encourage new growth wherever it appears. We are sorry that we cannot give you a rational expression of the difficulty without a better knowledge of the local conditions.

ORANGES DROPPING.

To the Editor: I would like very much to have your advice in the matter of securing a heavier orange crop. My groves look well and have the best care. The tree growth is good, the color excellent, but about this time every year we suffer a heavy dropping of fruit, leaving only an average crop on the trees. The trees are 10 years old and average only about 200 lb. per tree. For fertilizing I have used a green crop with either 10 lb. of fruit and vine fertilizer or 8 lb. acidulated bone and 3 lb. of nitrate of soda per tree. If there is any way of increasing the crop and preventing such a heavy dropping of fruit I would be glad to know it.—GROWER, Riverside county.

We regret to say that the subject you mention is very obscure and it is a matter of almost constant speculation and experiment among orange growers. The dropping is a weakness of some varieties like the navel, or is due to some other conditions not well understood. The Valencia Late, for example, is practically free from it and a common demand among growers is for an orange like the navel which will hold on as the Valencia does. It is, of course, to be hoped that further investigation and experiment may overcome this difficulty but it is impossible to write confidently about it at the present time.

HARLEQUIN CABBAGE BUGS AND OTHER PESTS.

To the Editor: I am sending with this specimens of a very troublesome "bug" that has lately invaded my garden. Please tell me whether I can get rid of it by any quicker method than hand picking? It seems to cover only a small area as yet. There is a small brown grasshopper taking possession of the same unfortunate little corner that has the "bugs." We are troubled every year to some extent by a small ladybug. Does this belong to the same family?—AMATEUR, Modesto.

The insect which you send is the Harlequin cabbage bug (*Murgantia histrionica*). They attack various vegetables and are hard to kill with ordinary insecticides. They cannot be poisoned because they suck the juice from beneath the surface of the plant and do not devour it. They can be killed with sprays like kerosene emulsion, but on a small scale there is probably nothing better than hand picking, as you suggest. Methods of killing the grasshoppers have been fully described in our columns. If the insect which you call the "ladybird" is greenish with black spots or stripes it is not the ladybird at all, but a *Diabrotica*, belonging to an

entirely different family. They are also difficult to kill and the same methods mentioned for the Harlequin cabbage bug may be applied to them.

ROOT KNOTS ON FRUIT TREES.

To the Editor: What can you tell me about root knots on out fruit trees and about the use of lime on our orchards? I am seeking information on those two matters.—ORCHARDIST, Pomona.

Root knots on fruit trees are caused by a low form of fungus which is communicable to the tree from infected soil or may be carried from one tree to another in the process of cultivation. The most satisfactory treatment consists in throwing back the soil and removing the knots with a hatchet or chisel. The wound is then soaked with bordeaux mixture and allowed to dry well before replacing the soil. Knots occurring near the root crown, or on the larger roots near to their attachment to the trunk of the tree, should be removed because as they enlarge they destroy the connection between the roots and the tree and seriously interfere with its growth. It is not worth while to pursue the knots on the outer roots at a greater distance from the tree because they may grow for years without injury to the tree; in fact, bearing apricot trees which have been satisfactorily bearing for twenty years or more have been removed and the roots found to be quite badly affected with knots, although their presence was not indicated by the thrift of the tree. But wherever young trees fail to grow satisfactorily and the knots are found they should be carefully removed, or if the knots are found to have seriously dwarfed the young tree it is often better to dig it up and plant a new one.

Lime is often useful upon heavy soils to make them more friable and to render their plant food more available, but it is very seldom that lime is necessary on the lighter loams because they do not need its mechanical effect and because such soils are usually well supplied naturally to meet all demands for lime as a plant food.

ANOTHER CASE OF APPLE TROUBLE IN THE MOUNTAINS.

To the Editor: Under separate cover I am sending you some cuttings from Hoover apple trees for your inspection, and ask that you advise me by an early mail how to treat the diseased trees. The Hoover trees are the only ones that are thus affected, and the late frosts we had in this section killed the bloom and young tender twigs on these trees, no matter how well they were protected by the older limbs and their foliage. You will observe that young leaves are putting out on these twigs, and this is true in many cases. The trees are firing up all over and unless something can be done very soon every tree will be ruined. The trees are from six to eight years old, and the drying up of the leaves is recent, so I do not think the frost had anything to do with it. You can take hold of them and they are so dry that they powder up like ashes and seem as brittle as can be.—GROWER, Butte county.

Your case is similar to the one from Mariposa county already commented upon. It is likely that your apple trees are suffering from the after effects of the frost which you mention and that the weak start and present failure of the new growth is due to insufficient sap flow through the tissues of the smaller branches, which were injured by the frost. The only treatment which can be suggested is cutting back to places where strong growth is appearing, for up to those points there has been presumably no interference with the circulation. Nothing can be expected from branches which are going back at this time of the year and the future of the tree must depend upon new and vigorous growth which has free communication with the roots.

HORTICULTURE.

PEACH BLIGHT AGAIN.

To the Editor: Among the effects of the recent late rains in prolonging the season of activity of many fungous diseases, the result in the case of the peach "blight," a disease which has received considerable attention of late in the columns of the Rural Press, is worthy of remark. Renewed alarm has been felt in some quarters in regard to this trouble, on account

of considerable new development of the "blight," which has taken place since the rains. New growth on the trees has become considerably spotted and gummed, the fruit and leaves have shown decided and injurious "shot-hole" effects, and in some cases there has been a considerable dropping of leaves and fruit, subsequent to that which occurred earlier in the season.

The case, as intimated above, is simply one of a renewed, out-of-season development of the *Coryneum* or shot-hole fungus, the cause of peach blight, brought about by the unusual amount of moisture at this season. Ordinarily the fungus which showed itself early in the spring in the gummed spots on last year's twigs would have become dried up and dormant, incapable from want of moisture, of infecting the new growth until next fall and winter. The late rain has kept it growing and spreading, just as it has prolonged the growing season of weeds, grasses, and other vegetation.

The successful results of spraying for this disease described by the writer in a recent number of the Rural Press give us reason to feel that it will be comparatively easy to control the trouble in the future. The present prolonged development of the fungus will probably result in greater infection next winter in unsprayed trees, and peach growers in districts where the blight has occurred cannot be too strongly urged to follow the recommendation to spray their trees thoroughly with bordeaux mixture next fall, early in December. (See Pacific Rural Press, May 12, 1906.) Without such treatment the experience of the past two seasons indicates very serious injury and loss from this disease. Its late development this summer will also tend to spread the blight more generally over the State next spring.

We aim to carry on quite extensive spraying experiments in various parts of the State, commencing early in the fall, in order to determine the best time for treatment in each locality. We are also making a study of the development of the fungus itself.

RALPH E. SMITH.

University of California, Laboratory of Plant Pathology.

A HALF-HOUR WITH LUTHER BURBANK.

To the Editor: We found Mr. Burbank very busy as usual. He has no time to throw away on those who are simply curious.

Having seen some reference to a new potato he is bringing out, I asked: "What is the truth, Mr. Burbank, about the new potato you are producing, of which we have seen reference in several papers. Is it a fact that you have a potato with orange colored flesh?"

"O, yes; not only yellow, but we have them red as a beet. I have made several crosses of these with the *Solanum Maghai*—also called the Darwin potato. This species was found growing some years ago among the Indians of the mountains of Chile by an agent of the Chile Saltpetre Co., from whom I got a few small tubers. The potato itself is small, irregular in shape, and of no particular agricultural value. I have been hybridizing them for some years with this red fleshed variety of *Solanum Tuberosum* and have got the only true potato hybrid—a cross between two species—ever produced, although there have been a great many crosses between different varieties of the *Tuberosum* species heretofore."

At this point Mr. Burbank brought in both hands full of tubers—one the Darwin potato, and several hybrids. The hybrids have a peculiar mixing of color in the flesh, usually the outer circle was light colored or yellow with a darker center, sometimes beet red. As the potatoes were sliced up the change in the outline of the colors was very striking. Every cut disclosed new and interesting markings and forms of the red, yellow and purplish shades, some of them being most curious. The red colored center in one was a perfect image of a mouse in a sitting posture; others looked like pigs and even the outlines of a man's shoulders and head appeared on one slice—and it did not take any stretch of the imagination to see them either.

But the most interesting thing to the practical man is that some of these hybrids are of the finest table quality of any potato ever produced. Mr. Burbank feels however that he has not yet perfected this tuber, and life and health being spared—which we all hope for—is certain he will produce a potato that will surpass anything previously introduced. In fact he already has the potato, but there are some points in which it may be improved before being put on the market. He wishes it distinctly understood that there are none for sale now.

The red fleshed potato has a perennial stem here in California and makes an enormous growth of vine, spreading six or eight feet, and continues to set tubers all the year round. One hill produced nearly a bushel of potatoes.

From the potatoes we went to the greenhouse where there were many boxes of seedling plants in great variety, all being from crosses or hybrid seeds. Thousands—even millions—of these are destroyed at a tender age unless they show some marked improvement along the line he is looking for. There were a number of pots containing plants of several species of *Solanum* on which he is at work. Some resembled potatoes, some tomatoes and some egg-plant. One seemed to be inclined to produce edibles at both ends.

Shasta daisies, one of his productions, are becoming very popular on account of their great beauty and keeping qualities. He is still at work with them and looking for further improvements.

To the ordinary observer these boxes of young plants look very commonplace. It is only when one thinks of the possible improvements in flower, fruit or vegetable, that may lie concealed now in those tiny plants that they take on a fascinating interest. Outside are arranged beds with plank edgings, 12 or 14 ft. wide and many rods in length. In these are sowed many of the hybridized seed in narrow rows or sometimes broadcast. So practiced is Mr. Burbank's eye that almost as soon as a seedling is out of the ground he can tell whether it has been affected by the cross-fertilization or not. A large bed of seedling poppies—little plants only just starting up—was examined. He would point out the plants that were to be saved for further trial and the rest pulled up. Much of this work he cannot trust to anyone but himself, and when we consider that he has thousands of these crosses continually under test and which need daily and sometimes almost hourly attention, the wonder is that he finds time to eat and sleep, to say nothing of entertaining visitors. While there is scarcely a species of plant that escapes his attention, he says his work is mostly on perennials. As improvements in them are fixed and can be propagated with certainty, while annuals depending on seed for reproduction are likely to undergo changes in a few years and nearly always deterioration.

A large bed of poppies was noticed and some in bloom—think of poppies in February. He picked some beautiful large ones, handing them to us, and said that poppies usually bloom but a short time and then are done for the year. But he is developing a strain of perpetual blooming poppies, and his success was evident. We stopped at an evergreen cherry tree, the fruit of which, although quite good, is too seedy. He is working on an improvement. The dainty little cream cups of the mountains and the more practical clover are receiving his attention.

The amaryllis has yielded to his genius and developed wonderful improvements. Even the hated cactus is losing its sharp needle-pointed hatefulness under his magic touch. Many other things were speedily looked at with interest.

The home grounds consist of only a few acres in the beautiful town of Santa Rosa and the home itself is very modest. As Mr. Burbank throws his whole thought and life into the building of new and better forms of plant growth he has no time for the building of houses. The main nurseries and propagating grounds are some miles distant where the soil is better adapted to the purpose.

This is but a glimpse of the great work that Luther Burbank is doing; work that will accrue to the benefit of man through long ages to come. Some have asked: How does he do it? Is he a wizard? Yes, in the same sense that Edison, Franklin, Faraday and a host of earnest workers in the past were wizards. What he has accomplished has been by work, hard, close, intense work of both hand and mind, and followed up with unceasing, persistent energy. What wonder is it that out of thousands and hundreds of thousands of seedling plants, produced with the greatest of care and knowledge, there should be an occasional one that is superior to anything else of its kind? Such is the evolution of our best fruits and flowers. Through the long ages of the past the best have been saved and propagated. Mr. Burbank by incessant study, care and labor, is crowding centuries of the slow process of evolution into the few short years of a man's life. He has given us our best potato, our best plums and prunes, walnuts, rhubarb, phenomenal berry, many of our most beautiful flowers and there are now in the hands of propagators and nurserymen several of his most wonderful productions to be introduced in the near future.

With the vantage ground of the knowledge already gained by years of practical experience in the production of new creations, and the munificent aid granted him by Andrew Carnegie, we may look forward with great anticipations as to what he will bring out in the future.

F. S. NEWCOMB.

Campbell, Cal.

THE MARKETS.

WHEAT.

There has been very little change in the market for spot wheat, though there is a somewhat firmer feeling as regards December. Advices from Argentina and elsewhere indicate somewhat smaller crops than were previously reported and a slight advance seems to be looked for. Nothing new has developed as regards the California crops. In some places the rain damage seems to have been less than earlier reports and a few places report additional damage. The export demand is still at the lowest possible mark, and while conditions still seem favorable for renewed buying in the Orient, there is no evidence of any fresh orders from that quarter. In fact, the exporting of last year's crop seems to have been abandoned all along the coast and traders are now paying attention to the coming crop only. So far very few charters for the new season have been consummated. Almost two-thirds of the United Kingdom fleet has arrived out, and sales of wheat aboard, while hardly so satisfactory to holders as was expected at the time the wheat was purchased, these sales have not been quite so bad as many expected. The general idea seems to be that wheat prices in Europe have about reached their lowest level and that the situation will probably remain steady for some time to come. The European wheat growing sections do not seem to be turning out such good crops as were anticipated, and while there is little prospect of any radical change, the opinion seems to be general that the tendency will be upward rather than downward. Crop conditions over the Pacific Northwest are favorable, the situation having been improved by recent showers.

FLOUR.

The flour market during the week ruled quiet and the business transacted was only of small proportions. Exporting is still at a low ebb, the only inquiry being from Central and South America and from Japan, where regular orders are being filled. The general idea seems to be that large buyers of flour, whether for export or for domestic purposes, will buy only for immediate needs, pending the arrival of the new wheat crop which is now near at hand. Prices are, however, maintained and in the face of a firmer feeling in the wheat market there is little prospect of a falling off in values. Locally some little interest has been taken in the sale of the 8,000 tons held by the relief committee. It is not, however, believed that the disposal of this flour will have any appreciable effect on the market. The receipts of flour for the week have not been very heavy and prices have remained with little or no change. California extras are quoted at \$4.65 per barrel and bakers' grades at from \$4.40 to \$4.60 per barrel.

BARLEY.

But little interest is now taken in old barley in this market and in the northern markets the business which is being done is almost exclusively of a retail character. Stocks of old barley are very low all along the coast. With the new barley coming in in irregular quantities the price of spot barley in San Francisco is hard to fix. Buyers and sellers are generally far apart in their views, owing to the conflicting reports as to the volume of the present crop. There has been a little decline in the price of December barley as was to be expected and it is possible that a further decline in both spot and December barley will be reported next week. In the local market old feed barley is ranging about 2½ c. above new barley of the same grade.

OATS.

While the receipts of oats are coming in a little more freely the available supply is still light, though equal to the demand. Buyers of oats are not disposed to invest heavily on the present market. The unusually high price of oats as compared with barley seems to them an artificial situation, and they prefer to wait for an adjustment.

In the North where oats are in better demand, the market is very strong, the local shipping demand being fair and the stocks only moderate.

CORN.

There has been no movement in the corn market during the past week and receipts have been practically nothing. All California corn is practically out of the market and Eastern, both white and large yellow, is held at \$1.37½ to \$1.40. Advices from other points indicate a strong market with higher prices. The passage of the denaturalized alcohol bill by Congress will, it is admitted, largely increase the home consumption of corn. Crop advices are generally favorable from all sections.

MILLSTUFFS.

Feed stuffs are generally scarce in California and it is understood that some buyers have sent to Portland

for stocks. In that city supplies are not over-abundant and it is doubtful if the California buyers will meet a favorable reception. Very little bran or shorts is coming into the market, owing to the quietness in flour milling. During the week there has been a decline in rolled barley on account of the lower price of whole barley.

BEANS.

Some little interest is now being taken in beans, owing to a slight revival in shipping. Pink beans have been in request for this purpose and previous prices are firmly held. The situation as regards the coming crop is unchanged.

HAY.

Although hay has been coming to market quite freely during the past week, the arrivals amounting to 3,280 tons, the situation has nevertheless held strong. A continuation of liberal shipments is expected to relieve the situation materially in a short time and to permit the market to settle on a definite basis. As it is quotations are hard to fix as prices are up one day and down the next, according to the immediate supply. The railroad situation is still far from satisfactory as a sweeping order has gone out that for the present no more hay shall be loaded for San Francisco delivery. The reason for this seems to be that considerable hay is sidetracked at out-of-town points awaiting track room in San Francisco. At present efforts are being made to market hay by water and considerable quantities raised close to railroad tracks are being hauled many miles to schooner landings. The old crop still continues to constitute the bulk of present shipments, the new crop arriving only in a spasmodic way. Prices hold without material change.

POULTRY.

The situation in the poultry market shows little if any improvement over the past few weeks. Supplies have been quite liberal during the last few days, much of the arrivals being of somewhat undesirable stock. Poorer stock is accumulating and the disposal of it constitutes a serious problem. Holders of this manifest a willingness to make concessions but buyers are unwilling to take more than enough for immediate needs. Heavy full-grown stock is doing fairly well at about the same price as last week.

BUTTER, CHEESE AND EGGS.

Receipts of butter, cheese and eggs have fallen off somewhat this week, owing to the strike on the water front, which is holding back shipments from coast points. The demand has continued about up to the average and the situation is therefore a little better from the sellers' point of view. The tendency to higher prices and the scarcity of supply has tended to stop the buying of butter and cheese for storage and shipping purposes.

HIDES, SKINS AND TALLOW.

The hide market is considered to be a little weaker though prices have not yet declined. In the East the market is off a little bit for heavy stock, but is still comparatively firm for lighter weights. The Eastern market for dry hides seems to be a little stronger than for green stock. Arrivals are fairly free at Eastern markets, but are still below the demand. Locally, the situation is not particularly active just now, though holders are still firm for former prices.

VEGETABLES.

Heavy arrivals of new potatoes from the river districts have been a feature of the last few days. Nevertheless, the market for these has remained firm. Those now arriving are considered old enough for shipping purposes and there has been a fair movement overland. Old Oregon burbanks are still in good request for seed purposes, and former prices are adhered to. Onions continue in rather short supply and prices have a tendency to advance. Asparagus is coming in badly damaged by the heat in some cases. The bulk of the asparagus is now being turned over to the canners who are also buying string beans at close figures. Green corn is sold at a considerable range of prices according to quality. Cucumbers are in light supply at good prices, while summer squash and tomatoes are lower.

FRESH FRUITS.

The fresh fruit market seems to be maintained in pretty good shape. Nearly all seasonable fruits are well cleaned up. Reports of peaches having been sold at Fresno for future delivery at 10 cents are current, but these have not been confirmed. Seedless grapes are now coming in in small quantities from the Coacheila Valley. Apricots are still in very light supply and in good demand where the quality is up to the standard. The shipments of deciduous fruits east are still below the average. The only fruits now being shipped out fresh are peaches and plums and a few cherries and apricots. The cherry crop is now nearly all harvested

and receipts are beginning to drop off, though this fruit will continue to be in the market for some time. The hot weather of last week is beginning to have its effect on some varieties of fruit and some of very poor quality has been received and sold at concessions.

DRIED FRUITS.

Advices from San Jose are to the effect that the prune crop of the Santa Clara Valley will be about sixty per cent of the normal, or possibly a little more. There has as yet been no buying of this year's crop, and growers are talking 3½c and are endeavoring to take concerted action to hold for that price. A few apricots for drying purposes have been sold at \$60 and \$65 per ton and with the present short crop probably the bulk of the valuable stock will go at those figures. Dryers will begin operations in some sections about July 1st. It is reported that future dried apricots have been selling at Lemoore for 12½ cents, while 8 cents has been offered in that locality for the coming dried peach output.

CITRUS FRUITS.

Lemons and grape fruit have ruled strong at better prices throughout the week. A fresh supply of Mexican limes is now in and is being marketed at from \$6 to \$6.50 per case. Navel oranges are in poor demand, and the supply, though not heavy, is hard to dispose of.

RAISINS.

Raisins are still firm at 3½ cents, with stocks not over plentiful. The growers in Fresno seem confident that prices will hold well for the coming year. Some little shipping of raisins has again developed, a small lot having been sent to Honolulu this week. Not much interest is taken as yet in the coming crop, and no sales have so far been made.

NUTS.

For walnuts the market is now depending upon eastern goods, and prices are high. Almond prices are also high and are expected to remain up for a year to come, as the prospects for the coming California crop are poor owing to the late rains. Some estimates are made that the crop will not exceed one-third of that of last year. Prices at present are 35 cents for choice almonds, and from 30 to 32 cents for inferior grades. The handlers of bakers' and confectioners' supplies are in the market for almonds for shelling purposes. Almond buyers are again in the field, and one or two of the growers' associations have already sold their coming crops.

WINE.

Advices from the dry wine district are to the effect that little or no damage has resulted to the grapes from the recent rains and that the prospect is now for a little better than the average crop. The general idea is that prices for both sweet and dry wine grapes will be high and that the price of wine will be correspondingly high. As yet wine-makers have been doing but very little buying.

THE IRRIGATOR.

IRRIGATION FOR YIELD, SIZE, QUALITY AND COMMERCIAL SUITABILITY OF FRUITS.

By E. J. Wickson in the report of Irrigation Investigations of the U. S. Department of Agriculture.
(Fourth Paper.)

Irrigated Fruit in Long-Distance Shipment.

The next point of inquiry was as to the suitability of properly irrigated fruit for shipment long distances, as is required by the present state of the world's fruit trade. During the last quarter of a century fresh fruits from deciduous trees have been carried longer distances in the world's commerce than ever before and in quantities altogether beyond anticipation indulged in at the beginning. It is also true that the fruits of this class which have successfully traversed longest distances are those grown by irrigation. The employment of irrigation is, of course, not the cause of this exceptional durability during transportation. The absence of rain and the consequent atmospheric aridity during the development of the fruit are the chief causes of the peculiarly durable tissue of the fruits and are the chief causes also of the resort to irrigation, which enables the tree to so thrive upon adequate soil moisture that it is able to meet both the thirst of the air and the requirement of the fruit. Fruit grown in a dry summer air is of the most lasting character. This was demonstrated by experience in parts of California where the winter's rain, conserved by constant summer cultivation, was adequate to the needs of the trees and vines. At first it was a question whether the same effect could be secured by irrigation during the dry season, and the impression that it could not prevailed quite generally. Later experience shows that this impression was wrong, and there can perhaps be no more

sweeping demonstration of this than the fact that by far the greater part of the Pacific coast fruits successfully marketed on the other side of the continent and even beyond the Atlantic ocean is grown by irrigation as a supplement to winter's rainfall. Still this fact is not wholly appreciated, and among growers unacquainted with irrigation practice there is still too wide a belief that it is the artificial use of water which makes fruit soft and perishable. That this is not the case, when the water is wisely used, is supported by the following declarations of experience and, observation, although dissenting opinions are also included:

Idaho.

W. G. Whitney, Payette: I have had the best of success in shipping irrigated fruit.

A. McPherson, Boise: My experience in shipping irrigated fruits has been very satisfactory.

L. A. Porter, Porters: Unirrigated apples are usually better keepers, as, not being fully matured, they wilt. With Bartlett pears the rule is reversed and the irrigated pear will hold up much better. All irrigated fruits are the best sellers, on account of size and general good qualities. I ship east some 200 cars annually from both irrigated and unirrigated sections.

Washington.

E. H. Libby, Clarkston: Well grown, well picked, and well packed irrigated fruits ship safely and satisfactorily.

F. E. Thompson, North Yakima: I have had ten years' experience in fruit shipping, and have shipped irrigated fruit as far as New York City without complaints.

J. H. James, Watsburg: I have had success in shipping irrigated fruit.

Oregon.

S. A. Miller, Milton: Irrigated fruit is always in demand, as it is larger and of higher color than the unirrigated.

R. H. Weber, The Dalles: Non-irrigated fruit being firmer will stand shipping better.

Seufert Brothers, The Dalles: Our irrigated fruit has shipped successfully, and we raise three to four times as much per acre.

J. R. Casey, Ashland: Shippers prefer irrigated fruits.

California.

George A. Lamiman, Anderson, Shasta County: I have shipped irrigated fruits for five years with an increasing demand for them. I have not shipped non-irrigated fruits, as they are too small.

W. E. Hazen, Manton, Tehama County: I have no trouble in shipping nor in selling irrigated fruits.

O. E. Graves, Red Bluff, Tehama County: I have sold irrigated prunes to shippers, usually at good prices.

Fred Scharr, Red Bluff: When a tree gets too much water the fruit will be softer and will not ship so well. The care is to irrigate deeper and not so often.

George H. Flournoy, Corning, Tehama County: Irrigated fruits, and in fact all irrigated products, carry as well as non-irrigated.

L. F. Moulton, Colusa, Colusa County: Reasonably irrigated fruits are so much larger and finer in appearance, and as the flavor is not deteriorated and the shipping qualities not impaired, it follows that such fruit is much sought for by shippers.

F. B. McKevitt, Vacaville, Solano County: Irrigated fruit grown on uplands and where there is considerable iron in the soil ships perfectly. On heavier land it does not show the same shipping quality.

Foster Brothers, Dixon, Solano County: Peaches, prunes, and such fruits stand shipping well when irrigated, but pears do not.

E. A. Gammon, Courtland, Sacramento County: My experience in shipping irrigated fruit has been good; there is no hesitation on the part of shippers to buy irrigated fruits.

W. W. Hinsey, Fair Oaks, Sacramento County: Being more juicy, the irrigated fruits will perhaps not carry so well, but they will sell better, and we grow fruit to sell, not to keep.

Charles W. Landis, Folsom City, Sacramento County: Buyers seldom distinguish between irrigated and non-irrigated fruit, but what amounts to the same thing, they set standards of size, etc., which are more surely attained by irrigation. With the exception of the mellowing of grapes, I have never heard any complaint that irrigated fruits did not ship as well as non-irrigated. When fruit is sold on the trees a clause is inserted in the contract as to irrigation.

T. J. Wagoner, Rough and Ready, Nevada County: Irrigated fruits are not good in shipping if they are allowed to become too big and juicy.

T. J. Fitch, Loomis, Placer County: The shipping quality of properly irrigated fruits seems to be demonstrated by the fact that such fruits constitute a considerable part of our eastern shipments, and have for the last twenty years or more. In 1902 almost one-third of the fresh fruit sent east was shipped from Placer

County, where irrigation is sine qua non. It opens out well if properly packed and cared for in transit.

P. W. Butler, Penryn, Placer County: There is but little non-irrigated fruit grown in this section and this is generally rejected by shippers because of its inferior size.

W. R. Fountain, Newcastle, Placer County: In our home market we have shippers and buyers both soliciting irrigated fruit, and it is easy either to consign or to sell.

W. Sharwood, Soulsbyville, Tuolumne County: The apples from our irrigated orchards are said to bring the highest prices in the San Francisco market. No one is foolish enough to try to grow fruit in this district without irrigation.

J. M. Harris, Miami, Mariposa County: I have had good success in selling irrigated fruits.

John Rock, Niles, Alameda County: Irrigated fruit will carry well if irrigation is done in the winter or while the fruit is small.

Edw. M. Ehrhorn, Mountain View, Santa Clara County: I have had no difficulty in shipping irrigated fruits.

A. Block, Santa Clara, Santa Clara County: My experience favors irrigated fruit for shipping, provided it is not irrigated too close to ripening.

S. P. Sanders, Cupertino, Santa Clara County: I only irrigate in winter from a torrential stream; such irrigation is held not to affect the carrying quality of shipping fruits.

H. Hoops, Wrights, Santa Clara County: I have generally improved the quality of my fruit by irrigation, and therefore get better prices from fruit shippers.

J. V. Webster, Creston, San Luis Obispo County: My experience is that irrigated fruits do not ship so well as non-irrigated, decaying and fading in color much more rapidly.

Dr. W. N. Sherman, Fresno, Fresno County: For 18 years we have obtained the highest prices on table grapes of any shipped from this State. In 1902 our table grapes netted us \$500 per acre. The fruit is grown with irrigation.

J. S. McCormick, Fresno: Shippers take irrigated fruits as readily as non-irrigated, and they carry fully as well.

Charles Downing, Armona, Kings County: My pears, grown on trees sub-irrigated by seepage from main canals, have always brought top prices in New York and Chicago. I have shipped peaches from trees similarly irrigated, but while some have brought good prices the result as a whole has not been satisfactory, the claim being made by consignees in many instances that the peaches from the district do not carry so well as those from the mountain districts.

Thomas Jacob, Visalia, Tulare County: Fruit grown on low land or where much water is used, does not seem to carry as well as fruit grown on drier land.

C. A. Walter, Independence, Inyo County: Irrigated fruits are best for shipping. They are firmer, have better color, and look better when packed than fruit that has been scant of water.

N. J. Cooley, Bishop, Inyo County: I have market for more irrigated fruits than I can supply, and always at top prices.

William Chappelow, Monrovia, Los Angeles County: I think unirrigated fruit handles best.

W. W. Bliss, Duarte, Los Angeles County: Non-irrigated fruit ships better, as it is firmer than irrigated fruit.

Henry D. Engelhardt, Glendora, Los Angeles County: For shipping purposes, give me the irrigated fruit every time.

L. L. Bequette, Los Nietos (Whittier), Los Angeles County: Irrigated peaches and apricots will not stand shipping so well.

A. D. Bishop, Orange, Orange County: I have been shipping irrigated fruits and selling to shippers for more than twenty years with satisfactory results.

W. S. Corwin, Highland, San Bernardino County: A large, juicy apple, if picked at the proper time, will keep fully as well as non-irrigated fruit and will sell for a far higher price.

J. H. Reed, Riverside, Riverside County: We shipped no fresh fruits, but our irrigated fruit was much sought for by the local trade because of size and general appearance as well as quality.

Hemet Land Company, Hemet, Riverside County: We get the top price for all the irrigated fruits we raise.

T. J. Bryan, Lemongrove, San Diego County: I never shipped anything but irrigated fruit, which ships well if properly handled.

Chester Gunn, Julian, San Diego County: Where irrigated early the fruit is large and well colored, and preferred for shipping to that not irrigated.

C. J. Johnston, San Diego, San Diego County: I do not clip lemons immediately after irrigation or rains. The fruit is apt to be too sappy to hold up. I wait four or five days before clipping.

Arizona.

A. J. McClatchie, Phoenix: I shipped irrigated fruits regularly to the Pan-American Exposition at Buffalo, N. Y., with success.

The foregoing statements establish beyond question the availability of irrigated fruits for shipping and afford warning against the excessive use of water also, for it is clear that those of opposing view speak from experience with an amount of soil moisture which promoted overgrowth and softness of tissue. Some fruits are more liable to this evil effect than others on account of their own characteristic pulp formation. It is also true that perishability in the pulp is due to excessive moisture supply, whether it be from natural underflow or from irrigation, and, as might be expected, the greatest dangers in irrigation are likely to be encountered on low, rich, and retentive soils and the least danger in soils naturally drier and open to a free movement of water. This diversity in soil and situation explains some of the contradiction in the testimony, while other indications of the destruction of shipping quality are due to unguarded use of water.

SUITABILITY OF IRRIGATED FRUITS FOR CANNING

The next inquiry as to the value of properly irrigated fruits related to their suitability for canning. Upon this point there has been less controversy, and yet claims of superior richness and firmness in unirrigated fruits always carry a reference to thinness of juice and mushiness in processing which have been freely attributed to irrigation. When, however, it is shown that irrigation can be used to the general improvement of the fruit trees which are scant of moisture during the filling and ripening period of the product, the improvement includes the character which canners especially esteem and are willing to pay extra prices for. That this is true is shown by the following declarations which refer to irrigated fruit, particularly from the canner's point of view:

Idaho.

A. McPherson, Boise: I have canned my own irrigated fruit and have sold it to canners—both very satisfactorily.

Washington.

J. H. James, Waitsburg: I have found irrigated fruit a little too juicy for canning.

F. E. Thompson, North Yakima: I have only canned irrigated fruit for our own use. We consider it fine.

Oregon.

Seufert Brothers, The Dalles: We can our irrigated fruit and sell it well. We pay 25 per cent more for irrigated fruit and find it cheaper for our canning.

California.

Owen Dailey, Whitmore, Shasta County: I prefer irrigated fruit for canning.

George A. Lamiman, Anderson, Shasta County: Canners pay the highest prices for irrigated fruit, especially pears.

W. E. Hazen, Manton, Tehama County: Irrigated fruits can well and are profitably sold to canners.

J. L. Barhom, Manton, Tehama County: Our fruit brings the highest prices and it is all irrigated. I have shipped to the eastern markets right from the tree mostly.

George H. Flournoy, Corning, Tehama County: I have received top prices from canners for irrigated fruits and never heard any complaint. For home canning I prefer irrigated fruit.

G. M. Gray, Chico, Butte County: My experience in canning irrigated fruits and in selling them to canners has been very satisfactory.

Rio Bonito Orchard Company, Biggs, Butte County: Our experience in selling irrigated fruits to canners has been satisfactory.

L. F. Moulton, Colusa, Colusa County: Being much larger, smoother, and finer, the irrigated fruits command the highest and best market among the canners.

F. B. McKevitt, Vacaville, Solano County: As a general thing canners prefer irrigated fruits because of the larger size.

Foster Brothers, Dixon, Solano County: Irrigated peaches and apricots are superior for canning, but not pears.

E. A. Gammon, Courtland, Sacramento County: My experience in canning irrigated fruit has been good. I have no trouble with it.

T. J. Wagoner, Rough and Ready, Nevada County: Canners will not have the unirrigated fruit if they know it. While the irrigated fruit sells quickly the other is dull.

P. W. Butler, Penryn, Placer County: None but irrigated fruit can be successfully grown in this section for canning.

W. R. Fountain, Newcastle, Placer County: Canners are after our irrigated clingstone peaches.

C. H. Bentley, San Francisco: The question of irrigation is of vital interest to everyone engaged in the handling of California fruits. From the canners' point of view there can be no question as to the benefit of intelligent irrigation in soils which require it. Peaches are, perhaps, our staple, and their quality is generally improved by irrigation except when they are grown in a soil that enjoys a natural sub-irrigation.

John Rock, Niles, Alameda County: Canners never object to irrigated fruit if it is large and firm. Large sizes bring better prices.

Edward M. Ehrhorn, Mountain View, Santa Clara County: I have had no difficulty in shipping irrigated fruits to canners.

A. Block, Santa Clara, Santa Clara County: I have no trouble selling irrigated fruits to canners; on the contrary, they like it.

S. P. Sanders, Cupertino, Santa Clara County: Canners' agents inquire on buying if apricots have been irrigated, and prefer those that have not been irrigated late.

J. H. Flickinger Co., San Jose, Santa Clara County: Irrigated fruit is good for canning.

F. M. Richter, Campbell, Santa Clara County: We think irrigated fruit is best for canning and canners prefer it, though its superior size may have most to do with their preference.

Dr. W. N. Sherman, Fresno, Fresno County: Where fruit, peaches in particular, is thinned and watered at the proper time it is much larger and greatly superior in every respect for canning purposes. We have canned from 4,000 to 7,000 cans a year of such fruit with success.

J. S. McCormick, Fresno: We sell irrigated fruit to local canners and to the canners of San Francisco at satisfactory prices.

George C. Roeding, Fresno: The flavor of canned fruits from irrigated sections is excellent.

Frank Femmons, Ahwahnee, Madera County: Irrigated fruit canned for home use has given entire satisfaction.

J. M. Harris, Miami, Mariposa County: I have had good success in canning irrigated fruit. I have now a jar of irrigated peaches that I put up in 1877. Irrigated fruit sold for canning has always brought the very highest price.

Thomas Jacob, Visalia, Tulare County: We think either very moist land or irrigation necessary to make good canning fruit.

W. S. Shelly, Hollister, San Benito County: Winter irrigation is no detriment to fruit for canning.

J. V. Webster, Creston, San Luis Obispo County: Manifestly size and general appearance are eminently essential in fruits for canning, and irrigation, properly pursued, tends toward those characteristics.

Robert Dunn, Fillmore, Ventura County: I prefer irrigated fruits for canning, and my experience is that canners take the best fruits, which can usually only be secured from irrigated trees.

F. F. Stetson & Co., Los Angeles: We use non-irrigated fruits almost wholly, but firmly believe that the fruit would be of better quality if the trees were irrigated moderately—say, twice during the season's growth. We believe such fruit would be of better size, flavor, texture (being firmer or less mealy), would cook better and look better after canning. Irrigated peaches have less red around the pit.

Henry D. Engelhardt, Glendora, Los Angeles County: Properly irrigated fruit will can best, but over-irrigated fruit will be watery and will spoil easily.

H. D. Briggs, Azusa, Los Angeles County: For 19 years I have canned, largely for home use, and have sold large amounts to canners, and always received the top price for well-grown, irrigated fruit.

W. W. Bliss, Duarte, Los Angeles County: I have sold but few peaches to canners. For our own use we like non-irrigated fruits better.

J. B. Neff, Anaheim, Orange County: Canners buy irrigated fruits in preference because of superior size. The fruit will be equally solid as the non-irrigated if not watered within one month of picking.

C. P. Taft, Orange, Orange County: Fruit irrigated before ripening is better for drying but not for shipping or canning, but fruit on any soil which lacks sufficient moisture will be better if irrigated whether dried or sold to canners.

A. S. Bradford, Fullerton, Orange County: We never have any trouble canning irrigated fruit, and canners prefer irrigated fruits because they are larger and finer. Such fruits command about \$10 per ton more on account of size, etc.

C. J. Merryfield, Colton, San Bernardino County: Canned irrigated fruit has a fine appearance and superior flavor.

W. S. Corwin, Highland, San Bernardino County: I have had first-class success in canning irrigated fruits and in selling to canners.

James Boyd, Riverside: No objection is ever made to irrigated fruits by canners; on the contrary irrigation gives more desirable fruit for canning.

Joseph Wallace, San Jacinto, Riverside County: Fruit moderately irrigated is much better for canning purposes.

H. Culbertson, El Cajon, San Diego County: Well irrigated fruit is practically the only fruit that canners will buy in this section.

THE APIARY.**RACES OF BEES.**

Mr. Isaac Hayes of Yakima county, Washington, gave a paper on races of bees at the recent meeting of the beekeepers' association of that State which may be interesting to beginners and to those experienced beekeepers who enjoy comparison of observations.

First, there is the *apis dorsata*, the large bee of Asia. I have had a sample of these bees and comb sent by Mr. Benton, the Government apiarist at Washington, and the cells of the comb were large enough to place the tops of your fingers in very comfortably, and the bees are as large as the ordinary bumble bee. I kept this sample for some time to show visitors and those interested in apiculture, the habits of bees, how they build their combs and store their honey. They are rapid workers, and fill their combs, and then evacuate the hive without cause, apparently, and take another habitation. In their native country the natives find their storing places, watch them carefully, and when they leave their well-filled combs, the natives have a great feast.

These bees build out of doors; they don't want a hive, hollow tree or some other cavity for a habitation, but build anywhere that suits their fancy.

The Italian bee, called the *apis ligustica*, seems to be the best liked for many reasons. They are good workers, take good care of their hives, defend themselves against their enemies, and in handling they stick well to their combs. I know of but one fault that they have, and that is, they cap their combs over in such a manner that they look greasy and this injures the appearance of what should be a first class section of honey.

Italian bees from different parts of Italy are of various shades of color, but otherwise preserve the same characteristics all over the peninsula.

The first bee introduced into America was the common bee of Europe, western Asia and western Africa, known as *apis mellifica*, usually designated under the name of black or gray bees. Both names are appropriate, since the race varies in color according to the locality. In Turkey the common bee is nearly black, and in other places the color is grayish. They also vary in size as well. According to some writers the bees of Holland are very small.

The Carniolan bee comes next. They are quite large, and this bee has a silver band around her body, where the Italians have the golden bands. I received some of this variety of bees some ten years ago from Mr. George Lockhardt of New York State. I did not like them for many reasons. One reason was that they resembled the common bees very much; another, they were great swarms; they did not defend themselves, although they were easy to handle, would hardly ever sting, but would allow themselves to be robbed, that is, would not defend their hives.

Carniola is a province of Austria, near the Adriatic, situated on the eastern slope of the mountains.

According to the American Bee Journal's calculation, the common bee was imported into Florida by the Spanish previous to the year 1763, for they were first noticed in western Florida in that year. They appeared in Kentucky in 1780; in New York in 1793; and west of the Mississippi in 1797. It is surprising what countless swarms have spread over the far west within but a moderate number of years. It is evident that the bees travel westward very rapidly, and to this day many old bee men can be found who positively assert that a swarm of bees never goes eastward, even after it is proven that they usually go to the nearest timber.

Bees, like all other insects, are divided scientifically into general species and varietes. Aristotle speaks of three kinds of bees that were well known in his time. The best variety he describes as small and round and variegated in color. I wish to claim that this great and noble bee of which Aristotle speaks is no other than the

Cyprian bee, for this reason: They are small and round-bodied, quick in motion, and upon the slightest provocation. They are the lightest colored bee of which I know, and the best workers. The Cyprians were imported from the island of Cyprus into the different parts of Europe where agriculture was carried on, and they were so much praised and recommended that in 1880 importations began in America. The Cyprian resembles the Italian bee in habits, etc., the difference between them is that on the thorax of the Cyprian there is a brighter yellowish color than on the Italian, and the yellow rings of the Cyprian are brighter and graduate to a copperish yellow under the abdomen. The drones of the Cyprian are beautiful, and these bees quickly assail those who dare to handle them. Smoke astonishes them but does not subdue them. At each puff of the smoke they emit a sharp shrilling sound not easily forgotten, and as soon as the smoke disappears they are again on the watch, ready to pounce on any enemy, whether man or beast. Their courage and grit and prolificness make them a very desirable variety if they could be handled safely. I have handled this race of bees for the last five or six years. I find them to be good comb-builders and good honey-gatherers and a splendid adversary when it comes to fighting. They are much inclined to rob other bees, and they will fly out of the hives when other bees are quiet. The Cyprians are usually rustling all the time, and if an apiarist does not mind a few stings, this race is, I think, the best honey-gatherer I have ever tried. They are in my estimation equal to the Italians and better in some respects, especially the cappings of their combs, which are white and smooth and even. Italians, to the contrary, cap their cells over in a rough, uneven way, although they are the idolized bee of America today.

Two noted apiarists, Messrs. D. A. Jones and Frank Benton, made a trip to Cyprus and the Holy Land and brought bees from both countries to America.

CONTROLLING THE SWARMING OF BEES.

Mr. H. S. Philbrook of Ventura county describes in the American Bee Journal a plan for controlling the swarming of bees which he has practiced for two years.

First, and most important, I will say we all know what causes swarming is an overcrowded brood-chamber, and this is what suggested my plan to me. It is simply this:

Start a new colony connected with the old one and yet separated by a queen-excluding zinc honey-board. To do this, place a hive full of frames with foundation, or empty combs, beneath the old brood-chamber, and either put the queen below on the empties, or shake the entire lot of bees out of the old brood-chamber on the ground and let them, together with the queen, crawl back into the hive, being careful to place the honey-board neatly between the new and the old chamber. Thus there is no chilled brood, as the main lot of bees will go through the honey-board and attend to it, while the surplus bees will attend to matters in the new one, and they take hold with the vim and vigor of a new swarm. Now, if cells are sealed in the old brood-chamber, they must be removed before the young queen emerges, or you are liable to get a drone-laying queen in the super, unless it has an open entrance.

The bees will not disturb the queen-cells themselves, as we all know the cells are readily accepted above a honey-board. Yet they do not mind in the least if those cells are removed, and it is just so with bees treated in the manner I speak of. Now, when the lower chamber is full of brood, the upper one will almost all be hatched out, and they can be exchanged, always keeping the queen below. It has worked beautifully with me, and has given me absolute control of swarming, and always kept up vim and vigor in the colony.

This also admits of easy increase whenever one is ready to make it, by taking away the old brood-chamber and supplying a young laying queen, or a virgin, or allow them to hatch their own cells. And now, connected with this system, it becomes very convenient to be able to find "her royal highness," and thus avoid the bother of shaking out the swarm. I have a little device for this trick which will get her in two minutes, no difference how large and populous the colony is, or whether she is black, Italian or Cyprian, or what her makeup. She cannot resist going where she is wanted and readily becomes a captive.

My bees have a very strong strain of Cyprian blood, and yet this system of controlling swarming has never failed me, which speaks well for it.

Now, for those who do not use the honey-boards, on account of not liking them, I will explain a little trick to remove all drones either in the egg or larva, or in any state of unsealed form, although our text-books all say, "Let them alone until sealed and then cut them off." My trick is just to sprinkle a little sulphur on them in the cell, and in twenty minutes the bees will

have them all out in the front dooryard and scattered far and near. A large salt-cellar is very convenient for this purpose.

THE SWINE-YARD.

THE OUTLOOK FOR HOGS.

"Several reasons have contributed to the appreciation in hog values," remarked James Wilson, Secretary of Agriculture, to a writer for the Breeders' Gazette. "One of the most important, perhaps, was a series of short corn crops. This sent breeding stock to the shambles, owing to attractive prices, and to some extent discouraged production. Meanwhile consumption increased by leaps and bounds owing to phenomenal industrial and commercial activity. All of these influences may be removed, but there remains the undeniable fact that production is not keeping pace with consumption. We are adding millions to the population annually and these millions must be fed. Look at our enormous immigration. These acquisitions from Europe naturally take to pork as the most economical food they can buy. I can forecast no reason for a severe decline in hog values during the next few years. Europe will probably re-establish its swine herds and require less from us, but reciprocity would enlarge the export outlet materially and offset any increase in production across the Atlantic. Canada is not to be considered as a competitor in the export field, as for many years to come growers of that country will not be able to supply the domestic demand. Canada's population is increasing rapidly, and hogs are worth a cent a pound live weight more across the border than in Chicago. It is a fact not open to dispute that the hog of commerce will always be produced in the corn-belt proper. The material that makes pork at minimum cost is to be had there. In other sections of the country hog production will be largely taken care of by local demand.

"Students of hog market conditions," continued Mr. Wilson, "cannot fail to notice momentous changes in the trade. Chicago no longer kills the bulk of the American hog crop. Packing houses are springing up all over the country and the industry is becoming diffused. These ventures are meeting with success because they are managed by men with Chicago training, who have learned how to handle hogs and cure meats in the school created by the Chicago packers. One reason for our increased exports of hog product, despite existing handicaps, is, the fact that the American manufacturer is making a superior article. His curing methods are perfect and his product has won on merit. Out of these pioneer plants are going scores of experts to manage new concerns. In Iowa there are a number of plants all operated by men who have learned the business with the big packers, and the same development is noticeable in other States.

"Another feature of hog trade is the westward movement. Formerly everything moved east, alive or dead. Owing to the rush of population to the Pacific Coast, things have changed. Kansas is sending hogs alive to Southern California, and shippers have bought in Omaha for slaughter in Washington and Oregon. Ultimately the Pacific Coast may raise enough pork for local requirements, but the corn-belt must furnish the pork of commerce. I cannot detect any indication of over-production. Succeeding hog crops may not sell as high as the one marketed during the past winter, but prices will be satisfactory to the grower."

A HOG CHOLERA INVENTION.

The Bureau of Animal Industry of the Agricultural Department, says a correspondent, is congratulating itself in having received a gift from Doctor Dorset, a member of the Bureau, who has invented and received patent upon a process for protecting swine from hog cholera. The doctor gives his invention without price. The new method consists of the injection of serum from the blood of an immune hog, after the immune has been treated similarly with the serum from hogs afflicted with the disease. Heretofore the treatment for cholera has been the injection of the cholera virus directly. About 20 per cent of the treated animals have died. Just at present the Department of Agriculture is at work upon a bulletin giving complete information on the subject. Dr. Dorset's invention may be used by any of the employees of the United States Government or by any person in the United States without royalty. The invention is the outcome of several years constant labor and study.

FIXING UP HOGS FOR EXHIBITION.

The California State Fair will be held on the new fair grounds at Sacramento on August 25 to September 1.

There should be a fine show of hogs, and hogs should also be properly prepared to be shown. Exhibitors often overlook this fact. A Kansas exhibitor gives the Breeders' Gazette these suggestive points:

It is impossible to give any fixed or specific method for fitting show hogs, as it is seldom that any two can be fed and handled just alike. However, I have one ration that I very seldom vary except as to quantity fed and thickness. This ration is composed of wheat chop and oat shorts or rolled oats, mixed with skim milk, not separator milk, but milk that has stood about 12 hours. I feed only rolled oats to the most valuable boars, as it is too expensive. The oat shorts can be had at almost any oatmeal mill and is the first leaving in making rolled oats. If oat shorts cannot be procured, grind the oats and put them in a barrel of water, when the hulls will come to the top and can be removed by a sieve, leaving a good oat feed. Wheat chop is by far the most satisfactory by-product of wheat I have ever used. It is the whole of the wheat after taking out a high-grade flour. In the absence of this feed, wheat shorts or middlings will answer.

I feed equal parts of wheat and oats mixed ordinarily about like buttermilk, but if the animal is in strong flesh and an easy feeder, make it thinner. It is not advisable as a general rule to reduce greatly the quantity of a show hog's ration, as he should have bulk enough to fill him up. If he is putting on flesh too rapidly, make the feed thinner instead of having it richer and reducing the quantity. I feed very little corn and no meal. Show hogs that are being fed swill relish an ear of corn and I give them one occasionally as a side dish. If you have a hog that is inclined to grow and stretch instead of putting on flesh, more corn can safely be fed. Bonemeal, blood dust, tankage and others rich in protein are good, and a little may be added with good results, but as skim milk, oats and wheat are all bone and muscle-producing, it is only in cases of very weak and defective bone where any thing additional is needed.

The secret of the whole show business is to bring the animal along so he will be in full bloom at time of the show and not a month or so before, and each feeder must use his judgment on each hog as to the quantity to feed in order to accomplish this result.

A grass lot of not less than one-third of an acre should be provided which must contain shade of some kind, natural shade preferred. I exercise the boars, usually early in the morning before feeding, and if you have a bad-footed one or one that shows signs of knuckling in hind pasterns, exercise is absolutely necessary. Walk him a mile or two if he needs it. Exercise makes the flesh firm, and while many hogs will take enough exercise themselves, there is the advantage derived from walking them yourself of getting them used to being handled and driven, making them much easier to exhibit in the ring at show time.

Keep the feet well trimmed, especially if at all defective. I clip every hair of the coat of every hog, whether it sheds or not, as it makes it come out even and the length you want it. If the coat is fine and thin, clip from two and one-half to three months before show; if heavy, and inclined to be wavy or rough, two months before show is long enough.

Several days before leaving for the show wash the hog thoroughly and see that all dirt and scales are removed, so the dressing will take effect when applied. The best preparation for the coat when showing is sweet oil and alcohol, using enough of the latter to cut the sweet oil and prevent it from being gummy. To this add a very little lamp black and be very careful that it is only a little—just enough to darken the skin. After applying the dressing, wipe off well with dry cloth.

When exercising the hog note his defects and the positions in which he shows to the best advantage and when you get him in the ring, keep your head and also the hog in the best positions possible. And if you get the short end of the purse, try it again next year.

GROUND AND CUT ALFALFA.

The Colorado experiment station has completed an experiment in which a comparison between alfalfa cut in lengths of half an inch and alfalfa ground was made in the fattening of pigs. It required 4.77 pounds of corn and alfalfa, mixed at the rate of three pounds of corn to one of alfalfa to produce one pound of gain, while 4.81 pounds of corn and ground alfalfa, mixed in the proportion of three parts of corn to one of alfalfa were eaten for one pound of gain, not counting labor. With cut alfalfa costing \$8 per ton and ground alfalfa \$16 per ton, the cost of producing 100 pounds of gain with the former was \$2.62, and with the ground alfalfa \$3.12. With corn and cut alfalfa fed in equal parts by weight, the cost of producing 100 pounds of gain was \$2.72. With corn and ground alfalfa fed in equal parts by

weight, the cost was \$3.69. These results go to show, says the report of the experiment, that at the prices quoted cut alfalfa is more economical to feed than ground alfalfa, and that a ration consisting of three-fourths corn and one-fourth alfalfa is cheaper than one consisting of half corn and half cut alfalfa for fattening pigs. Grinding alfalfa is an expensive process, and it is doubtful if machinery can be improvised which will grind it as cheaply as it can be ground by animals.

THE BOTANIST.

ALFILARIA IN ARIZONA.

By J. J. Thornber, Botanist of the Arizona Experiment Station: An extract from Bulletin 52 of that Station.

Alfilaria is known, botanically, as *Erodium cicutarium*, being a member of the geranium family, which finds its maximum development in Western Africa. The genus *Erodium* consists of fifty or more species of plants, nearly all of which are herbs, indigenous to the Mediterranean region of the Old World, though a few occur in temperate and tropical America and in widely separated parts of Asia. At least one species, also, occurs in western Australia. Alfilaria, or *Erodium cicutarium*, is a hairy, slightly viscid, erect or ascending herbaceous winter annual, six to eighteen inches in height. During the winter period it forms a relatively large, compact, many-leaved rosette which commonly attains a diameter of 10 to 12 inches. Its leaves are opposite, or alternate, and pinnate, the divisions being finely dissected nearly to the mid-vein. Its lilac or purple flowers, with parts arranged in fives, are produced in axillary, stalked, several-flowered clusters or umbels. In fruit the five styles of the flower elongate conspicuously, become hairy on the inside, and at maturity dehiscent, i. e., separated into definite parts, and twisted spirally, the seeds at the lower ends of the styles becoming in the meantime sharp pointed at their bases. The plant possesses, generally, a pronounced, musky odor.

Other Species of Alfilaria.—Seven other species of *Erodium* occur in the United States, four being natives of the Mediterranean basin of the Old World and three indigenous to the Pacific coast region. Of the introduced species, musk filaree or musk clover, *Erodium moschatum*, so called on account of its characteristic odor, and *Erodium botrys*, are becoming very abundant in California, in some instances even displacing the more valuable red-stemmed alfilaria, *Erodium cicutarium*. Musk filaree is common in the Pacific coast country, from southwest Oregon to Mexico, and in Chile. In western middle California it is one of the commonest plants of the rich lands of valley orchards and vineyards. Professor E. W. Hilgard, Director of the California Experiment Station, says of it: "On account of its distinctly musky flavor, *E. moschatum* is eaten only in limited quantity, so that a pasture once over-run with the musky species ceases to be of much value. In heavy rich soils the valuable species, *E. cicutarium* is often completely run out by the musky species."

Erodium botrys was scarcely known in California fifteen years ago. Within this period, however, it has become common in many localities from San Francisco northward, spreading with unusual rapidity over low pasture hills and gravelly plains. The following clipping, entitled "A Poor Kind of Alfilaria," is taken from a leading agricultural journal of California (*Pacific Rural Press*): "This alfilaria may be distinguished from the two common species by the leaves, which are merely lobed, the lobes being toothed. *Erodium botrys* is a newcomer and was introduced from the Mediterranean region only a few years ago, but is rapidly spreading in some parts of California, particularly in the grazing districts of Marin and Solano counties, where it is occupying the land to the exclusion of other and more important forage plants. It does not ordinarily grow in the same situations as the red-stemmed filaree or the musk filaree, but prefers low, rolling hills and pasture lands where it crowds out the more valuable grasses. As a forage plant its value is almost nothing. Its leaves hug the ground so closely that cattle do not get them; and the flower-stalks, although erect, are nearly destitute of foliage. Its further spread should not be encouraged, even in Southern California where, on account of the long, dry summers it is likely to give the least trouble."

Of the native species already noted, the Texan alfilaria, *Erodium texanum* Gray, is the only one occurring within our borders. It grows quite generally throughout the southern half of Arizona; never in sufficient quantity, however, to add materially to the floral covering. Its flowers and seeds are quite similar to those of the red-stemmed alfilaria, though it may be recognized easily by its fine, gray or ashy, appressed pubes-

cence and its rather deeply lobed ovate or heart-shaped leaves. It appears most abundant over clayey, gravelly plains and foothills, but even here it is devoid of any tendency to become a controlling factor in the flora, and hence always ranks as a very secondary species.

Factors Favoring the Growth of Alfilaria.—The conditions which influence most the growth of alfilaria in Arizona, and generally in the south west, are (1) mild winter temperatures, (2) winter precipitation, (3) altitudes as influencing precipitation and temperature, and (4) to some extent soil conditions. The winter rains in Arizona differ from those of the summer period in that, normally, they are heavy, of considerable duration and quite general in distribution, as compared with the local, showery character of the latter. They begin as early as November, though commonly later, and continue frequently until well into April. Like the summer rains, they are, unfortunately, not to be depended upon from year to year, and hence we may pass an entire winter season without precipitation.

The amount of winter and spring rainfall necessary to produce a good growth of alfilaria ranges perhaps between five and seven inches, which is not far from our common allotment during moderately wet seasons. Two or three inches of rain from December to February, inclusive, is sufficient to start the plants to grow, and winter them over in good condition, after which time there should be rains of a half-inch or more during March and April. Precipitation in excess of the above, especially during the spring months, makes possible a heavier growth both of alfilaria and the native species. The abnormally heavy rainfall of the winter and spring of 1905 induced one of the heaviest growths of alfilaria in Arizona on record.

During the delightfully mild winters which are characteristic of the Southwest, the temperature ranges for the most part far above freezing though falling occasionally at night five to twenty degrees below that point. Accordingly, the seeds of alfilaria, in common with those of a number of our native species, that is, the winter annuals, are able to germinate and grow, when there is sufficient moisture in the ground, at practically any time during the winter season.

Little is known, as yet, concerning the various soils in which alfilaria will grow; practically, it seems to thrive in any soil that is not manifestly alkaline. In common with other species of *Erodium* it has a tendency to spread over gravelly, clayey slopes,—a condition easily met with in many parts of Arizona. The writer has noted its successful growth in calcareous soils, in sandy mesa soils, in alluvial clays of valleys and washes, in mechanically decomposed granite soils (arkose soils) and gravelly, iron-stained clays, the two latter common about Oracle. It also occurs in mesa clay, an interesting modification occurring in swales and other depressions. In the vicinity of Oracle, in the spring of 1905, among shrubs, over rat and gopher mounds and other small areas where the soil had been loosened, also in canyon, valleys, and broad swale-like depressions, it frequently attained a height of 18 in., forming such a heavy, matted growth as to break down under its own weight. In the same region, on red, clay-like, gravelly hills and inclines its growth, though quite continuous, was only about one-third to one-half as heavy.

Characters of the Plant Adapting It to the Southwest. The ease and rapidity with which alfilaria has been able to get possession of large areas in Arizona and other portions of the Southwest, to the practical exclusion of the native annual species growing under the same conditions, indicate that it is admirably adapted to our peculiar environment. From numerous accounts it is at this time more abundant, more generally distributed, and apparently more at home over large portions of the West and Southwest than any other introduced species. In those parts of Arizona where it has become established it is by far the most predominant annual plant during its period of growth.

As already stated, alfilaria begins to grow in the late fall or winter months, which is a season when moisture conditions are most nearly uniform, owing to the greatly reduced surface evaporation. During this rather unfavorable period the small plants pass quickly through the critical seeding stage, developing immediately into compact, many-leaved rosettes, which lie flat upon the ground, thus securing for themselves a maximum exposure to heat and light, in addition to very desirable protection from animals. The rosettes continue to grow slowly during colder winter weather by increase of leaf surface and development of a rather deep, thick taproot, numerous flower-buds forming, in the meantime, at their centers. The flowers begin to appear with the first warm days of late winter; they are soon followed by several vigorous ascending stems from each plant, which growth continues until April or May. Plants growing on the University grounds, and favored with a southern exposure, produced the earliest flowers

this year on the 19th day of January, and matured six weeks later. Obviously, alfilaria plants have a decided advantage over others that begin growth later, in that they have well-developed root and leaf systems in the early spring to begin with, thus enabling them to get a much earlier start and mature seeds before a possible drought may set in. Also in virtue of its deep taproot, the plant can withstand, longer than most of the native annuals, the unfavorable effects of a dry period. Annual plants, commencing growth in the fall or winter, are called winter annuals, of which there are numerous examples in the southwestern flora, as, the mustards, borages, evening primroses, plantains or Indian wheat, and many composites.

Qualities of the Seeds.—The splendid adaptation of alfilaria seeds has undoubtedly contributed much to the success of the plant. They mature during the spring months and pass the hot, and for the most part, dry summer in an apparently unchanged condition, even with the presence of any considerable amount of moisture. All attempts to germinate them, together with the seeds of a number of our commoner winter annuals, during the summer months, failed.

The seeds taper from above, to a slightly curved and sharpened base, and are clothed with an abundance of brown hairs which are longer below and so disposed as to aid them to stick to and penetrate the furry coats of animals, thereby insuring for the plant a very general distribution. The awns, which are one inch or more in length and spirally twisted below, are hygroscopic, rolling and unrolling with the changes of moisture in the atmosphere from day to day. In virtue of this adaptation a good percentage of the seeds literally plant themselves, the stems, composing the plant covering, acting as fulcrums against which the coiling and uncoiling awns brace themselves, which action forces the seed into the ground. Thus the seeds escape the fate common to those of many of the native species, namely, of being blown away by the winds or washed away by the torrential summer showers.

This planting is more readily accomplished in the deeper and richer soils of valleys and swales, where the floral covering is heavier and more continuous. Nevertheless, the writer observed the beds of numerous arroyos and abandoned roads in the vicinity of Oracle, into which depressions the seeds had collected in tangled masses or windrows, planted so thickly in spots as to present a brown, furred appearance from the presence of the innumerable awns, which alone remained exposed, and as yet, had not separated from the buried seeds. This interesting observation explains fully the rather striking and unexpected occurrence of occasional matted patches of alfilaria in stony, abandoned road beds, arroyos and other similar situations least calculated for the growth of an annual species. These small, rank-growing patches contrasted so sharply with their immediate surroundings in the landscape as to be subject to comment from the resident and the occasional passerby, divers speculations being offered as to their origin.

In order to study with more than usual care the ecological features attending them, the writer camped for several nights in their immediate vicinity. At the close of a dry, hot day the seeds were seen to have their awns coiled tightly in the characteristically spiral manner, thus giving a nominal coherence to the seed masses. The next morning at 4 o'clock the formation of dew having been quite abundant during the rather cool night, the awns were observed everywhere to be uncoiled, straight and pliable from the large amount of moisture taken up, so that the heretofore tangled seed-mass could be separated readily now and appeared as so much finely chopped, discolored hay. With the first increase of the day's heat, the excess of moisture being gradually taken up again by the atmosphere, the characteristic, hygroscopic movements of the awns became apparent, at first slow, but later very active, thus giving to the seeds composing the mass curious twisting or writhing movements. Toward noon, the moisture being dissipated again, the movements came gradually to a close, leaving the bunches of seeds in apparently the same condition in which they were found on the previous afternoon. Thus the process continued from day to day, with the result that the planting of the seeds under the mats was quite complete. Occasionally, also, the work is finished by passing showers, whose flood-waters, collecting in these depressions, cover from view both seeds and awns with rich sediments. Further observation demonstrated that as a result of the intermittent hygroscopic movements, the seeds, if spread out over the ground in a uniform layer, tended to be pulled together into heaps, unless prevented by a more or less continuous covering of vegetation, which, taken in connection with the wind's action, explains their grouping together and occurring commonly in depressions. The above observations have been verified, as far as possible, by a series of laboratory experiments under essentially like conditions.

HOME CIRCLE.

THE PROFESSOR AND THE TIGER.

Bravery, Doctor (said my friend the third officer), isn't such a simple thing as you think it. One man is brave in one way, and another in a different one. Often enough, that which is called bravery is nothing more than custom. You wouldn't go up on the fore-royal-yard in half a gale to reef sail, would you? Not you! You'd be afraid. Well, you might think me a brave man because I would. But then, I'd be afraid to cut a chap's leg off, and you wouldn't.

That was what old Captain Hoskins, whom I used to sail with, could never understand. If a man was a bit nervous about the sea, he used to look down on him as all sorts of a coward. But there happened a day when he learned better.

It happened when I was with him in a three-masted sailing ship called the Arrow. We lay at Singapore, alongside the Tanjong Pagan wharf, loading with a general cargo for Liverpool. The principal object in that cargo—or, at least, the one that we took most notice of—was a tiger that we were shipping for London. It lay in a strong cage of wood and iron, with a door in the front through which it could be fed. It was a fine big brute, and every time it stretched itself you could see the muscles slipping over its sides and the big, wicked looking claws peeping out of the pads of its feet in a way that made you very thankful for the bars.

We had a passenger or two. One of them was a young girl who went by the name of Hilda Sandford. She had been a governess in the family of one of our agents out there, but the climate hadn't suited her, and she had to go home. She was coming with us instead of by steamer, because she had got her passage for nothing and she wasn't too well off. Directly the old man set eyes on her trim figure and the wealth of golden brown hair about her head, he was struck all of a heap, so to speak, and I could see that he was promising himself a mighty pleasant voyage.

The other passenger was a strange, little, dried-up man, who wore gold pince-nez and kept peering about the ship in a most uncomfortable way. He gave his name as Mr. Hay—Professor Hay, he called himself, though we didn't find out what he professed until later. Of course, the tiger had his attendant, but he berthed forward.

An hour or two before we started, this Mr. Hay came up to the old man and began asking him a lot of questions.

"Captain," he said, nervously, "I hope we shall have a quiet passage."

"I don't see why we shouldn't," said Hoskins, genially.

Mr. Hay looked up at the sky.

"There seems to be a good deal of wind about," he said.

"Pretty fair," said Hoskins. "That's what's going to take us home. Not being a steamer, we can't do without it."

"You're sure it's quite safe?" asked Hay.

"Safe!" said the old man, getting on his high horse, "safe! I'm sailing this ship."

The little man smiled apologetically.

"You will excuse me, Captain," he said. "I did not mean any offense. The fact is I am constitutionally nervous on ship-board. It is a feeling that I have never been able to overcome."

The old man looked at him with a sort of good-natured contempt.

"You've no call to be alarmed," he said; "we'll take you to England safe enough."

Mr. Hay smiled again and walked off into the waist, where he had fixed up the tiger's cage. It seemed to have a sort of attraction for him, for he stood before it for at least a quarter of an hour. Hos-

kins looked after him, and then turned to Miss Sandford, who was sitting near.

"Nice sort of chap to have on a ship," he said. "A man like that ought to stick to dry land."

"Well, you know, I have a fellow feeling for him, Captain," she answered; "I'm afraid of the sea myself."

"Ah," he said, "but you're a woman, you see. A bit of fear is all right in a woman. It's natural to them. But with a man it's different. A man ought to be afraid of nothing."

"And are you afraid of nothing, Captain?" she asked.

"Not I," said Hoskins. "You can have the biggest storm ever hatched out by the China seas and I'll thank you for it. It brings out all the good in a man."

"It must be nice to be brave," she exclaimed.

"Oh, it's all right when you're used to it," said Hoskins, modestly. "A brave man and a pretty woman are two of the finest sights in creation. They ought always to be together."

There was something in his tone that made her blush. And though she said she agreed with him, she took the first opportunity of clearing off to another part of the deck.

Shortly afterward we put to sea. For the next few days we had the best of weather, and everything went smoothly. I had my time pretty well taken up with my work, but for all that, I could see one or two things that set me thinking. The first was that the old man was making himself uncommonly attentive to Miss Sandford. The second was that this Mr. Hay, in a quiet and timid sort of way, was thinking a good deal of her, too. Hoskins saw quickly enough that he had a rival, but as he had started off with a healthy contempt for him, he didn't disturb himself over and above much.

One afternoon the skipper was sitting beside Miss Sandford on the poop deck when Hay came up the companion and made his way toward them.

"There's something I want to tell you, Captain," he said. "It's getting on my mind and making me quite uncomfortable."

That man whose business it is to look after the tiger isn't doing his work properly. The animal isn't getting enough food. It is developing a savage nature. And yesterday, when I went to see the man about it, I found that he was intoxicated. I really think you should interfere."

Of course, the old man should have interfered. But he didn't like being told his duty by the little professor, especially when the girl was about. So he just sneered.

"I suppose you're afraid of the beast escaping?" he said.

"I should certainly regard it as unfortunate," the little man replied. "You see, a drunken man might be careless about the fastenings. I must really insist upon your speaking to him."

"He's not one of my crew," said Hoskins. "I have enough to do to look after them. If any of them get drunk, they'll hear of it. But this chap is a passenger, even if he is only a steerage one. He can do as he likes with his spare time. If you're so darned frightened about the beast, you'd better look to the fastenings yourself."

"Excuse me," said the professor stiffly, "that is not my business. The animal does not belong to me. I have done what I believe to be my duty. I can say no more."

He turned away without even a glance at the girl.

"That man," said Hoskins, looking after him, "is frightened of his own shadow. Let me give you a bit of fatherly advice, Miss Sandford. When you are looking for a man to marry, never select a coward. A girl like you wants some one who will protect her in times of dan-

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ger; some one she can rely on and look up to."

"I'm not thinking of getting married," she said, shyly. "But when I do I'll bear your advice in mind, Captain."

"That's it," said Hoskins. "Think over it carefully. And as for getting married, I'd be glad if you'd think over that, too."

She started like a frightened horse.

"Oh, Captain!" she said. "I don't understand. 'What do you mean?'"

"You do understand," he said, tenderly, drawing his chair a bit nearer to her. "Miss Sandford! Hilda! Haven't you a word for a poor old seaman who worships the very ground you tread on? Think over it. None but the brave deserve the fair, you know."

"You mustn't speak like this," she exclaimed, rising, as though she were distressed. "You are older than I am. And I don't know that you are a brave man. I have only your word for it. Please don't speak to me about this again."

The old man saw that he had gone a little bit too far.

"Wait!" he said, "don't be frightened. I promise not to say a word until we reach England. Before we get there, if we have a bit of rough weather, I'll show you the sort of man I am. I should love a bit of danger for your sake."

For the next few days he went about whistling for a wind, as though he wanted to send us all to Davy Jones' locker. As for his seamanship, no one ever questioned it; and as for his contempt for danger, he was to get his chance all right, though not quite in the way he expected.

It was about a week after his conversation with the girl that it came. Hilda was sitting on the poop deck reading a book. The old man was marching up and down with a quarter deck trot, casting glances at her and thinking how pretty she was, when suddenly he let off a howl that would have frightened an elephant, and sprang into the port mizzen rigging. I wasn't far from him at the time, and I looked at him, wondering whether he had gone mad. Then I saw what he had seen, and I went up the starboard mizzen shrouds as quickly as he had gone up the port ones. The girl raised her head and looked up at Hoskins, and he gaped down at her and tried to shout. But for some time he could only make faces.

"Look! look!" he yelled at last, "come up the rigging! The tiger is loose!"

She sprang to her feet and looked about her. Not four yards away from her the tiger was playing with a coil of rope. It was paying no sort of attention to her at the moment, but she felt that it might take it into its head to spring at her at

any minute. As she stood, she was cornered between the stern of the ship and the cabin door. There was nothing to be done but to climb up the rigging. She tried, but the first step was too high, and she could not manage it. And when she realized that I thought she was going to faint.

Hoskins was just going down to give her a hand, but at that moment the tiger looked up and saw him and gave a kind of roar. The old man stuck where he was then, and sort of shivered all over like a jelly in a gale. As for the girl, she went white all over and gave herself up for lost. And then—out of the cabin came Professor Hay.

He just took one look around and saw the tiger.

He just took one look round and saw the tiger. Then he picked up a broom some one who had been washing decks had left leaning against the deckhouse, and pushed at the tiger with it, looking it straight between the eyes. I'd heard of the power of the human eye before, but I had never believed it until that afternoon. He kept walking forward, pushing the beast gently before him right into the waist and back into its cage.

When he had it safely fastened in he came astern again, looking not the least bit excited or worried, and put the broom carefully into its place. The girl was looking hard at him, and her eyes were shining; but he didn't seem to be aware of it. Hoskins had come down the rigging and was looking a trifle ashamed of himself. He hadn't known it was so easy to push tigers into their cages with a broom or he might have had a try at it. After a bit he spoke up.

"That was a fine bit of work, sir," he said. "If I hadn't seen it I couldn't have believed it."

"Oh, it's nothing," said the professor. "It's my business. I tame wild animals."

After that he seemed to dismiss the whole subject from his mind, and went down into the cabin. But I saw him later in the evening talking to that girl, and he must have had something important to say to her, for when the old man met her next morning and began making excuse for himself, she cut him short.

"Captain," she said, "do you remember advising me to marry a brave man?"

"I do," said Hoskins, a bit puzzled.

"Well," she said softly, "he asked me yesterday, and I'm going to take your advice."

Which shows you, doctor, that bravery is very much a matter of custom. As for poor old Hoskins, we had mill-pond weather the whole way home, and he hadn't even a chance to show himself.—J. Sackville Martin, in the Sketch.

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AGRICULTURAL REVIEW.

Butte.

BIG WHEAT RANCHES RAISING ALFALFA.—Gridley Herald, June 22: J. A. Onstott, one of the best-known wheat ranchers in Butte and Sutter counties planted seventy acres north of Gridley to alfalfa this spring. The resulting crop is a fine one, the young plants being nearly high enough to mow. The field will be irrigated as soon as the crop is taken off. Another well-known farmer who has been operating in wheat on a large scale for many years, is George D. Wickman, whose ranch is just west of Gridley. He has 100 acres of as fine alfalfa as can be found in the country. The crop is about ready for the mower. Mr. Wickman expects to harvest three more crops from the field this season.

PUTTING UP HIS HAY LIKE A LAYER CAKE.—C. W. Thresher, a prominent farmer and fruit grower of this vicinity, is practicing a novel plan for saving his grain hay which was damaged by the rain of last week. The hay has dried out and is ready for the barn. Mr. Thresher is putting it up, alternating loads of alfalfa with the grain hay and salting the whole with brine. He believes that the resulting combination will be very acceptable to the stock.

MAKING MONEY FROM BERRIES.—Gridley Herald, June 22: R. J. Hunter is securing a fabulous return from a small patch of dewberries and raspberries. His place was planted out last season.

ONE HUNDRED TONS OF APRICOTS. Sacramento Union, June 22: One hundred tons of apricots from the Parrott orchards afforded the material for the opening run of the local cannery which was inaugurated yesterday.

Fresno.

RECORD PRICES ON PEACHES.—Stanislaus News, June 22: The California Cannery Association and Griffin & Skelly opened their plants today. Each employs about 500 men and women. Sharp bidding on the part of the canners, together with the scarcity of good fruit, has caused the prices to soar and the packers are paying an average of \$35 a ton for apricots. The quality of the fruit delivered so far is below the average, being small and marked by blight. The packers and canners are already in the market for peaches, and the price of that fruit will be higher than ever before.

GOOD PRICES FOR DRIED APRICOTS.—Lodi Sentinel, June 19: Within the last few days dried fruit prices have taken a big jump. Buyers are offering 10 c. per lb. for dried peaches and 15 c. for apricots. Both crops are light. These are the highest prices offered for many years.

San Bernardino.

ERROR COSTS COUTNY \$300.—San Bernardino Index, June 19: Because J. J. Reeves, inspector at Redlands for the

County Horticultural Commission, has failed to serve notice upon W. G. and Sallie P. Withers, Judge Bledsoe granted a motion for non-suit in the case of the county of San Bernardino against the Withers this morning. The suit grew out of one of those numerous affairs where the fruit grower does not come across with the money for the cost of fumigating the infected orange and other fruit trees. The Withers failed to take any note of the warning to fumigate their trees and consequently the Horticultural Commission ordered the inspector to do the work, which cost \$302.11. Then a lien was filed against the property and finally came the suit for foreclosure of the lien. It was this suit that met with a sudden ending this morning. Assistant District Attorney Willis had been informed several days ago that an allegation in the complaint that Inspector Reeves had served notice on Withers was untrue, as Reeves had handed the notice to a neighbor of Withers named Stowe. He could not swear that Withers had ever been notified to fumigate his orchard and hence the bottom fell out of the suit.

THOUSAND ACRES BURNED.—Sacramento Union, June 19: One thousand acres of barley were destroyed by fire within the last 24 hours at a point southwest of Rialto. The barley belongs to the Fontana Land and Water Co. and the adjacent harvests were saved only after great efforts on the part of 100 Southern Pacific employees and citizens of Rialto.

Santa Clara.

FORTY TO FIFTY TONS ROYAL ANNES PER DAY.—Los Gatos Mail, June 21: The warm weather here the last few days has made business lively at the local cannery. The Los Gatos Canneries are handling forty to fifty tons of Royal Annes per day, with about 250 hands. From present indications the cherry crop may be finished the coming week. The apricot crop will ripen about July 1. It looks like a 15 per cent crop in this valley. Freestone peaches are dropping some. Promise still holds out for a good crop for this valley. Cling peaches look even better, and there will be a large crop. Prunes are beginning to show up somewhat on the trees, and we have no reason to reduce our estimate of at least one hundred million pounds for the valley. Some of the packers have been picking up small lots, but, generally speaking, there has not been a large number of sales. The packers who sold 2 3/4 c. or 3 c. bag basis felt pretty safe on account of the size of the crop, and today are confident that they will buy the goods at a fair profit to themselves. Frankly, notwithstanding the agitation by growers in certain districts for a higher price, we are of the opinion that prunes will sell somewhere about 2 1/2 c. bag basis to growers. This is going to be a banner year for tomatoes for canning purposes. A large acreage has been set out in various portions of the State. The price of grapes promises to be the highest for years.

Tulare.

DISPOSING OF DAIRY HERD.—Porterville Enterprise, June 15: The Williams & Young Co. are going out of the dairy business and are disposing of their fine herd of registered Holstein cows, heifers and bulls. C. T. Brown and son purchased 27 head of registered Holstein cows and heifers and a bull, Sir Skylark Ormsby Hengerveld. Messrs. Brown and son have now one of the finest dairy herds in the county. A further ten head of registered Holstein heifers have been sold to L. M. Owen, and also a bull, Korn-dyke Piebe DeKol.

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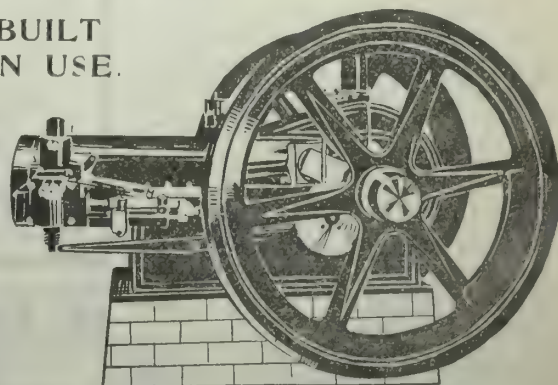
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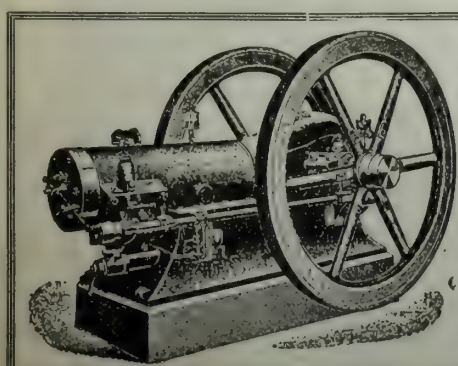
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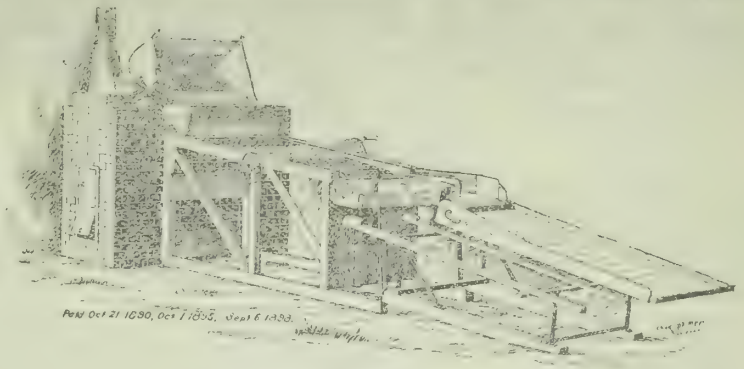
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THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXII. No. 1

SAN FRANCISCO, SATURDAY, JULY 7, 1906

THIRTY-SIXTH YEAR

THE FRANQUETTE WALNUT.

Several weeks ago in our allusion to the wisdom and enterprise of the Oregon Nursery Co. in making the Franquette walnut one of the specialties of their propagation and sale, we expressed the hope that Mrs. E. M. Vrooman, who decided to make this variety the basis of her planting after careful investigation, would give our readers an outline of her experience. Our desire has been gratified and Mrs. Vrooman has sketched the steps by which she decided to plant walnuts on her fine farm, "Walnutmere," near Santa Rosa, and the process also by which she resolved to concentrate upon the Franquette.

Mrs. Vrooman holds that present walnut planters are fortunate because a leading nursery company has searched out and secured to them a commodity of first rank, and are now giving them facts for their guidance, because she believes that these facts, if followed in the spirit of their issuance, will assure present planters a practically smooth course upon what would otherwise prove a storm-beset sea of mishaps and probable failures. She states that it was otherwise in her experience at the time of planting "Walnutmere" at Santa Rosa. While almost every home yard, or its sidewalk, in that vicinity had one or more English walnut trees (some yards had many of them), yet Sonoma, one of the oldest horticultural counties of California, had no commercial walnut orchard. Questions, elicited from some of these tree owners the belief that theirs was a "poor variety." Some charged the climate with crop failures, while others, with unwarranted hopes, believed that trees would prove to be the right variety when they should come into full bearing.

It was a discouraging outlook; surely something was awry, for the walnut trees certainly grew well, and Mrs. Vrooman accepted the task of finding out why they failed to fruit profitably. Turning to some successful walnut orchardists of Southern California for explanation, she found that all believed Santa Rosa's climate was at fault; and finally she was given the declaration that "walnuts will not thrive beyond the sound of the sea." It was strange that such a statement should have been made by people otherwise intelligent for the contrary was demonstrated 30 years ago by Mr. Felix Gillet in the foothills and by the success of old trees in the Sacramento valley, but Mrs. Vrooman was depressed by the statements made to her and her purpose to plant walnuts was abandoned, her hopes laid low and covered with a pall of prudence.

But she courageously decided not to consider the question settled. She had her acreage of deep, rich, loamy and well drained soil bringing an insufficient profit in grain. No planting seemed to answer all desired requirements as did the walnut tree, because, as she reasoned:

- First.—It is the longest lived of all orchard trees.
- Second.—A walnut orchard, when once established, requires less labor than do other orchard plantings.
- Third.—Walnuts, unlike many fruits, need not be harvested and marketed on the hour.
- Fourth.—They have the wide world for a market.
- Fifth.—And finally, the area favorable to fruitage of the walnut is very limited.

At the beginning of the second year's campaign for information, Mrs. Vrooman received a letter which seemed to suggest the key to the situation. The writer's orchard of 150 acres had borne regularly and generously, while that of a friend 15 miles distant, planted at the same time and to the same variety, had not borne any nuts at all. This statement gave rise to

the suspicion that "late frosts" was the basis of the walnut trees near Santa Rosa. Her next line of search was clearly defined. She must discover, if possible, a variety of walnut that would withstand the frosts of late spring.

About this time claims were being made for the Proeparturiens, a French variety which escapes the frost by blooming some three weeks later in the spring than does the common seedling English walnut. The Proeparturiens bears at an earlier age, and most prolifically, and the flavor of its fruit was most delicious. What more could one ask? Caution suggested that it might be well to compare this fruit with other French varieties before closing with an alluring proposition to buy, which was being pressed upon her. Apparently this was the last step she could take in the selection of a variety of walnuts suited to her locality. She had read everything printed upon California walnut culture; had received courteous replies in an extensive correspondence with walnut growers and nurserymen; had visited the wholesale and retail dealers in search of information, and was still at sea.

To make the comparison referred to, she visited the late Mr. John Rock, and asked to be left alone in his sample room to solve the problem in her own way. Here was at last the chance to finish her tests, for she was satisfied that a commercial walnut must be:

- First.—Large enough to meet its competitors, whether of the French or of the English varieties.
- Second.—The nut meats must fill the shells.
- Third.—The meats must have a white covering.
- Fourth.—The flavor must be the best.
- Fifth.—The shell must be what is termed "medium soft shell."

Sixth.—And finally, the shells must be well sealed, to endure the many handlings of a long distance market.

In that sample room, the little Proeparturiens fell out of the race. It failed to meet the first requirement, while the Franquette alone, of all the varieties there, met each and every condition. She saw Franquette walnuts from a grafted tree whose scions came from France, "the home of the walnut," and before her was the evidence of their uniformity of size and their excellent flavor. "Walnutmere," California's pioneer large acreage of grafted French walnuts, was accordingly planted with the Franquette variety.

The engravings on this page are illustrative of Mrs. Vrooman's walnut farm. The first picture shows the residence, walnut drier and various outbuildings. The lower picture shows the best bearing Franquette tree of the orchard. Near the tree stands Mr. J. F. Burgess, Mrs. Vrooman's manager.



Buildings upon Walnutmere, the walnut farm of Mrs. E. M. Vrooman, near Santa Rosa.



Franquette walnut tree and Mr. J. F. Burgess, manager of Walnutmere.

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THE WEEK

Seasonable heat seems to show that the Nevada weather blockade has vanished and a fuller line of harvest sun and air may be realized. Report comes from the high Sierra that the season is very backward and July conditions are apt to come in August this year. This announcement will be interesting to our valley readers who go pretty high for their summer outings and count upon absence of snow and plenty of grass for their animals. Such reports indicate high water in the valley streams later than usual and, considering the volume which is now passing beyond bounds on the lowlands, it is perhaps fortunate that it has not come down more rapidly. What with the Colorado river still pushing farther into the eastern lands of Riverside and San Diego counties and the Sierra streams pouring into the central valleys, we surely have a great deal of water for an arid State and, as we claimed last week, it devolves upon the State to use it better than it has hitherto. Irrigation, drainage, reclamation and safe water storage still remain among the greatest engineering problems in California in spite of all the progress which has been made up to this time. This fact is commended to the next legislature.

Fruit shipments eastward are now reaching respectable figures per day but we are still only about one-half of last year's movement up to July 1. It looks as though we should have to depend largely upon grapes and apples to make good figures for the early fruits have been short and the midseason fruits like pears and peaches are in such demand for canning that both the fresh and dried product must be small. Peaches and pears are being contracted for in some places up to \$60 per ton or more where the varieties suit the canners and different canners are going hundreds of miles and contracting supplies almost from under the eaves of rival establishments. All this makes it very gay for the grower who has a crop of the right varieties and some of those fortunate parties will probably get more money for less fruit than they ever did before. The liveliest possible fight against pests is now being waged by such growers for fruit was never more worth fighting for. All these things will make it a very active season with fruits. We could only wish that the benefits were a little more widely distributed.

If all the farmers' difficulties in turning his produce into money are not now speedily met it will not be for the lack of help from the outside. An outfit of promoters in the central West is trying to float an organization of producers which will be strong enough to fix prices upon all products and to enable the producer to say, if you do not meet my price you will go hungry. Without wasting a moment in discussing the equity of this proposition it is enough to say that farmers never have hung together on such a proposition and never will. But now comes an entirely different sort of an organization, reported from New York and said to be backed by unlimited capital, and supported by many of the most prominent financiers of the country, known as the American Farm Products Company, and established for the purpose of taking absolute control of all dairy products, chickens and eggs. It is asserted by those who control the company that it will bring about an increased and uniform price to the producers, and a diminished price to the consumer, giving

him a superior and purer grade of dairy products, and greatly improving present methods of distribution. The commission merchants' profit will be eliminated, and the great corporation will take the responsibility of delivering butter and milk from the hands of the farmer to the hands of the consumer. A score of the wealthiest men in America, who already have put in about \$20,000,000, are prepared to advance additional millions as they are required. This is decidedly interesting. The poor middleman is getting it from both sides. Producers have been pounding him for years and now a great first-hand distributing trust is after him. He will evidently disappear from the earth in the milk and eggs line at least! The head of this great New York trust is ex-vice-president Levi P. Morton, who is a farmer who admitted once that butter cost him a dollar a pound and we presume his eggs cost him about as much. Farmers will be content if he will knock out the middlemen and get such prices for them.

Congress has adjourned and one can get a side glance at the importance of agriculture in the country and the recognition of the fact, by a reference which President Roosevelt made at the close of the session. These are the words:

In the session that has just closed the Congress has done more substantial work for good than any Congress at any session since I became familiar with public affairs. The legislation has been along the line of real constructive statesmanship of the most practical and efficient type, and bills have been enacted which have been of an importance so great that it is fair to say that the enactment of any one of them would have made the session memorable—such, for instance, as the railroad rate bill, the meat-inspection measure, the pure-food bill, the bill for free alcohol in the arts, the consular reform bill, Panama canal legislation, the joint statehood bill and the naturalization bill.

The recognized importance of agriculture is found in the enactments enumerated and characterized by the President. There are eight measures named: of these three are distinctively agricultural in that they have most to do with farm products, two more are largely agricultural because the farmers have been the strongest and most persistent advocates of them, while three are general measures in which farmers share with other citizens. Five out of eight great measures secured because of the persistency of farmers' advocacy, not only shows how important our agriculture is but how influential our farmers are when they get busy in public affairs.

California has her recent experience to thank for one congressional achievement. Since 1879 California has been appealing to Congress to grant to the State five per cent of the net proceeds of the cash sale of public lands. Practically every other State in the Union had received various amounts from this source. Several times bills to effectuate this purpose have passed the Senate only to fail in the House, where it is always more difficult to obtain action. This year, however, the California delegation decided to unite in a determined effort to pass a bill, and their efforts were crowned with success. The result is that California will receive from this source about \$1,000,000. This will go for educational purposes if we are not mistaken.

Sometimes we get an idea from the paternalism of the European governments that the people have little to do with forest improvements and the like. This seems to be wrong and much is accomplished by popular effort. Consul E. T. Liefeld furnishes a statement about the improvements made in the Black Forest of Germany, with recommendations for American mountain associations. Of the 54 mountaineering clubs in Germany, with 142,603 members, the most important is the Schwaebish Alpine Club, with 28,000 members; then comes the Harz Club, with 17,298, and the Baden Black Forest Club, with 10,710 members. The last named does much to

beautify the mountains by making paths, roads, etc., and publishing illustrative matter. The annual membership fee is \$1.25, and it is suggested that Americans form similar mountain associations. The thought of employing a guide never occurs to a person tramping around the Black Forest, for the many guideposts and maps render it unnecessary. In like manner, the picturesque and beautiful mountain scenery of the United States could be made convenient and attractive to the people by their own organized effort. It is a thing for Californians to think of.

We have heard that to make trade samples of the different grades of grain it is usual to put in a certain amount of dirt, weed seeds, etc., to make the sample fairly represent a low grade of grain, but we never heard before of putting a definite amount of dirt into a lot of grain to make it like a certain sample. And yet that is said to be a practice in India. The report is that the recognized proportion of dirt allowed by English millers is five per cent. Hence it is the common practice of Bombay merchants engaged in the wheat trade to keep in their warehouses on the Port Trust, Bombay, two sets of machines. All their wheat as it arrives in the warehouse is sampled. That which contains more than five per cent of dirt is first put through the cleaning machine to get rid of the dirt. This cleaned wheat is then put through the mixing machine, where it receives its exact five per cent of dirt and is then ready for the wheat market in Europe. A correspondent says that it is this miserable system which prevents elevators being erected in Bombay and the wheat as it arrives by train being delivered direct on board the steamers, so as not to disturb the dirt percentage. The reform needed is for the millers in Europe gradually to reduce their allowance of dirt until it is abolished altogether. "As long as millers in Europe deduct five per cent for dirt, so long will they get it. Eastern wheat shippers can not be expected to lose five per cent on each shipment, and therefore they add the deficiency of dirt in each sample as it arrives.

It seems that the cost of inspecting fruit entering some German cities is likely to prove quite a handicap. H. Percival Dodge, secretary of embassy at Berlin, mentions the fees charged in Germany for inspection of imported fresh fruit in order to detect the presence of San Jose scale. In the territory of the free city of Bremen the following charges are made for official inspections: For every package not exceeding 75 lb., 1.19 c.; for every package exceeding this weight, or for every 100 lb. or less of unpacked fruit, 2.38 c. The minimum fee for every consignment is 1 mark, or 23.8 cents.

QUERIES AND REPLIES.

BARLEY GROWING IN CALIFORNIA.

To the Editor: I am very anxious to obtain some information with respect to the methods of cultivation of barley in California, since your State has a great reputation in this connection. The points on which I should be glad of information are as follows: Average time of sowing; average time of harvesting; average yearly rainfall in barley growing districts; average rainfall during barley growing period; average yearly temperature; average temperature during barley growing period; usual rotation of crops. If you can give the above information and in any case I should be most grateful.—STUDENT, Warminster, England.

It is very difficult to make a general statement about the growing of barley, because there is such variation in culture methods and natural conditions in different parts of the State where barley is grown. Commenting roughly upon the points which you suggest we may say that barley is sown at different times from the beginning of the rainy season in October until near the end of it in March. Near the coast where the rainfall is heavier and the temperature less the late sowing is successful; in the interior where other conditions prevail earlier sowing must be practiced. The harvesting months are June and July. The rainfall in the different

districts ranges from six inches to sixty inches and barley is such a hardy plant and such a quick grower that a crop can be secured with less rainfall than any other cereals we grow, so that fair results, but of course, not a maximum yield, can be secured with a minimum rainfall, providing it is properly distributed from the sowing to the ripening. The average rainfall in districts where the most barley is produced would be about 15 inches. The average yearly temperature does not count much in barley growing,—it is the temperature during the growing season of the plant which is significant. For instance, high summer and early autumn temperatures will count for nothing because the barley is then in the sack. Probably the average temperature during the growing season would be about 50 deg. and the range would be from about 25 deg. to 75 deg. The low temperature seldom exists long enough to freeze the ground surface but comes in the form of frosts which are rarely severe enough to affect the grain.

We have practically no systematic rotation of crops in California. Bare fallowing is quite largely practiced, mainly for the purpose of conserving the moisture and thus rendering the crops in alternate years more sure. Wherever barley has been grown in rotation with alfalfa, or beans, or sugar beets, an increased yield of barley has been secured, providing moisture conditions are favorable. With irrigation it is possible to practice rotations with great advantage, but this policy has not yet been pursued long enough to yield definite results. We expect an alteration of barley with legumes for plowing under green, or for pasturage, will prove to be of great value, but without this method of supplementing rainfall our moisture supply is too scant to allow the growth of such plants in rotation. We have still very much to learn in this connection.

TREES FAILING AT THE TOP.

To the Editor: I have a prune orchard on heavy black loam soil, 13 years old. I have practiced clean culture; no growth of any kind has ever been plowed under, and no fertilizer used except barnyard manure. This orchard is vigorous and thrifty, and always has a small crop. For several years the tops of the trees turn yellow and later in the season become absolutely bare of leaves. Remember, there is no lack of moisture and the orchard is always well cultivated. The trees are on peach root. There has been no manure used for several years. Can you tell me what is the matter? I send you a few leaves; the small yellow ones are from the top; the large one from the lower branches.—GROWER, Santa Rosa.

Manifestly there is something at fault with the root system of your trees, or in the soil in which they are growing, as you are sure that there is no lack of moisture. Are you also sure that there is not standing water below which prevents the tree from rooting as deeply as it ought to? Such failure in the top is generally due to either excessive water or excessive drought in the subsoil and this may occur even when the soil nearer the surface may be kept nicely moist by careful cultivation. We would advise you to dig a hole near a suffering tree to a depth of four feet and see what sort of conditions you encounter. You may strike hardpan, or mud, or gravel and sand. Any one of these conditions would bring your trees into trouble at this time of the year. It is not probable that the soil lacks plant food for in that case you would not find part of the tree thrifty and the balance otherwise. If, however you discover the soil and moisture conditions to be all right to the depth mentioned then the application of stable manure or the plowing in of a green crop is all that can be suggested as of possible benefit. If you find the soil dry below, summer irrigation is the remedy.

THE ANDREWS CHERRY.

To the Editor: I ship you sample of cherries to be identified. I found the tree amongst about three hundred seedling trees I got from France ten years ago. I call it the "Andrews cherry." I have planted out several acres from grafts from the "mother tree," as the one tree was the only one worth anything. I value it highly. Please let me know what you think of it. Enclosed find ten dollars on subscription. Can't do business with-

out the "Press." I admire your grit.—C. N. ANDREWS, Redlands.

You are quite justified in calling the cherry which you send "Andrews" or any other name you select, because if you are sure that it grew from an ungrafted cherry seedling it is a new variety, and although it may closely resemble its parentage it is new just the same and is entitled to a name if its quality justifies planting. We cannot undertake to judge of its resemblance to its parentage, supposing it is surely from a seedling grown in France, because we are not familiar with the European varieties, except the few which constitute our chief cherry product in this country. It seems to us a splendid shipping variety; the specimens which you shipped on June 25 reached us June 28 in absolutely fresh condition, excepting a single cherry here and there which showed a sign of drying a little, but none whatever of decay. The bearing of the tree, as shown by the branches sent must be considered excellent and it seems to us you have a variety exceedingly valuable for shipping purposes in size, beauty and keeping qualities as well as in juiciness and flavor.

COMPOSITION OF STABLE MANURE.

To the Editor: Can you give me a formula that will express the main elements of barnyard manure, such as is produced on the average ranch, part hay and part grain feed? I want to get it something like this: Nitrogen, 4.5; phosphoric acid, 3.2; potash, 10. This is a formula I have used on some kinds of small fruit.—ENQUIRER, Los Angeles.

There is so great variation in barnyard manure that it is very hard to state either its composition or value, but we can say in a general way that the relative proportions of nitrogen, phosphoric acid and potash in manure from horses fed in the average way with hay and some grain is very close to the figures of the formula which you say that you have used.

WOOLLY APHIS.

To the Editor: I send a small box containing apple twigs covered with an insect which must do some harm. What is it and how can I extirpate it?—AMATEUR, Madera county.

Your box contains specimens of woolly aphid of the apple. The woolly aphid on the tree can be best held in check by spraying with the kerosene emulsion or by transplanting ladybirds as they do at Watsonville, but the woolly aphid also inhabits the roots and they may be prevented from collecting in too large quantities on the root crown by the use of about five gallons of fresh wood ashes placed about the base of the tree at the beginning of the rainy season, or by using about three pounds of tobacco refuse in the same way. The rain leaches the lye from the ashes or the juice from the tobacco, both of which are destructive to the aphid. By keeping the insect thus reduced at the root crown its presence on the tree itself can be reduced to a minimum. More than this you cannot expect to do, because it is impossible to extirpate the insect, and it is present in nearly all the apple orchards of the State.

POMELO PESTS.

To the Editor: Inclosed find a few leaves and parasites from my pomelo trees. They are three years old and have not done well. I have sprayed them with soap and coal oil. Can you give me any better remedy or tell me what to do for them?—GROWER, Placer county.

The spots on the pomelo leaves which you send are not serious. They can almost always be found on citrus trees and fortunately do not become abundant enough to do any great injury. They seem to be the result of an exudation and are not of a parasitic character. The envelope contains specimens of the black scale and the best way to keep this pest reduced on a few small trees is to spray from time to time with kerosene emulsion, as you have already done. These large black objects which you send are the old scales containing eggs from which the young brood are now coming out. For this reason it is desirable for you to continue your spraying from time to time, for it is only in the younger state that the insect can be killed in this way.

FIRST CUTTING OF ALFALFA.

To the Editor: In recent issues of your paper there have been interesting articles upon silos and how to build them, and alfalfa and how to grow it. But I have not seen anything about combining the two and making alfalfa silage the same as they do with corn. In this neighborhood, and this season in particular the alfalfa had lots of foxtail and bronco grass in it, and owing to the wet season it was not possible to cut it for hay before it headed out. Now, if it is possible to make alfalfa silage it would settle the question of disposing of the foxtail early in the season and give us good feed in the winter when we need it for our milk cows. There are no silos in this part of the country so I have no one but you to consult.—FARMER, Sutter county.

The siloing of the first crop of alfalfa, together with the foreign stuff which usually grows in it has been long advocated and in some cases has been successfully accomplished. There is, however, a question whether alfalfa siloed is as good as alfalfa hay, the latter to be fed in connection with corn silage, etc., but the siloing of the first cutting, owing to the amount of grass, etc., is a different proposition. It is necessary, however, in order to successfully silo this stuff, to cut it thoroughly and to pack exceedingly well in the silo because of the amount of air which would be carried in the hollow stems of the grasses and in interspaces of ill-packed stuff. If you undertake anything of this kind you must remember that successful siloing of it is rather more difficult than in the handling of well-cut corn stalks for the same purpose.

The stack silo was recently described in our columns. This has been favorably reported upon in the Fresno region. The first crop is put in a well-tramped stack and it settles sufficiently to exclude the air. When ready to use cut straight down one side of the stack so as to expose the stuff as little as possible to the air. It would not cost much to try this.

PLACES FOR WALNUTS.

To the Editor: I have some 200 acres of land in Fresno county in which there is some alkali, but not enough to prevent the growing of alfalfa in a fair quantity, but I think there is too much alkali to make a good peach orchard of, therefore I wish to know whether or not soil of this kind would be suitable for walnuts, that is the English or French grafted on black walnut stock. The soil is generally a sandy loam mixed with alkali. I particularly wish to know whether or not the kind of walnut trees I have described will grow successfully in soil containing alkali.—READER, Oakland.

We cannot encourage you to undertake walnut growing on land affected with alkali even in moderate quantity. Land which shows alkali is apt to be underlaid by hardpan, or to be troubled with a rising water table from excessive irrigation somewhere in the region. Both hardpan and standing water are unwholesome for the walnut even when alkali is not present and the occurrence of alkali is an added difficulty. If you wish to try an experiment certainly the California black walnut root is more promising as a foundation than the English walnut seedling.

BURR CLOVER SEED.

To the Editor: I would like to ascertain where to find a market for burr clover seed and whether it can be sold in the burr or if it is required to be threshed and sold in the seed only. I understand they use this in Mexico as a fertilizer. I hope you can enlighten me.—ENQUIRER, Stockton.

There is a growing market for burr clover and formerly it was all sold in the burr; recently, however, machinery for cleaning has been put in operation and clean seed is now on the market in large quantities. The Jessup-Wheeler Co., of San Francisco, were large producers of clean seed before the San Francisco fire, but whether they have re-established themselves or not we are not informed. Burr clover will be in constantly increasing request in this State now that clean seed can be furnished. It is being more widely recognized as valuable for winter growth in orchards to be plowed in as fertilizer and it is also in request as a winter forage plant. It seems to us that widely as it has been grown hitherto, it is likely to be of vastly greater importance in the future.

THE IRRIGATOR.

IRRIGATION FOR YIELD, SIZE, QUALITY AND COMMERCIAL SUITABILITY OF FRUITS.

By E. J. Wickson in the report of Irrigation Investigations of the U. S. Department of Agriculture.
(Fifth Paper.)

Suitability of Irrigated Fruits for Drying.

The next inquiry related to the suitability of properly irrigated fruits for drying. This is a quality which has had to meet a strong negative from the first and many growers are still disposed to deny it. This is not remarkable, for does it not seem reasonable that fruit which has to be brought into preservable form by the expulsion of a large percentage of its moisture by heat would be made better for that process by growing it in a way which would naturally reduce the amount of moisture? In fact, so strongly did this consideration appeal to many growers a few years ago, that it seemed to them silly, as the common saying was, "to force a tree to pump its fruit full of water which has to be driven off again in the preparation of the product." Several propositions which are fundamental in successful fruit drying were not then recognized at their full value. They are better understood now because the chemists have made many comparative analyses of dried fruit, because the dealers have learned what consumers will pay most for, and because growers have secured many hints of practical value from their own experience. The breadth of this experience can be readily understood when it is remembered that in California alone the annual product of dried fruits of all kinds is nearly 340,000,000 lb., and not less than half of this amount is made from fruit grown with irrigation, and this half has a vastly higher market value than the other half. A few of these propositions which have been shown to be fundamental in successful fruit drying may be briefly stated, as follows:

- (1) The best dried fruit is secured from the fruit which is best before drying.
- (2) Good size is as profitable in dried fruit as in fresh or canned fruits.
- (3) Fruit which is deficient in flavor and richness does not improve in drying and acid flavors which are apt to be developed in fruit which is not able to mature properly are intensified in drying.
- (4) Though the best drying fruits are those which naturally possess a certain firmness of texture and density of juice, it is not possible to imitate these natural conditions nor to advance them by denying the tree the amount of water which is necessary to the vigor of the tree and the full development of the fruit. For instance, the Muir peach has naturally rather dry flesh and the popular cling peaches are of very firm flesh, but these natural endowments of the varieties can not be successfully produced in other varieties nor enhanced in the varieties themselves by denying the trees the water necessary to produce satisfactory size of fruit, for it is clearly shown by all lines of investigation that adequate size, in each variety according to its own natural standard, helps in the development of other qualities of the variety in their fullness.
- (5) While all these things are true it is also true that water in excess of the amount required by the tree to attain its highest quality of product is apt to force the tree beyond its best work and it matters not whether the water reaches the roots by irrigation or by natural movements of water through the soil. Of course in a semi-arid country there is greater danger and greater actual occurrence of excess by irrigation than by natural movements and consequently blame attached to it in the popular mind.

These considerations hold in the growth of fruit for all purposes, but they are advanced in this place because in the growth of fruit for drying the sharpest issues have arisen, the greatest inconsistencies have been alleged against irrigation, and this is the place for the vindication of the practice of irrigation against wrong conceptions of its effects. This is the last ditch of the non-irrigators, and a deep stream of water is now flowing through it, as the following reports clearly demonstrate:

Idaho.

L. A. Porter, Porters: I have found that irrigated prunes make the better cured product, as they have more sugar in the juice and dry plumper. I can pay more for them.

A. McPherson, Boise: I have had good results in drying irrigated fruits.

W. G. Whitney, Payette: I have had splendid success in drying irrigated fruits.

Washington.

F. E. Thompson, North Yakima: I have only dried

irrigated prunes. One hundred pounds French yield 41 lb. dried; 100 lb. Italian yield 32 lb. dried.

J. H. James, Waitsburg I have had good results in drying irrigated fruits.

Oregon.

Seufert Brothers, The Dalles: We knew that driers pay the largest prices for the largest fruit. In a dry country the fruit gets sun enough to offset any greater amount of water supplied by irrigation.

California.

Owen Daily, Whitmore, Shasta county: I consider irrigated fruit best for all purposes.

George A. Lamiman, Anderson, Shasta county: As irrigated fruit is larger and better flavored, it commands a higher price after drying.

O. E. Graves, Red Bluff, Tehama county: Irrigated prunes are as easily dried as those not irrigated.

Fred Scharr, Red Bluff: Irrigated fruit will shrink more in drying.

J. L. Barham, Manton, Tehama county: We have had first-class results in drying irrigated fruits.

Mrs. Emma E. Yager, Manton: According to my experience irrigated fruits dry well.

W. E. Hazen, Manton: Irrigated fruit makes better dried fruit than non-irrigated; it has a better flavor.

George H. Flournoy, Corning, Tehama county: If properly irrigated, fruits of all kinds make a better dried product than non-irrigated fruits.

G. M. Gray, Chico, Butte county: It takes a few more pounds of irrigated fruit to make a certain weight of dried fruit, as a rule.

Rio Bonito Orchard Company, Biggs, Butte county: Our experience in drying irrigated fruit has been satisfactory.

L. F. Moulton, Colusa: Reasonably irrigated fruits dry well and sell for the highest prices to driers.

G. W. Thissell, Winters, Yolo county: It requires more pounds of irrigated fruit to make a pound of dried fruit than it does of non-irrigated fruit, but the heavier yield and the larger size under irrigation, also the advantage in handling, drying, and selling large fruits more than compensate for the greater shrinkage in drying. The money is in the irrigated orchard.

F. S. McKevitt, Vacaville, Solano county: If properly irrigated the fruit will dry as well, and the yield from the same weight of fresh fruit will be as large as with the unirrigated.

Foster Brothers, Dixon, Solano county: The drying of irrigated fruits of all kinds is satisfactory.

John Rock, Niles, Alameda county: Fruit grown with winter or early spring irrigation will dry as well as unirrigated and is more profitable, as it is of better size. It will have more sugar than fruit grown on dry land.

Edward M. Ehrhorn, Mountain View, Santa Clara county: There is a little more loss in drying irrigated fruit, but I believe this is offset by the larger size of the fruit secured by irrigation.

S. P. Sanders, Cupertino, Santa Clara county: Fruits irrigated late in the spring and in early summer shrink more and are off in flavor. Driers buying fruit green seek and pay more for non-irrigated, but growers hardly understand the reason for the discrimination.

J. H. Flickinger Company, San Jose, Santa Clara county: In drying the shrinkage is greater with irrigated fruit.

F. M. Richter, Campbell, Santa Clara county: If fruit is heavily irrigated late in the season it will show greater shrinkage in weight in drying, but it will not otherwise be inferior. The commercial driers look upon it in this light and prefer irrigated fruit, because the product is larger and hence of better grade.

W. S. Shelly, Hollister, San Benito county: Winter irrigation causes no greater shrinkage.

J. V. Webster, Creston, San Luis Obispo county: As irrigated fruit is larger, and as the larger dried fruits have the higher commercial value, irrigation is often an important agency toward profitability, but my observation is that the non-irrigated fruit excels in everything but size.

Charles W. Landis, Folsom City, Sacramento county: The better the green fruit the better the dried fruit.

W. T. Kirkman, Merced: Muir peaches well irrigated will dry about one from five and make first-class dried fruit, selling for the highest quoted prices. We have had very satisfactory success in drying irrigated fruits.

George C. Roeding, Fresno: Irrigated fruits dry as well as non-irrigated and are much brighter in appearance.

Dr. W. N. Sherman, Fresno: We dry about 150 tons annually of raisins, and have done so for about ten years. We dry about 25 tons of peaches. All these are grown by irrigation.

John C. Nourse, Fresno: The percentage of shrinkage or loss of weight in drying fruit, either irrigated or non-irrigated, is about the same, except where the water has been applied immediately preceding the ripening

of the fruit, when the shrinkage in the irrigated fruit is greater. Our dried fruit from irrigated apricots, peas, peaches, nectarines, and raisin grapes compare favorably with the same fruits in any other part of the State.

J. S. McCormick, Fresno: We dry irrigated fruit every year, and it commands as good prices as non-irrigated fruit in other parts of the State.

Charles Downing, Armona, Kings county: Orchards in this district are chiefly grown by seepage irrigation from main ditches. Almost all the peaches and apricots are dried, yielding usually a little more than a ton of dried fruit to the acre. Raisins also go about a ton to the acre for the first crop, second-crop grapes going mostly to the wineries. A piece of 20 acres, or allowing for avenues, etc., about 17 acres actually, of Muscat vines planted 10 by 10 feet, produced, in 1901, 96.4 tons of grapes of 22 per cent sugar test. In 1902 this same piece gave 168.4 tons of grapes of about the same sugar test. The vines were 13 years old in 1901. One edge of this vineyard is one-eighth of a mile from the nearest ditch.

Thomas Jacob, Visalia, Tulare county: Non-irrigated fruit dries heavier and retains its color better after bleaching than fruit grown on wet land or with much irrigation.

J. M. Harris, Miami, Mariposa county: I have always dried irrigated fruits with the best success.

C. A. Walter, Independence, Inyo county: Irrigated fruit, being large and rich in flavor, is the best fruit for drying.

Robert Dunn, Fillmore, Ventura county: I prefer irrigated fruit for drying, as it is as a rule larger.

Henry D. Engelhardt, Glendora, Los Angeles county: Deciduous fruit grown with about two light irrigations during the dry season in Southern California will produce the best results in drying qualities.

J. B. Neff, Anaheim, Orange county: Driers prefer irrigated fruit, if not irrigated within a month of ripening.

A. S. Bradford, Placentia, Orange county: The fruit driers make no distinction between irrigated and non-irrigated fruits, and the largest fruit commands the best price.

A. D. Bishop, Orange, Orange county: My experience in drying irrigated fruits has been entirely satisfactory.

H. D. Briggs, Azusa, Los Angeles county: I have dried fruit every year since 1890, more or less, and always with fair results. I always prefer irrigated fruit, if water has not been used within three weeks of ripening.

L. L. Bequette, Whittier, Los Angeles county: Irrigated fruits do not dry so well.

W. S. Corwin, Highland, San Bernardino county: Irrigated fruit dries well.

Joseph Wallace, San Jacinto, Riverside county: Non-irrigated fruit is much better for drying, provided, of course, that it will attain proper size without irrigation.

Hemet Land Company, Hemet, Riverside county: We have dried irrigated apricots and peaches for five years and always get paying prices for them.

Edward L. Koethen, Riverside: Irrigated apricots make an excellent dried product.

J. H. Reed, Riverside: I kept careful account during two or three years of our dried irrigated fruits as compared with the same kinds of fruit unirrigated which we dried for neighbors under precisely the same conditions. I was surprised at the increased product of cured fruit from the irrigated lots. As to quality, the increased price received for the fruit settled that.

H. Culbertson, El Cajon, San Diego county: Our experience is that irrigated fruit is the only fruit that will pay expenses. By actual test I have found the actual cost of preparing peaches for drying to be two or three times more for small fruit than for large fruit well developed under irrigation. Of course, thinning (or spacing the fruits on the twigs) is one of the most important factors.

Very clear conclusions can be secured from a careful study of the foregoing declarations of experiences. It is desirable to consider them as a whole and not as isolated statements. For instance, Mr. Thissell's and Mr. Ehrhorn's statements complete the showing of the greater shrinkage in drying, as shown by Mr. Gray, the Flickinger Company, and others, and Mr. Jacobs shows that shrinkage is experienced in fruit grown on land naturally wet as well as on that excessively irrigated, while Mr. Wallace shows when non-irrigated fruit is superior and explains the preference which Mr. Bequette has expressed in all the answers which he has made. He has land naturally moist enough for the fullest requirements of the trees and has no need of irrigation. Reading dissent then in the light of such interpretation there remains a clear and emphatic affirmation from the experience of many that irrigation is widely the surety of satisfactory size and quality and of profit in the growth of fruit for preservation by evaporation.

THE MARKETS.

WHEAT.

During the past week the wheat market has been absolutely without feature. Prices seem to be a little firmer early in the week, owing to some little call from millers. There was some talk of bringing in wheat from Portland, but the situation eased off again and nothing resulted. Advices from Chicago and Liverpool continue to report firm markets, and the outlook is for a fairly good market for the new crop. Some little interest is taken in the first arrivals in new wheat. The wheat shows up well, though there is as yet not enough of it to make any deliveries. The first deliveries can hardly be made much before the end of July. There has been no export business doing and the demand from shipping houses shows no signs of being renewed. It is still hard to get active estimates of the size of the crop now at hand, and advices continue to be somewhat conflicting. Floods in some sections have done considerable damage, especially along the San Joaquin river. In other places the crop is not turning out so well as anticipated. Advices from Portland and Seattle are to the effect that the entire stocks on hand in those States will not aggregate more than 10 per cent of last year's crop. In Oregon and Washington the crop will probably be of average dimensions, running somewhere in the neighborhood of 55,000 bushels. In Europe, the outlook is not particularly encouraging as the market is weak for prompt or early shipments and buyers continue to assert that Europe has already secured sufficient wheat to carry it well into next season. There are no late reports from China, Japan or South America and no buying can be expected from these quarters before the new crop is well in hand.

FLOUR.

The flour trade continues extremely light. Here and there a report comes in of a slight improvement, but these are not sufficiently numerous to be accepted as any indication of the general condition of business. There have been no exports during the week except a very small shipment to Honolulu. Millers get an occasional cable from Japan inquiring for prices or offering prices all the way from 10 to 15 c. per barrel less than ruling domestic prices. In view of the fact that the new Japanese tariff goes into effect on October 1, some millers are anticipating quite heavy buying before long, and in fact, a few orders from that country for July loading are reported from the Columbia river and Puget Sound. The general idea seems to be that there will be a revival in the trade soon after the new wheat crop comes in and that trade should be quite active during the late summer. Portland reports a good demand from Central and South America. Owing to the tying up of the San Francisco shipping interest, the southern trade which usually comes here, is being diverted to the north.

BARLEY.

The barley market has weakened further this week as was to be expected, owing to considerable receipts of new barley. During the last few days interest has shifted almost entirely from old barley to new barley and no distinction is now made between the two as regards prices. At the present time nothing is doing in brewing barley, though there have been considerable transactions in feed. Prices are ranging from about 90 c. for poor new barley to about \$1 for very choice old barley, with the average run of both new and old selling between these two prices. Some little interest is being manifested in December barley with quotations generally tending a little lower from day to day. One considerable shipment of new barley has already been sent to England and some small shipments are going to the Hawaiian Islands. So far there has been no movement North, although feed barley is quoted at \$1.20 at Portland with light receipts, a firm market and a good demand for all grades.

OATS.

New oats are expected to reach the market in small quantities within a few days. So far the arrivals have been but trifling and not sufficient to establish a market. Pending the coming in of the new crop, very little is doing, both the demand and the supply being exceedingly limited. Crop prospects are considered good. In the North, offerings are small and the demand is being met with Eastern oats as heretofore. The crop in Oregon and Washington will be above the average, showing an increase of about 20 per cent over that of last year.

CORN.

Prices for corn in the local market are largely nominal as practically no business is being done. The corn market is therefore almost entirely an Eastern matter. Chicago advices report small stocks with considerable

speculation as to futures, owing to the uncertainty of the effect of the new alcohol law. The condition of the new crop throughout the Mississippi valley is favorable with a considerably increased acreage.

MILLSTUFFS.

Very little interest is being taken in millstuffs, most lines being depressed by the coming on of the new crop. Crushed barley is naturally weaker with very little doing. Owing to the inactivity of the flour mills, supplies of bran and other by-products are very limited and prices for spot stocks are fairly steady. There is, however, no large buying and nobody is stocking up for the future. Shippers are out of the market entirely.

HAY.

There has been a decided diminution in hay shipments since last report, the total showing but 2,800 tons as compared with 3,580 tons for the week previous. In view of the fact that the Southern Pacific Company has raised its embargo against hay, the falling off in receipts is somewhat surprising. Advices from the interior are that cars are being loaded at many points, but owing to the congested condition of the tracks in San Francisco, very few cars are being brought through and there is not enough hay arriving to supply the demand. Owing to this condition, prices are holding high though dealers claim that with the restoration of normal conditions, prices would settle on a moderate plane. Dealers seem to be looking for freer arrivals and lower prices shortly. In most of the principal hay sections there is reported to be an ample supply of good hay though there is undoubtedly a large per cent of the crop in a damaged condition. The local demand continues fairly active though still considerably below the usual trade. Owing to the spasmodic delivery of the new crop, prices are as yet not very definite.

BEANS.

While there was not much going on early in the week in the bean market, there has later developed considerable interest in pink beans. These are quoted higher from day to day and are very firm. Several large houses are said to be quietly speculating in them as the yield of the coming crop is expected to run considerably below that of last year, owing to the late rains which prevented planting in some cases. Other varieties of beans are quiet at unchanged prices.

WOOL.

The wool market does not show any particular change during the last few days. Most of the California clip is now in and while there have been a number of transactions, there has been none of particular note. Some interest is taken in the Nevada clip where considerable wool is still in the hands of the growers. Reports from Salt Lake City show a great deal of interest in the wool market there where the Idaho wools are now being marketed. The struggle between the big Idaho wool growers and the wool buyers has ended in a compromise as a result of which the growers are selling their wool on the ground instead of shipping East as was threatened. Prices realized are in the neighborhood of 21½ cents. Some growers are still holding out for 25 c., but this is probably an extreme limit.

FRESH FRUITS.

The labor strike on the water front is seriously affecting the fresh fruit market, as long lines of shipping stock which would otherwise find a ready outlet in export channels have to be carried over from day to day and are usually sacrificed in the end at low prices to the detriment of good fresh stock. Cherries are now sold almost entirely in bulk. These are generally in not very good condition and the trade is beginning to neglect for better and more attractive lines. Apricots have continued firm though quiet. Cantaloupes are coming in from the Coacello valley in rather poor condition and prices have broken badly not only for poor stock but for all grades. Some cantaloupes from India are bringing better prices. Hawaiian bananas are coming in freely but are generally too green to be attractive. Figs and seedless grapes are in small supply and currants are very scarce. Peaches are more plentiful and are being well received. Apples are slow and weak. In some sections buyers are offering from \$50 to \$60 per ton for green apricots.

BAGS AND BAGGING.

The market for grain bags seems to have become firmer again in the presence of the new harvest. Grain bags are now selling at wholesale in San Francisco at 10¼ c., while at Stockton and other points they are bringing 10½ c. It is claimed that some farmers are still without bags and that difficulty may be experienced in securing a large enough supply. Dealers here estimate a total of between 38,000,000 and 40,000,000 bags

to meet the requirements of the season which they claim may reach 50,000,000 bags. It is, however, possible that the present high prices may succeed in drawing out enough bags to fill the deficiency and it is hardly probable that prices will advance further.

DRIED FRUITS.

As regards spot fruit the situation is unchanged. The small stocks now on hand are being cleaned up rapidly and it is hardly likely that the carrying over will amount to anything. The general idea seems to be that the output of dried fruit from California this year will be large. The lateness of the season, which will cause the California fresh peach crop to be marketed coincidentally with the crops of Arkansas, Texas, Oklahoma, Georgia and Michigan, will result in lower prices and consequently reduced shipments. The destruction of the canneries and the delay in beginning operations at the remaining canneries, owing to the destruction of cans, will probably reduce the demands of the canneries considerably. Added to this the high prices offered for dried fruit should lead to an unusual per cent of the crop being given to the dryers. Nevertheless there is no tendency to a break in prices for future dried fruit, and buyers are now offering better prices than usual. Future dried apricots are selling in some localities at 12 c. The complete cleaning up of all stocks of dried fruits is expected to stimulate the market for dried prunes and dried apples. Purchases of the coming prune crop have been made at 2½ and 2¾ c., notwithstanding the fact that buyers are still talking of a 2½ c. basis. A large buyer now in the East is quoted in New York as placing the dried apricot pack of this year at 5,000 tons as against 22,000 tons in 1905 and the dried peach output at 16,000 tons as against 20,000 tons in 1905.

RAISINS.

There is very little activity in the raisin market here, owing to light stocks, and to the fact that everything has passed out of first hands. The market East is decidedly strong and transactions have recently been quite large. Sales of the new crop loose muscatels in carload lots have been made in New York at 3¾ c. for four-crowns. Some sales of seedless muscatels and seedless sultanas for shipment out of the new crop have been made on a 3¾ c. basis for sultanas, and 3¼ c. basis for muscatels. The inside price on the new crop seems to be 3½ c., f. o. b. One of the largest buyers in the country estimates the coming crop at between 60,000 and 65,000 tons, and the stock of 1905 raisins still on hand at only 80 cars.

CITRUS FRUITS.

There has been but little active trading and very little interest in the citrus fruit market this week. Mexican limes have weakened under fresh supplies. Oranges of rather poor quality are offering quite freely without attracting any interest. A small shipment of grape fruit has arrived and is taken quite well.

BUTTER, CHEESE AND EGGS.

The butter market continues firm with a very slight advance for the best quality, other grades remaining practically the same. It is expected that from now on there will be a wider range of prices for the varying grades of butter. The cheese market continues in good shape with no surplus of California stock to be had. The bulk of the receipt of cheese now consists of Eastern goods. The egg market seems to be a little off and prices, while nominally unchanged, are a little weaker. The market, however, is not considered to be in bad shape as the demand is quite good.

POULTRY.

The poultry market shows no signs of an immediate improvement and in nearly all varieties it is quite badly overloaded. Prices continue, however, without change and this is possibly a favorable system. Prices are now nominal for old roosters, ducks and geese. The only extensive trading has been as usual in large full grown young roosters and in heavy hens.

VEGETABLES.

The vegetable market is chiefly characterized by a general weakening in the ordinary run of summer vegetables due to the increasing supplies now reaching the market. Cucumbers, green corn, peppers and tomatoes are included in the list of those which have declined under heavy receipts. The tomato crop is reported in good shape and it is expected that large quantities will go to the canners later on. Large shipments of green peppers are coming in from Stockton and vicinity. The receipts of potatoes show an increase, most of the stocks being of good quality. Onions are also coming in in good shape, but the arrivals are now proving in excess of the demand. Other vegetables are generally unchanged.

FORESTRY.

FIRE FIGHTING ON THE NATIONAL FOREST RESERVES.

The worst enemy of the forests is fire. To combat it the forest service maintains a fire-fighting system. How effective is this system is shown by the following figures for the last two years:

Area of forest reserves in the United States, exclusive of Alaska and Porto Rico, year ending January 1, 1905: 58,052,054 acres of reserves; burned over 388,872 acres; per cent of reserve area burned, 0.66.

Year ending January 1, 1906: 92,741,030 acres of reserves; burned over 152,557 acres; per cent of reserve area burned, 0.16.

In other words, while the reserve area has almost doubled, the burned area has been reduced by more than one-half, and the percentage of area burned has been reduced by more than three-fourths.

Only since February 1, 1905, have the reserves been under the administration of the Forest Service. This reduction is therefore the showing of the first eleven months of administration by government foresters. The working out of a system of effective control of fire on the reserves is still in its infancy. "Too much fire" is still the judgment of the Forester on the situation. Of course, bad seasons play a large part in determining the fire losses of a year. Even with the best possible system of protection there are bound to be wide fluctuations between individual years. But it is believed that under expert care the injury to the national forests can be rapidly and permanently cut down. The direct loss from forest fires in the United States runs annually into many millions of dollars, while the indirect loss is beyond estimate.

In developing its system of protection the Forest Service availed itself of past experience, home and foreign. The reserve officers—forest guards, assistant forest rangers, deputy forest rangers, forest rangers, deputy forest supervisors, and forest supervisors—are under the direct supervision of the office of the Service at Washington, guided by a definite code of instructions; but large authority, with corresponding responsibility, is placed upon the local officers themselves. All except the forest guards are civil service employees, and the salaries paid range from \$720 to \$2,500 a year. Each supervisor is responsible for the patrol of his reserve and is expected to devise systems best suited to his locality. Already, in the brief period since the organization of this system, a high standard of efficiency has been developed, and a much higher is expected.

A constant lookout for fires is kept from ridge trails and commanding points during the danger season, and the reserves are patrolled as efficiently as possible with the force available. Roads, trails, and fire lines are constructed, affording means of rapid communication and points of vantage at which to arrest the progress of a fire, and telephone lines are being run to help give warning and summon assistance.

Every forest supervisor is authorized, in person or through a subordinate, to hire temporary men, purchase material and supplies, and pay for their transportation from place to place to extinguish a fire. When the cost is likely to exceed \$300 the supervisor telegraphs the Forester for authority to incur the additional expense.

Forest rangers are required to report monthly to the supervisors regarding all fires occurring in their districts. These reports cover the location, damage done, probable cause, by whom the fire was discovered, when discovered, when brought to the notice of the forest officer, when the work of fighting the fire was begun and finished, how many extra men were employed, and cost of fire. At the end of the year the supervisor submits an annual fire report to the Washington office.

During the calendar year of 1905, 36 of the 93 reserves escaped fires altogether. On the remaining 57, areas were burned over ranging from 1 to 79,083 acres (northern division of the Sierra reserve) and amounting to 279,592 acres. The largest amount of timber was destroyed on the Lewis and Clark reserve (southern division)—42,893,000 board feet. The total for all reserves was 152,557,000 board feet, with a value of \$101,282, but the greatest loss in money value was \$27,320 on the Priest River reserve. The total cost of extra labor and supplies for fire fighting was \$12,573.52.

The seasons of greatest danger from fire are spring and fall. The first is now fully at hand, as the Michigan losses already testify; and, unless every precaution is taken by all concerned, vast damage from fire, on both public and private forests, may again be expected. General co-operation of all coming in contact with the forests is earnestly to be sought, first, to guard sedulously against the starting of fires, and, second, to aid in every way in extinguishing such as occur.

In this connection may be mentioned several steps already taken toward co-operation among the Forest Service, the State governments, and local interests in fighting fires.

In California the Forest Service, the State Forester, and the lumber companies are co-operating to prevent and fight fires, all forest rangers having been made State fire wardens. In Oregon and Washington the Forest Service is co-operating with the timber companies to the same end. The governor of Idaho is inaugurating a movement to organize the timber companies of that State to co-operate with each other and with the State in fighting fires, and has asked the assistance of the Forester, who has replied that the Service will aid the movement by furnishing plans and assisting in carrying out any measures agreed upon by the Idaho organization.

THE STOCK YARD.

SUGGESTIVE NOTES ON FEEDING.

W. D. Foster, foreman of the Washington State College Farm, recently gave a talk at the Live Stock Breeders' Association at Moscow, Idaho, from which we take these suggestive paragraphs.

First get the right kind of a steer before you think of feeding him. You can castrate the males of any of the breeds of cattle and make steers, but there is only one kind of a beef steer, and that is the product of a beef sire. I am not going to say whether the sire be a Shorthorn, Polled Durham, Polled Angus, or Hereford; these, if correct in type, will all produce calves of beef form according to the individual taste of the farmer who is devoting his energies to raising beef cattle. It is an absurdity, I think, for any farmer to try and mature steers from a strictly dairy bull that will ever amount to anything, while on the other hand a Holstein cow crossed with a bull of good beef type will occasionally give you a pretty fair beef steer. Now there is a great diversity of opinion regarding the best kind of an animal to use. Some prefer the coarse boned type. I have heard people say if they could get the frame with lots of bone they would have an animal to suit them exactly.

I do not agree with this theory, however, for when I buy beef I want meat, not bone. Allow me to give you a short description of the animal I would select and one that in my opinion would make a good sire. He must be well set on short legs, good length of body with well sprung ribs; a short thick neck, well arched; a good deep brisket not flabby; well filled behind the shoulders with good heart girth; a broad back with a straight line from the shoulder to the butt of the tail; broad and smoothly turned around the pins; with not too coarse a tail; the hams well sprung with meat low down not only outwardly; and in order to get a good feeder get an animal with sufficient capacity covered with a good mossy coat of hair. The product of such a sire will invariably be calves of good beef form.

I have noticed in the large summer fallows that abound in the Palouse country a great many cows suckling their calves. That is a splendid way to start a beef steer, provided you do not allow the calf to stay with its dam at the straw stack during the winter. The calf may possibly live, but when spring comes it will be so badly stunted that it will never mature into a first class animal. The first winter is the critical period in a calf's history, and the farmer who sees that his calves are kept comfortable, with plenty of good food during that period can have reasonable assurance that he can make something good out of them in the future. Now, about the dam. She does not require to be a pure-bred animal like the sire; a grade cow, even a common one crossed with such a bull as I have described, will invariably produce a calf of good beef type, for we must remember the bull is the almost all important factor and if I understand it properly the main object in our meeting here today in conjunction with this very excellent prize list, is to encourage farmers to use only at the heads of their herds, whether it be cattle, sheep, swine or horses, only pure bred sires. There is room for a tremendous improvement in this direction and I trust the majority of farmers will not always be blind to what is certainly for their own best interests.

In feeding a steer, it is not well to push the calf too much at first, as it is very liable to sicken, and a calf at that age is very easily killed by kindness; but it must have something more than pasture. I refer to the period when it would be about a year old. A small quantity of crushed oats given twice a day will assist nature in forming bone to carry its future weight. I do not believe in rushing animals too fast, but as your steer develops and grows you must increase his ration, not necessarily a great quantity of grain, but by adding roots and ensilage, he will grow very rapidly; or in other words you must grow your steer preparatory to the fattening process. Of course it requires diligence and

perseverance, not feeding one day and missing the next in order to get the best results. Wheat, barley and oat chop is a splendid ration with roots and ensilage to fatten a steer. By having your steer in proper condition the time you want to make him weigh, you can with this ration make him put on three pounds per day by giving him good comfortable quarters with plenty of water and fresh air, combined with plenty of grooming, for that also is essential.

I am trying to impress on your minds how to raise and feed a first class steer, one who when finished would find a place in the best markets in the United States, and at two and a half to three years of age would weigh anywhere from 1600 to 1800 pounds, and some might do even better than that. In comparison with your summer fallow and straw stack steer, that could not do it in less than five or six years, and in the majority of cases would never do it at all, and then he would not be half as good. I am aware of the fact that beef cattle during the past summer have been very low in price. The farmer is, I think, a good deal to blame for this condition of affairs. Generally speaking he does not put on the market a first class animal. The steers I have seen marketed here are by no means finished, and he cannot expect the price if he has not got the goods. Mr. Byrns had a steer last year that was finished, and he did not have to give him away, and I venture to assert that Mr. Byrns' steer was a money maker, and I do not know one thing regarding the food he consumed. When farmers wake up to their own interest and do something themselves to make their cattle what they ought to be, it is, I think, a reasonable assumption that buyers will come from somewhere and prices will be paid that will make their work not only a pleasure but also profitable.

Last year the Washington State College furnished the people of the Falls City their Xmas beef—a pair of twin steers raised and fed there. Their sire was a Polled Durham bull, the dam a grade Shorthorn, not much of a cow to look at, for when I first saw her she was past the meridian of her youth, and like the last rose of summer, somewhat faded and gone, but a pretty fair milker. She had the disease called springhalt, and had it bad. When we would turn her out to water it would give you sore eyes to look at her. She had practically speaking just three legs, for the fourth one was in the vicinity of her stomach as often as it was on the ground. She nursed these twin calves and when I arrived at the farm they had just been weaned. To look at them they did not give promise of a very brilliant future. We were crowded for room at that time, and are much in the same condition still. Finally late in the fall we got a box stall for them, and kept them growing nicely during the winter. The next summer they staid out in the pasture, feeding them a little oat chop daily. Last winter the students had the preparing of their feed for a while. During the past summer they had dry feed all the while with the barn yard to run in. They gained steadily in weight and still kept growing. Their bodies grew larger and their legs seemed to get shorter, and their general appearance was much improved.

About October 1st it was decided to sell them for Xmas beef, and from that time they were forced to their full capacity. Their ration was wheat, barley and oat crop, with roots and ensilage and hay of various kinds. They gained three pounds a day each and were still doing it when shipped to Spokane. Professor Elliott had instructed me that he wished the steers to be fed nothing but what was raised on the College Farm, consequently they were fed no oil cake, oil meal nor any condiment with the exception of one-fourth pound of ground flax seed each twice a day during the last six weeks, and any farmer can grow that.

These steers had some peculiarities—one had horns, the other was hornless. They lived together in peace, ate out of the same feed box and never quarreled. In gains they kept about equal. Oftentimes when weighed they were exactly the same weight, and on the day of their departure there was only 60 lb. difference. Their combined weight the day before leaving the farm was 3320 pounds. Their history at the block is something remarkable at least for the State of Washington, and shows what any ordinary farmer can do without paying out so much for oil foods.

HOLSTEIN-FRIESIAN SALES.

Secretary F. L. Houghton of Brattleboro, Vt., reports to us the following transfers in this State:

Black Knight of Sleepy Hollow, R. M. Hotaling to R. S. Guerin, Visalia.

Johanna Wit Netherland, R. M. Hotaling to Walter Mitchell, Visalia.

Korndyke Baker Boy, R. M. Hotaling to C. F. West, Galt.

THE POULTRY YARD.

A PLEA FOR BETTER STOCK.

To the Editor—"Gone mad," is the verdict rendered by many a person who reads of the high prices paid for stock, of different varieties, and of poultry, also, in these prosperous, progressive days. It remains (and always will) that there is a good demand for the most perfect breeds of animals and fowls and he is wise who, if he can afford to do so, will secure the best. True it is that every person cannot purchase the very best, yet each and every one who breeds horses, cattle, sheep, swine or poultry may profitably strive to improve his flocks and herds. No farmer is so poor that he cannot take one short forward step, at least, each season, in this direction.

Too often it is the case that the average farmer works without system; without a definite plan which may never be fully matured, but which may be, approximately, realized. There is an old and true saying that we'll never hit the mark unless we aim for it. It takes money now-a-days to hit the bull's eye, but any one ought to land within one of the outer circles.

Now that incubating is over for the first months of '06, it is well to look forward to the coming season. How long, how many a twelve month must pass, before all our farmers grade their flocks of poultry, or, better still, raise none but pure breeds. It is "line upon line, precept upon precept," in the matter of urging farmers and their wives to raise poultry of the highest standard. A vast amount of money, in the aggregate, is yearly lost to the farmers of this State because they will continue to raise scrub poultry, which produce scrub eggs and chicks, which sell for scrub prices.

Now for another season, and commence early. Purchase one, or more, cocks of good breeding in order to lift, a little, the standard of the flock. Or, get settings of eggs from those who make a specialty of raising pure blooded fowls. Get those noted for excellent laying records. Do anything, in any way you can, to improve your poultry. In one short year you will have a lot of birds that you can proudly exhibit to your friends. What is better, you will have quantities of eggs which will command the best prices.

Arguments along this line have been iterated and reiterated until one might well think they have become threadbare. But this article is written solely for the purpose of the betterment of brother farmers. Never lose sight of the axiom that it pays to have the best and to do things in the best way.

The rank and file of poultry raisers are staggered when single birds are reported to have sold for \$100, \$200 and so on up to \$800 and \$1,000 apiece. No wonder, dear farm reader, you will say such figures are outrageous. Yet they are asked, and are cheerfully given, and the purchasers long ago cut their wisdom teeth. The prices quoted were received for eastern fowls, quite recently. California breeders have hardly reached the \$1,000 mark yet, but commendable progress is making.

We all know that good draft, travelling and race horses command big prices, all over the land. Only a day or two ago we read in the eastern dispatches that, for a horse belonging to the Keane stables, \$100,000 was refused. Life is uncertain—for equines, as well as for humans—and the valuable horse suddenly died. His winnings on the turf last season are said to have been \$184,000.

But we frequently lose sight of the fact that dairy cattle, in this marvellously progressive age, sell for wonderfully large sums. It all goes to show that good breeding pays and that it stands any farmer—as it does every person, engaged in whatsoever business he may be—to do his level best.

The fact is too many of our California farmers have too long been content to get along as they did years and years ago. We ought to take one step ahead, at least, every season. Maybe we live too near Mexico and have caught the manana fever, putting off till tomorrow what we should do today. Let us take a trip to San Francisco and take a few lessons of the praiseworthy rustlers there, who, having been hit such a staggering blow are rustling like the good fellows they are in the laudable endeavor to push the world along. We need a little more concentrated energy on our farms; not so much of a physical nature, it may be, but mental. We need to plan for greater things. At least to work for the progress possible for us along the line of breeding better stock and fowls.

We read today of a Pennsylvania dairyman who thirty years ago paid \$300 for a Jersey cow. No doubt, in those years, long past, his neighbors thought him crazy. But, never losing sight of a well defined plan, the gentleman has built up a herd of national renown. At his last annual sale "Lady Vernonia" sold for \$2,500. Another cow brought \$1,700. Twenty-five calves brought \$5,945. Sixty-five cows went for \$29,595. Five bulls brought

\$2,315. Quite a number of heifers went for \$500 apiece.

These prices should encourage the farmer or poultry raiser who must, perforce, work early and late, and hard at all times. Let us do our level best in all things.

There is a wonderful unanimity of earnest effort on the part of persons engaged in commercial pursuits to speed on the building of the metropolis of this State, and the State, at large, as well. It well behooves the farmer to do his share toward the betterment of conditions in our beloved California, which he may do in endeavoring to intensify his farming, building up the standard of his flocks and herds and in strenuously bracing his stalworth shoulder to the wheels of progress at all times.

Napa, Cal.

A. WARREN ROBINSON.

BROODY HENS NOT WARMER THAN OTHERS.

The general notion is that broody hens have a fever and an enquirer asks the Rural New Yorker whether some anti-febrile medicine would not reduce the temperature and remove the broodiness with it.

Mr. James E. Rice of Cornell University, says the enquirer is wrong in his premises because a broody hen has no fever. Two Cornell students, Henry Jennings and H. F. Prince, carried out some interesting experiments in the advanced course in poultry husbandry, which apparently disprove the theory that a hen has a higher temperature when broody. The temperatures were taken when the hens were laying, when they were broody, when they began to lay, and each day or two throughout the entire period of incubation. Briefly stated, the average temperature of six hens, just after laying an egg, was 108.1 degrees. The highest was 109 4-5 degrees, a White Wyandotte; the lowest 107, a Plymouth Rock. On the other hand, the temperature of broody hens ranged lower. One Plymouth Rock averaged 106.9 and another 105.9. One White Wyandotte gave 106.5 and another 105.8, while a Buff Cochon averaged 106.1. The highest temperature among the broody hens was 107 2-5, about the same as the lowest of the laying hens. From the figures here given, it is readily seen that the hens' temperatures while broody are below rather than above the normal. When we seek for a reason, it seems to us that it is perfectly clear that the temperature should be lower while broody than at any other time, because then there is the least bodily activity, less respiration, less food consumption, all of which would tend to cause a lower temperature. It is interesting also to note in this connection that the hen's temperature would rise two to four degrees above the normal while the egg was being deposited.

Inasmuch as there appears to be no broody fever to overcome, the answer is self-evident that no medicine or drug of any kind should be used to cool the blood. It might be said also incidentally that there should be no resort to ducking the fowl in a water trough "to cool her off." The rational way to treat a broody hen is to remove her as quickly as possible from the nest, after she has indicated the desire to incubate, place her in a clean, well-ventilated coop or pen where she can be supplied with water, grit and precisely the same rations as are fed to the laying hens. With Leghorns we allow them to remain in these pens for three or four days. At the end of this time most of them will forget their desire to raise chickens, rest awhile and commence laying again. The starvation process, in my judgment, would prolong rather than break up the broody desire, at least it probably would prolong the time when the hen would again commence to lay.

THE HIGHWAY.

THE FARMER AND THE AUTOMOBILE.

Automobiles on the rural highways are often a grievous disturbance to movements by means of animals and subject those driving teams to much anxiety and danger. It is a fact of common observation that road animals generally quickly become accustomed to them when they have opportunities for acquaintance, and yet it must be acknowledged that these motors are a disturbing element which should be handled with constant care and with the fullest regard for the rights of other tenants of the highway.

The legal aspects of the matter are consequently of wide interest. Following is a recent newspaper dispatch from Montezuma, Iowa:

"After eight days of bitter contest in the court here a decision in the case against the Grinnell Garage Company has been reached, the jury awarding the plaintiff, a farmer living near Gilman, the sum of \$2,000. The first trial which was held in September resulted in a verdict of nearly \$10,000, and the judge gave the plaintiff the privilege of accepting a verdict reduced to \$3,000 or

grant a new trial as asked for by the defendants. The plaintiff refused the reduced verdict. The new trial was therefore granted, with the foregoing result. Judge Clements in his instructions to the jury laid down the common law principle which makes it mandatory upon the drivers to exercise ordinary care and prudence. He held that while automobiles have the same right on the highways as other vehicles the extra hazard which they produce makes extra precautions necessary, and that it is mandatory for drivers of machines to stop them when they see a horse is becoming frightened, whether or not the owner of the horse raises his hand or gives warning, as the law provides. In this case the farmer who was thrown out of his buggy as a result of a runaway caused by an automobile owned by the Grinnell Garage Company, claimed the defendants were negligent, and that he was permanently injured. The case will be appealed to the supreme court."

Upon the foregoing as a text the Breeders' Gazette comments as follows: If the defendants in this case appeal to the Supreme Court it must be on question of evidence or errors in the rulings of the trial judge. Judge Clement's instruction as to the rights and duties of automobile drivers is good law and common sense. (Barring technicalities these two will generally be found to be the same.) Not long ago there was a discussion on that subject in these columns, brought up by the claim of one of our correspondents that automobiles had no right on the public highways, but that the use of the highways by such vehicles was a privilege granted by or wrested from the public. At that time there had been automobile laws enacted in many of the States, and in the course of the discussion we presented a digest of those statutes. They were all of recent date, and there were practically no decisions in cases arising under them. Since then these statutes have been subjected to a severe trying out, and there have been many cases in which their constitutionality was questioned.

Ever since this subject was first brought up The Gazette has advocated the enactment of proper laws regulating the use and operation of automobiles on the public roads, and we now take pleasure in noting some of the results effected by the threshing over of the laws passed in the different States.

Last fall a prominent law journal remarked that: "The automobile is speedily making law. In 1899 there were no decided cases in the reports concerning motor cars; in fact, there were only about 50 machines in existence in the United States; but from that time until the present, the decisions have increased to such an extent that today there are a sufficient number of reported cases to warrant the conclusion that there has commenced a branch of the law peculiar to automobiles."

Many of these cases merely announce established principles of the law, and apply those principles to automobiles. As where the Supreme Courts of Illinois and Indiana said that the owner of an automobile has the right to the same use of the highway as other vehicles, provided he uses reasonable care and caution for the safety of others. The Indiana court says:

"It is, therefore, the adaptation and use, rather than the form or kind of contrivance that concerns the courts. It is improper to say that the driver of horses has rights in the road superior to the driver of an automobile. Both have the right to the use of the easement, and each is equally restricted in the exercise of his rights by the corresponding rights of the other."

In Illinois there have been some exceedingly bitter attacks made on both the State laws and city ordinances. It was conclusively decided that the regulation of automobiles as to speed and other particulars was within the police power of State and city. This also was decided by the Superior Courts of New York and Massachusetts. The extent of this regulation was limited when in Illinois it was held that a city ordinance requiring every owner to take an examination and get a license before he could use his own automobile was held to be unconstitutional as imposing a burden on one class of people, in the use of the streets, not imposed on others.

In New York, Massachusetts and Michigan it has been decided that the requiring of registration and the display on the machine of the number of the license is perfectly constitutional. In Michigan one querulous person attacked such a law on the grounds that it was a violation of the constitutional provisions that no one shall be subjected to unreasonable searches, and that no person shall be compelled in any criminal case to be a witness against himself, or be deprived of his liberty or property without due process of law, and that the State had no right to compel him to pay a dollar fee for having these indignities heaped upon him. A cold-hearted Supreme Court overruled him on all of these propositions.

It has been held that the words "to ride or drive" in a regulation of speed include the driving of an automobile, and that courts will take judicial notice of the great speed at which such machines can travel; that is, it is not necessary to prove that automobiles can run at a high rate of speed, but the court will accept that as a fact, without proof.

There is no question of the power to regulate the speed of automobiles, but where there is such regulation a driver cannot exonerate himself from liability for damages resulting from a collision simply by showing that he was within the speed limit at the time of the accident. The establishment of a speed limit does not mean that an automobile is allowed to run at that speed under all circumstances. If the driver is exceeding the speed limit he is prima facie liable for all damages, and when he is within the limit he must still exercise the same care and diligence for the safety of others as must the drivers of other vehicles.

A good part of the litigation has been caused by the frightening of horses. The common law rule was that one was entitled to traverse the highways with a vehicle or a load apt to frighten horses, but in so doing he must exercise due caution to prevent accidents, and the more unusual the appearance of his conveyance the more diligence was required on his part. So in New York it was held that the defendant was liable to the owner of a horse frightened by his machine where it was shown that the automobile was of a "crude and unusual construction, gave forth a loud puffing noise and could be heard for over two blocks; that the odor was pronounced; that there was a humming sound from its engine; that steam or smoke issued from the exhaust; that teams had been frightened by it; and that at the time of the accident it was passing the plaintiff's horse at a speed of ten to twelve miles an hour, and did not slacken until the horse became frightened."

In some of the States the statutes require the driver of an automobile to come to a standstill and to stop his engine when the driver of a horse requests it or when it is apparent that the horse is becoming restive. In Kentucky and Indiana it has been held that this duty is independent of statute. In the Kentucky case it was said: "Where a party operating an automobile knows or should know by the exercise of ordinary care that the machine in his possession and under his control has so far excited a horse as to render the horse dangerous and unmanageable, it is the party's duty to stop the automobile and take such other steps for safety as ordinary prudence might suggest."

Also in Illinois it is held that this duty to stop or take other precautions is not dependent on the receiving of signal from the driver of the horse. The Illinois statute says that "whenever it shall appear that any horse ridden or driven by any person" is about to become frightened, it is the duty of the automobile driver to stop until the danger is past. In a suit for damages the trial court instructed the jury that under the statute it is the duty of the automobile driver to stop "whenever it shall appear by the exercise of reasonable diligence" on his part that the horse is about to become frightened. The defendant excepted from such an instruction, but it was upheld by the Supreme Court on the ground that this was the only reasonable construction of the statute.

Many other questions on this subject have been decided in the last two years, but the points already touched upon are the principal ones of interest to our readers.

THE VINEYARD.

SULTANINA OR THOMPSON SEEDLESS IN GREECE

To the Editor: The growers of Sultanina (Thompson Seedless) grapes will probably be interested in an article in the last number of the "Review of Viticulture" where Mr. L. Rey discusses the methods employed in Greece in the cultivation of these grapes and the manufacture of seedless raisins. I am, therefore, sending you a summary of his remarks in so far as they are likely to interest Californian growers.

The Sultanina in Greece.

The cultivation of the Sultanina grape is constantly increasing in southern Greece where, however, it is only grown on a large scale in the plain of Argolis, in the Peloponnesus. The variety is said to have originated in Persia and to have spread from there to Asia Minor, the Archipelago and Greece. The proper methods of cultivating the vine and drying the grapes seem to be best understood in Argolis; in other parts of Greece it is grown only in small quantities.

Soil.—The cultivation of this vine is very costly, but the returns are profitable, so that it is usually planted in the best soils. The soils of the plain of Argolis are

alluvial, varying from clayey loams near the sea to gravelly soils at the base of hills. In general the clay loam is underlaid first by a stratum of fine gravel and deeper by layers of coarse gravel and stones. All the soils of the plain are suitable except the heavy clays. The best results both in quality of raisins and quantity of crop are obtained in soils of medium character, neither too stiff nor too gravelly and where the water level is not too low.

Preparation and Planting.—The soil is usually plowed 12 in. deep after being cultivated with hoed crops, such as tobacco, tomatoes, beans, etc., for one or more years. It is very seldom trenched or subsoiled.

The vines are planted five or six feet apart each way. Cuttings or rooted vines are planted with a dibble and the soil well hilled up around them, generally completely covering them after planting.

Pruning and Staking.—The young vines when planted are pruned back to one bud. This close pruning is repeated at the first pruning in the field. At the second pruning a strong cane 30 in. long is left and tied to a five or six foot stake. Only two top shoots are permitted to grow on this cane. These shoots form the final head of the vine and bear the first crop, though the vine does not come into full bearing until the sixth year.

On mature vines long, or mixed pruning is the method usually adopted and is considered the best. Two or three long fruit canes are left, each with seven to ten buds, together with four to six spurs of two buds each whose function is to supply fruit canes for the following year.

Each vine has a five to six foot stake to which it is tied and besides this two or three smaller forked stakes are placed around the vine, to each of which is tied one fruit cane. This is practicable in Greece because all the cultivation is done by hand.

Every three years the vineyard is given a fertilization with sheep or goat manure at the rate of about three pounds per vine, or 25 to 30 tons per acre.

Summer pruning is much practised and is considered essential to obtaining the best results. In the spring when the shoots average about 12 in. in length the first summer pruning, known as sprouting, is practiced. This should be done as soon as the blossom bunches are distinctly visible. All suckers from below ground and from the main trunk are removed completely and some of the water sprouts from the head of the vine. Later, at the time the pinching is practised, or soon after, this sprouting is repeated. The second time, all shoots which do not show fruit or blossoms are removed, except where they are needed to give wood for the following year.

The ends of all the shoots are pinched off just before the blossoming time. This is to promote the setting of the grapes and to prevent coulure. The shoots from the fruit canes are pinched back to the length of two feet. Those from the wood spurs are left to three or four feet long.

At about the time the grapes are ripening it is the common practice to remove more or less of the leaves near the base of the canes. The object of this is to increase the color of the grapes and to hasten their ripening. This practice, though common, is used less than formerly, as, while it hastens the ripening of the grapes, it prevents the fruit from attaining the maximum amount of sugar.

Irrigation is practised continually throughout the summer from the middle of June until the vintage. The water is raised by pumping and distributed in ditches.

Gathering and Drying.—The grapes are gathered at three or four different times as they ripen. They are gathered very carefully into baskets which are lined so as to prevent the bruising or cutting of the berries.

In the middle of each vineyard is placed a drying yard whose area is about one-twentieth of that of the vineyard. The yard is cut out into a series of beds separated by small ditches running across the shortest diameter of the drying yard. These ditches are 18 in. wide and 12 in. deep. Along the middle of each bed is placed a row of stakes three feet high and six feet apart, on which is placed a scantling running the length of the bed. In the middle of each ditch is placed a row of short stakes whose tops come to the level of the ground and are similarly arranged. These form a support upon which is placed waterproof cloth covers to protect the drying grapes from the rain and sun. Before the gathering of the grapes commences, the drying beds are covered with a layer of cow manure which is thoroughly mixed and beaten down smooth. This layer is considered essential for the production of the best results. It keeps the grapes clean by preventing the accumulation of dust or mud upon the bed; it hastens the drying because its dark color absorbs the heat of the sun in the daytime and radiates this heat out at night.

Dipping.—The carefully gathered grapes as they come from the vineyard are placed on a table and each bunch is divided into two by splitting the stem. They are then placed in baskets and dipped. The dip used consists of Water, 400 parts by weight.

Potash, 32 parts by weight.

Oil (olive), 1 part by weight.

This dip is well mixed before using and acts as a cleaning agent and an antiseptic. Without this dipping the grapes would require a month to dry. They are allowed to stay in the dip from 8 to 10 minutes, in which time the grapes are cleaned, the bloom removed, and the skin made transparent. The time of treatment is very important and the workmen employed at this part of the work are skilled at knowing the proper time to remove the grapes. After dipping, the grapes are drained and placed on a drying bed in a single layer.

For the first 24 or 36 hours after the grapes are placed on the drying bed they are protected from the sun by the cloth covers. If this is not done the grapes become dark colored and hard. At the end of this time, the covers are removed and the grapes exposed to the sun. They are turned occasionally until dry, which is in about 10 days, after which they are stored in a dry warehouse.

When thoroughly dry the raisins are stemmed by hand and the smaller particles of stems removed by means of a fanning mill. They are then sorted by hand into three colors, golden, reddish and brown.

The production is said to be from one to four tons of dried grapes per acre.

California Comments.—While many of the methods described by Mr. Rey are unsuitable to California conditions some of them offer us some valuable hints. This is especially true with regard to what he says of winter and summer pruning. Undoubtedly the Sultanina vineyards in California do not produce on the average 50 per cent of what they are capable of, judging from the vigor of the vines. This I believe to be due almost entirely to unsuitable pruning.

Many vineyards here are pruned short and where long pruning is adopted little judgment is shown in choosing fruit bearing canes. These fruit bearing canes are often simply water sprouts, from which very few grapes can be expected. When proper canes are chosen they are often tied in such a way that only a few of the buds start and the full benefit of the long canes is not received. This starting of all the fruit buds on the fruit canes is very much facilitated in the Greek method of training by the more or less horizontal position given to the canes when they are tied to the small stakes. The same object is attained in some vineyards in California by tying the canes horizontally to wire trellises. Summer-pruning similar to that adopted in Greece will undoubtedly be useful in the California vineyards. Proper sprouting would throw the strength of the vine into the fruit bearing canes and pinching at the right time would insure the starting of all the fruit buds and the better setting of the grapes.

FREDERIC T. BIOLETTI.

University of California, Berkeley.

THE DAIRY.

THE FLY PEST.

We do not hear as much about the horn fly as we did a few years ago but probably some will be interested to read about fighting the pest. Recent writings in Eastern exchanges afford a source for compilation.

An Iowa correspondent of the Orange Judd Farmer says he has followed three plans: using a fly repellent, feeding in the barn, and using a night pasture. Some years flies are much more troublesome here than they are other years. In the worst years I have used with satisfaction a fly repellent. I have also used a home-made preparation composed of a mixture of oil of tar and kerosene.

The Kansas station recommends the following spray: Dissolve two cakes of laundry soap in water and mix with the solution one and a half pounds of resin, one-half pint of fish oil and enough water to make three gallons. Use about one-half pint on each cow two or three times a week until the hair becomes coated with resin. This may be applied with a brush or also as a spray.

The so-called horn fly has a condemnatory habit worse than the ordinary flies, in that it roosts on the animal all night and is constantly at the old stand ready for business. I have fought it by shading the barn windows with perhaps one exception, and hanging a burlap curtain over the doorway. As the cows rush in nearly all the flies are moved with a feeling of precaution and abandon the cows at the doorway. Others are swept off willy-nilly, and the few remaining, if any, are easily removed with a brush or switch. They make for the

light at the partially exposed window and you proceed to milk free from fly annoyance. The cows give down all right, and are turned out free from flies to eat in the night pasture.

If we always keep in mind that it is semi-starvation more than loss of blood we shall more intelligently prevent shrinkage. If we feed well, or rather, if the cows eat sufficient of good food, they will hold out well in fly time. The bunching together to save themselves from flies diminishes the milk yield. Even if it totally prevented flies, the milk would seriously decrease because the time spent in huddling is a time of enforced cessation from feeding. Then if they are brought up to milk as it grows cooler they are taken from pasture too soon to fill themselves.

From this it is plain to see that when flies annoy so that cows refuse to eat during the day, they must be fed in the barn or pastured at night when they do not annoy. Spraying with a good repellent will protect them and allow them to eat well, but even then eating dewy grass is better than eating nothing but dry grass, and they will do better if allowed early and late grazing. The common practice here is to turn them in a pasture every night during fly time, and the use of fly repellents is not common. Darkening barn windows has this additional advantage: You can milk earlier in the evening and get the cows out in pasture in time to fill themselves before bedtime.

THE FIELD.

VALUE OF ANIMAL MANURES.

The value of barnyard manure, writes Prof. A. M. Ten Eyck in an Eastern exchange, may vary somewhat according to the kind of animals from which the manure is made, the quality, composition, and quantity of feeds fed, and the method of preserving or handling the manure previous to spreading it upon the fields. Manure from animals which are being fed with highly nutritious feeds will be richer in the plant-food elements than manure made from animals which are being fed on less nutritious feeds or which are being fed merely a maintenance ration.

I have computed the relative value of manure made by different animals as published in Robert's "Fertility of the Land," as follows:

	Per ton.
Horse manure	\$2.45
Cow manure	2.20
Sheep manure	4.20
Pig manure	3.20
Air-dry hen manure	8.50

The value of mixed barnyard manure varies greatly according to the different analyses made of the different samples of manure at different experiment stations. As an average for many samples, barnyard manure partly rotted contains in a thousand pounds of manure 720 lb. of water, 58 lb. of ash, 5 lb. of nitrogen, 2.6 lb. of phosphoric acid, and 6.3 lb. of potash. As chemical fertilizers are sold on the market, the essential plant-food elements may be valued as follows: Nitrogen 15 c., phosphoric acid 7 c., potash 4.5 c. per lb., respectively. At this rate a ton of barnyard manure having the composition given above will have a value of \$2.42. Professor Snyder, of the Minnesota Experiment Station, in discussing this subject has estimated the value of eight tons of farm manure, when applied to land deficient in fertility, at \$25. He makes this estimate in this way: The increase in yield of corn the first year after manuring will be 20 to 25 bushels per acre, or an increase of \$7 in the value of the crop. The second year after manuring, the land will produce, according to his figures, six bushels more wheat per acre, valued at \$4.50. The third year, provided clover is seeded, the land will yield at least a ton more hay per acre, valued at \$5. Wheat following clover should give an increased yield of eight bushels per acre, worth \$6. The fifth year the estimated effect of the combined manure and clover treatment should increase the yield of oats 12 to 15 bushels per acre, worth \$2.50, making a total increase of \$25 in the value of crops for five years.

FARM BUILDINGS.

TO BUILD A CONCRETE FOUNDATION.

A Pennsylvania farmer wishing to build a wall to enclose a barn basement, part of the wall to be 8 feet high, next the bank, and the rest of it about 18 feet where the wood comes down to make the wall, writes to the Breeders' Gazette asking how thick the wall should be, what the proportion of cement to sand and gravel should be, and whether he can make a cistern in the bank, and if he can how he can wall it and cover it over.

Mr. Joseph E. Wing prepares for the Gazette the following explicit advice and suggestions:

Let him excavate to solid earth, be that distance one foot or ten, and start his wall with a base of about 16 or 18 inches. This may very soon narrow to 8 inches, which is ample for the wall, either for the 8 foot height or for the lower wall. A really good wall made thin is as preferable to a thick wall not made so well. When the earth rests against the wall it will be well to take some precaution against the pushing of the earth. If, however, the wall is completed and the barn fastened to it by long bolts before the earth is thrown against the wall it can not be moved. Retaining walls sometimes have large anchor rods running back into the mass of earth, with plates to hold in the earth so that the walls can not move inwardly.

To build the wall get on the ground your floor joists, and whatever 2-inch stuff you will use in the building; it will serve as forms and need not be cut. Lay down a plank at right angles to the wall and stake it behind so that it can not be moved. Set up on this plank a studding to hold the side of the form and make the foot fast to the plank laid down. Now brace this upright studding well, letting the brace run to the plank laid down. This will hold your studding upright better than any other way I know. Set up these studding about 1 feet apart along the wall and put behind them the planking of the form, leaving the hollow space of 8 inches to be filled with concrete. Put the planks in one at a time as you fill or two at a time if you like.

Concrete is an artificial stone made by adding enough cement to broken stone or to sand or to sand and gravel or sand and broken stone to make it all adhere into a solid mass. The best concrete has all the pore spaces filled with something. If the gravel is coarse and there is enough small particles to fill the interstices and enough sand about to fill between the particles of fine gravel, it is nearly ideal stuff for concrete making.

To tell how much cement you will need in the material you have on hand take two measures of about equal size, say paint buckets or tin cans or common buckets, with straight, not flaring sides, fill one of them level full of dry gravel and the other level full of water. Now carefully dip water from the one measure and put it slowly into the other until it will take no more. Then measure and see what part of a measure you have used. That will tell you quite accurately how much cement to use, the only thing wrong being that you will not usually get a perfect mix of your cement and coarse material, so that you should add rather more cement than this rule indicates. Follow this simple direction and you can not go wrong in proportioning your materials.

Where you get coarse sand and broken stone or loose gravel separately, you can, if you do not care to find out for yourself what your material requires, adopt this rough rule, which will often be nearly correct: For a rich concrete, for important places, mix 1:2:4. That is, one of cement, two of sand and four of stone or gravel. For a medium mixture (which would mean for the purpose of barn walls and foundations) 1:2½:5, which means one barrel of cement, 2½ of coarse sand and five of broken stone or coarse gravel. In our country with clean pit gravel we find that one barrel of cement to a cubic yard of gravel makes a good concrete.

Measuring is best done with a box or barrel with the bottom out, which is easily lifted off. Be careful about the measuring. Four sacks of cement make one barrel. Mixing is best done on a smooth floor of matched wood; about 10x16 feet is a good size and it may have low sides, about 4 inches high, to keep material from rolling off. Measure your coarse material and place it on the floor, then add the cement on top of that and with long-handled shovels begin and turn the whole mass over, shoveling it from one pile to another, taking every shovelful from the bottom of the one pile, placing it squarely on the top of the other. Do this three times, or until you can see no streaks in the stuff. Then you are ready to wet down. Wet with a sprinkling can and have a man hoeing away the moistened concrete as fast as it is wet. Do not make it too wet; if it will stand up and yet have a little water rise to the top it is wet enough. Put it immediately in the forms and tamp it enough to make it solid. Hold your forms from spreading, where you have wood on both sides, by wiring the studding together occasionally. The wires remain in the concrete. Let your forms remain on for a week, and when you take them off wet the walls well. Keep them wetted every day for ten days or so. Green lumber is best for forms. The wood coming next the concrete should be treated well with linseed oil or grease before being used, else the wood will absorb moisture and the concrete will adhere to it also.

As to building the cistern back of the wall, that is the thing to do. Just build it as you would a little room,

say 10 feet square (square forms are easiest built) longer than that if you desire, say 8 feet wide and 20 feet long. Make the walls 8 inches thick. Where there is no earth backing to the wall be sure thoroughly to reinforce with steel, putting in rods both vertical and horizontal. The rods should be put in at intervals of about 8 inches and at the side of the wall most remote from the water. One-half inch rods will do. Make the cover of one flat slab of concrete about 8 inches thick, well reinforced with steel. An arch would be stronger, but more troublesome to build and expensive, and a slab thoroughly reinforced will be strong enough to bear horses and wagons.

Details of how to make the concrete slabs for floors can be had of the manufacturers of reinforcing material.

CALIFORNIA STATE FAIR.

Mr. J. A. Filcher, secretary of the State Agricultural Society, has issued the premium test for the coming fair which will be held in Sacramento August 25 to September 1. In the note to the editor he says:

The directors believe that this year, especially, owing to the peculiar situation in which our State is placed by reason of the great San Francisco disaster, there should be a more determined effort than ever before by enterprising individuals and firms to rally at the State Fair and show visitors and the world that while our greatest city is sorely stricken, the great industries that lie behind it are unimpaired. To this end they desire to see every breeder of good stock, of any class, every producer of a desirable article of any character, every packer and every manufacturer, lend his aid in favor of the effort for a bigger and better fair than ever before, which, if realized, will do more to restore confidence than almost anything else that can be done, and be of greater benefit to the State and all the State's industries.

They want the old exhibitors to come in this year with a better and stronger showing than ever before, and they want those who have articles of interest, but who have not been exhibitors, to commence now, with the assurance that every courtesy will be extended that can be to make their participation pleasant and profitable. They want a rally indeed, all along the line for the good of the society, and ultimately for the good of the State.

THE WAY TO MAKE BOILED WATER PALATABLE.

Marsden Manson, the well-known civil engineer, has given a recipe for boiling water without making it flat. Boiling water kills both the animal and vegetable in the water, but it also makes it unpalatable unless some special means of prevention is resorted to. Many people object to drinking water which has not been sterilized, and Mr. Manson's method will be as valuable to them as it is to the San Franciscans during the period of threatened disease. It is as follows:

First—Mix the beaten white of one egg in two or three gallons of cold water, then bring to a brisk boil, allow to cool, and then settle. Decant or siphon off the clear water.

Second—Dissolve in this one level teaspoonful of bicarbonate of soda; this is equivalent to 35 grains or 3.5 grams; then stir in two-thirds of a teaspoonful of pure hydrochloric acid; this is the equivalent of 3.9 grams. The water is then absolutely safe, sparkling and refreshing and entirely devoid of that flat taste of boiled and distilled water.

The chemistry of this mode is simple. The albumen of the beaten egg is soluble in cold water and is coagulated into an insoluble form by boiling and carries down with it all suspended matter.

SNAKES AS VERMIN TRAPS.

In a large cornfield on the farm of Josiah Sack, near Oakland, Ill., are two tame pine snakes, one measuring seven feet in length and four inches through the thickest part, and the other six and one-half feet long and nearly as thick as the former. Sack handles the reptiles as he would a pet cat, and even children are able to fondle them. The reptiles live on toads, mice and moles, and thereby rid the farm of its greatest pests. During the day and evening the snakes may be seen burrowing beneath the ground searching for moles. They show no fear when they are touched. At night or at noonday the reptiles coil up together under a brush pile beneath the fence and sleep until they become hungry. Farmer Sack cautions everybody who goes to see the snakes to do them no harm whatever, and declares he would not part with them for a large sum, as they are not only harmless, but of great benefit by killing mice and moles.

HOME CIRCLE.

THE CIRCUS OF YESTERDAY.

In the days I carried water to the thirsty elephants
Or wormed a surreptitious way beneath the circus tent,
It seems to me the camels were a taller lot than now;
The lion's fretted roaring was more terrible, somehow;
The peanuts were a crisper sort; the lemonade, I think,
Was very much superior to what you get to drink
At any circuses to-day—in short, I'm frank to say,
The circus of my boyhood was much better than to-day.

The seats are so much harder now, the tent is not so high;
The elephants are not as big, as they go shambling by;
The toy balloons are not, I'm sure, as brightly red and blue
As those of twenty years ago; the sprightly kangaroo
Seems not, by half, as wonderful as those that used to be;
They do not have such funny clowns; the show is not as vast;
I don't think they've improved upon the circus of the past.

The side show tent is smaller now; the banners out in front
Don't bear such splendid pictures as was formerly their wont;
The hair of the Circassian girl is not as long and queer,
She isn't half so pretty as she was that bygone year.
The tattooed man has faded some, the Punch and Judy show
Lacks half the bubbling humor that it had so long ago;
The wild man caught in Borneo is tame, and when I see
Him smile I know the circus is not what it used to be.

I know they do the loop-the-loop and death-defying feats
That freeze the frightened people stiff with terror in their seats;
But as they feed the animals when the big show is through
My hair stands not upon its end as it was wont to do.
I do not feel the anguished hope—I know it was a sin—
That bade me stand out front and say: "Please, Mister, take me in."
Nor do I see the circus grounds, when all is moved away,
To mourn the vanished glory of the glad-some yesterday.

—J. W. Foley.

THE THINACRE-SMITH ENGAGEMENT.

The Mirror of Fashion—We are informed upon the best authority that a marriage has been arranged between the Hon. Robert Thinacre, eldest son of the Earl of Thinacre, and Miss Ella Smith, only daughter of John Smith, Esq., of Oilopolis, U. S.

The Club Smoking Room—"Heard the news, you fellows? Bob Thinacre's engaged to Miss Ella Smith. 'What Smith?' Why, old Oilcake Smith's daughter, of course. 'Will I take my oath to it?' My dear boy, I'll go one better. I'll bet you a fiver on it. Waiter, a brandy and soda, sharp. 'Surprised?' (The speaker shrugs his shoulders.) Why on earth should I be? What else do you think penniless heirs to titles and American heiresses exist for? Order of nature, my dear boy, order of nature. Wish I were heir to an earldom, that's all!"

The Hon. Tom Martin: "Poor old Bob! I suppose I must write and congratulate him; but it's deuced hard hard lines. If it hadn't been for those infernal mortgages he might have picked and chosen among a dozen nice English girls. I suppose he was bound to sacrifice himself; but, hang it all, one can't help feeling sorry for him!"

Harry Hard—"What! Old Bob gone! The best halfback we've had for years. That's the third this season; the club will have to break up if our fellows go on like this. It's heartrending! I've a good mind to resign the secretaryship. (Reads note again.) 'So you must no longer consider me a regular member of the team, though I shall hope to assist you occasionally.' Umph! That's what they all say. Fancy a fellow like Bob, who might have gained his international cup, tied to a woman's apron string. (Puffs at his pipe, savagely.) Poor old Bob. I suppose he had to!"

The Marker—"So I 'eard, so I 'eard. Ah! it's a pity, that it is. As promising a young player as ever come into these rooms. (Screws in off the red.) 'E'll be a great loss to us—for a time. But they all come back after a year or two, sir. (Makes a long pot.) They do say she's a heiress, sir!' (Winks at the red, and starts a spot break.)

The Hon. the Earl of Thinacre—"Er—yes—I have—er—felt compelled to sanction the engagement. 'Not exactly—?' Well—er—no! But there were—er—circumstances— A highly respectable family; and, the er—young lady not—er—vulgar or unprepossessing. It might have been worse."

Oilcake Smith—"So poor little Ellie's got her lord. Well, well, her ma was set on it; but the child always said she wouldn't. (Fingers his cheek book absently.) Some wooden-headed ass, I suppose. Why the deuce couldn't she marry a man who'd work for her, and keep her? Ellie's a good little girl, if they'd let her alone. Eh! what? 'Meeting in five minutes.' (Scrawls telegram.) 'News received. Satisfied if you and Ellie are. Tell Ellie to draw on me for anything she likes.' It's all I can do for her!"

Lady Thinacre—"Yes; it's all settled. (Sighs.) Of course, one wouldn't have wished—but with rents falling. Now we shall have to receive them, I suppose. (Sighs again.) 'Vulgar?' My dear Emily, what else can one expect? 'Thought her rather refined?' Oh, I don't complain of her, my dear, but the mother! (Lifts her hands in horror.) Poor Bob takes it wonderfully well. But the dear fellow would be sure to bear up before his mother."

Mrs. Oilcake Smith: "Thank heaven, the gal's settled at last! Such a bother as I've had with her, you wouldn't believe; indeed, for a long time I thought she would marry some common person or other. 'Not quite what you would have expected?' Well, no, Maria; it isn't all that I should have wished. With our position, Ellie was entitled to a duke, I say. But the child was that obstinate; and when this young feller came along, and she didn't seem so set against him, I was glad enough to get it settled. Lor' we all have our fancies and feelin's, us poor women. Now, with men it's different. There's Smith wouldn't care if Ellie wanted to marry a dustman, I don't believe." (Left talking.)

The Hon. Maud Thinacre: "Poor, poor old Bob! Oh, I am so sorry for him! It's just like Bob to sacrifice himself for the rest of us, and pretend that he rather likes it; but I don't know how he could do it, with all his romantic notions about love, and such things. (Sighs.) He used to say he would emigrate first. She doesn't seem such a bad little thing. I think I must make friends with her, and see if I can get her to like him. Besides,

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WESTERN MEAT COMPANY

SOUTH SAN FRANCISCO,

San Mateo County

if I make a fuss over her, Bob might think more of her, and even grow fond of her—she really is rather pretty."

His View: "My dear Tom, you'll have seen from the confounded papers that I'm engaged to Ella Smith, the American heiress. All the fellows call me a lucky dog, and grin till I'd like to punch their heads; and the people at home look at me with moist eyes, till they drive me nearly mad.

"If I were to tell them the truth about the matter they'd probably want to put me in an asylum. I must tell some one, so I'm writing to you. Don't rot me, old man; I'm in love with the girl!"

"I daresay you thought, when you read the news out at Gib., that she was the usual sort of American heiress—big, showy girl, with a beastly twang in her voice. Well, she isn't. She's a quiet, almost shy, little thing, with fair hair, and big, innocent eyes. Honest Injun, Tom, I thought she was in love with me when I proposed. She just quivered, and put her head down softly on my arm, like any girl might—and—you know what I mean.

"Then I saw her mother. She's an awful woman, old man. She told me that Ellie had set out to marry a duke, but as she hadn't found a suitable one, she was going to put up with me. You wouldn't think she was that sort to look at her, and talk to her.

"Sometimes I fancy she does like me a bit. She's always nice, and seems to want to please me. Once or twice I've begun to ask her, but she seemed so flurried that I've stopped. It's no good having an unpleasant scene. It won't be my fault if I don't make her happy. Maud sends you her love—lucky fellow!—Yours ever, Bob Thinacre."

Her View: "Oh, I am so sick and ashamed of it! Every one thinks that I accepted him just because of the title; and I didn't—I didn't!"

"He is so big and strong, and so very, very kind and gentle to me; and he did seem to like me. It sounded so honest and manly when he proposed. But after he settled it with mother he seemed so different. I was so silly and shy; perhaps if I had told him quite plainly that I liked him, he would have tried to love me a little.

"Sometimes I think that he does; and I do try to be nice to him. Once or twice I have thought he was going to say something—it made me tremble all over; but he stopped as if he had altered his mind."

"Mamma, is it possible to hate any one you have never met and don't know personally?" "Certainly, darling; don't we all hate 'Central'?"

LULLABY.

[Written for the Pacific Rural Press by Mrs. Everett C. Parsons.]

Come little tired one,
On thy mother's breast, rest, rest.
Droop little blue eyes,
As into dreamland you drift, drift, drift.

The birds are softly singing,
The bees are humming low,
For you, my little precious one,
As into Wonderland you go, go, go.

Soft blue eyes are closing,
Golden head nestling low.
Tired little hands are folded
As into Slumberland you go, go, go.

Sleep, sleep, baby mine,
As under the apple boughs we swing.
Mother is drifting with thee
Out into the Shadowland.
Sleep, sleep, sleep.

Fresno.

THE CHILDREN.

Mother of many children I—sprung of my heart and brain—
And some have been borne in gladness and some have been borne in pain.
But one has gone singing from out my door,
Never to come again.

Content and Ease and Comfort—they abide with me day by day;
They smooth my couch and place my chair as dutiful children may,
And Success and Power, my strong-limbed sons,
Stand ever to clear my way.

And these be the prudent children, the careful children and wise,

There was one, and only one, with a reckless dream in his eyes.

He was one with the wind o' the dawn,
And kin to the wood and the skies.

Faithful and fond are my children, and they tend me well, in sooth;
Success and Content and Power, good proof is mine of their truth,
But the name of him that I lost was Joy,
Yea, my first-born Joy of Youth.

Well do my children guard me, jealous of this their right;
Carefully, soberly, ever by daylight and candlelight,
But, oh, for my prodigal Joy of Youth
Somewhere out in the night.

—Theodosia Garrison, in June Smart Set.

WAITING.

Serene, I fold my hands and wait,
Nor care for winds, or tide, or sea;
I rave no more 'gainst time or fate,
For lo! my own shall come to me.

I stay my haste, I make delays,
For what avails this eager pace?
I stand amid the eternal ways,
And what is mine shall know my face.

Asleep, awake, by night or day,
The friends I seek are seeking me;
No wind can drive my bark astray,
Nor change the tide of destiny.

What matter if I stand alone?
I wait with joy the coming years;
My heart shall reap where it has sown,
And garner up its fruits of tears.

The waters know their own, and draw
The brook that springs in yonder
height;

So flows the good with equal law
Unto the soul of pure delight.

The stars come nightly to the sky;
The tidal wave unto the sea;
Nor time, nor space, nor deep, nor high
Can keep my own away from me.

—John Burroughs.

HINTS TO HOUSEKEEPERS.

Wooden glove hands are a convenience in cleaning and drying gloves; they cost from 19 to 35 cents each.

A school lunch basket is likely to become musty if not cleaned from time to time. Dip it in hot salt water, then in cold water, and dry quickly in the sun, or by the fire; this will keep it clean and sweet.

A delicious variation is made in rhubarb marmalade by adding a handful of blanched almonds to two quarts of stewed fruit. The almonds are cut in shavings, stewed gently until pulpy, and then added to the hot fruit to finish cooking.

Many children form the habit of thumb-sucking with little attempt at prevention. It should be remembered that this habit may cause decided disfigurement, both of lips and teeth, as it pushes back the lower front teeth, while pushing the upper front teeth out. Without doubt many cases of crooked teeth, which lead to expensive dentist work in later life, result from this infantile habit.

A case to pack away fine shirt waists is a useful and inexpensive present for a girl. It is made like the pillow slip for a baby's carriage, having the opening midway across the back, to be buttoned or tied together when the waist is slipped in. The case is made of flowered muslin, lined with lawn in a solid color, and bound with ribbon. Such a case is desirable for packing a waist or for laying it away in closet or trunk.

To clean ceilings that have become smoky, wash off with soda and water.

To keep brass utensils bright and shining, rub well with salt and vinegar.

Old paper may be removed from the wall, by dampening with saleratus water.

To keep stove pipes from rusting when not in use, rub them over with linseed oil and keep in a dry place.

Leather chairs seats and leather book-bindings can be cleaned and brightened by rubbing with white of egg.

To clean willow furniture, use water in which a tablespoonful of salt has been dissolved, apply with a coarse brush and dry thoroughly.

To remove medicine stains from silver

phuric acid. Wash with soapsuds and polish with chamois skin.

Renovation of Skirts.—When a walking skirt commences to look shabby or, indeed, any skirt, for that matter, hang it out of doors, first of all, to air thoroughly, then carefully remove every stain and cut off the worn binding around the bottom edge. If the waistband is pulled out from much pinning or the skirt is commencing to "pull up" because the band is a little tight, remove that, too, very carefully. Now hang out of doors until the sponging (to remove stains) has dried, when the skirt may be given a new binding around the bottom, a new waistband, letting out a little of the fullness from the plaits at the back and replacing all hooks and eyes that are necessary. Give the skirt a thorough pressing, using a warm, not hot, flatiron and taking plenty of time. Press on the wrong side or lay a damp cloth on the right side and iron till it dries. Hang up for twenty-four hours before wearing, as any wrinkles that are made in it before it is thoroughly dry are apt to remain in the goods. A skirt fixed in this way is equal to a new one.

DOMESTIC HINTS.

Turnip Soup.—Boil six small turnips until soft enough to rub through a sieve. Fry an onion until it is cooked, but not brown, in a trifle of butter. Put the turnips, onion, pepper and salt in a saucepan and add a quart of milk. Stir thoroughly and when smooth serve with a little grated cheese on top.

Potato Stew.—Boil a small square of pickled pork in two quarts of water; when done take out, score and brown in the oven. Add to the liquor ten sliced raw potatoes, two small onions sliced; boil half an hour; add a teacupful of milk and a beaten egg.

Oyster Macaroni.—A delicious way of preparing oysters with macaroni is to first boil the macaroni; then, in a buttered baking dish, place a layer of macaroni and then a layer of oysters until the dish is full. Pour over it half a cupful of milk and oyster juice. Put small pieces of butter on top and cover with bread crumbs. Bake in oven and serve garnished with sliced hard-boiled eggs and parsley.

Welsh Rarebit.—Cut one-half pound of American cheese into small bits. Put into a small saucepan over hot water, add two level tablespoons of butter and stir until the cheese is melted to a smooth paste. Pour on one-half cup of thin cream, add a pinch of cayenne; mix well, and when heated pour over slices of toast slightly moistened with hot milk.

Peas in Boxes.—Cut some stale bread into slices one and a half inches thick. Cut these into boxes three inches square, take out some of the crumbs and brush well inside and out with melted butter. Set in the oven to brown, then fill with hot, cooked and seasoned peas. Use canned peas if the fresh peas are not available.

WHERE OLD GLORY GOES.

Up and down in all the lands and all the seas between;

Brave and bold against the sky, and clear and fair and clean;

Winding through the wilderness, or on the beaten track;

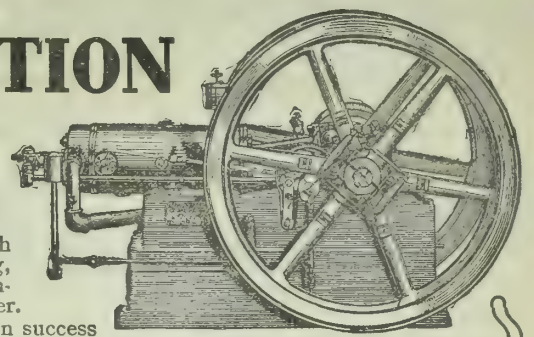
Half the way around the world—and more than that and back.

Whither will Old Glory go? But whither has it gone?

Mark the way of honor that it has not smiled upon.

Snapping from the halyard blocks of argosy and fleet;

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spoons, rub with a rag dipped in sul-Fluttering to life and drum that time the marching feet,

Beating back the driven spray and blazing o'er the sands—

It has led a starry way—a way through all the lands.

Whither will Old Glory go? But whither has it gone?

Where the spot it has not held the glory of the dawn?

Men have gone beneath it o'er the hills and o'er the waves;

Men feel its caresses while they slumber in their graves.

Red and white and blue it glows against the bending sky,

Bringing everywhere it goes new luster to the eye.

Whither will Old Glory go? But whither has it gone?

Tell the miles it has not traced—the way it has not won!

—W. D. Nesbit.

ENTOMOLOGICAL.

GRASSHOPPER KILLING.

To the Editor: The grasshoppers are getting very thick in our section of the country. Can you tell me what I could do to prevent them destroying plants and young trees. I have this spring set out some choice vines, plants and shade trees and am very anxious to save them if possible. Is there any spraying mixture that could be used, that would not harm the flowers or trees? If so would you please tell me how to prepare it and how often to apply it?—READER, San Benito County.

The way to save plants from grasshoppers is to kill the hoppers before they reach the plants. There is little satisfaction in spraying plants with a poison, because there are so many insects that the foliage will all be gone before they get a poisonous bite. In our issue of April 28 there are general suggestions of ways in which you can destroy the insects before they reach the plants.

In a bulletin of the University of California Experiment Station, it is stated that the most successful way of fighting grasshoppers in orchards and vineyards is with a formula of grasshopper poison that has been used so many years in various parts of California. The proportions used were:

Bran..... 40 pounds
Molasses (cheap).... 2 gallons
Arsenic 5 pounds

The above amounts of material will be enough to fill a good-sized tub. It will

be found easier to mix only half the given amounts at a time. The stronger smelling molasses used seemed to be the more attractive to the grasshoppers. In a number of cases where molasses could not be obtained, black honey was tried, but it did not seem to be as good as the molasses for attracting the insects. Paris green can be used in place of arsenic, but the latter is considerably cheaper, costing, in quantities, less than ten cents a pound.

In order to get the best results from the bait, considerable care must be taken in mixing it. It was found most successful to mix the bran with enough water that a lump held in the hand will only slightly drip unless squeezed. The molasses can then be added, mixing it thoroughly with the hands. After this has been well done, the arsenic can be added. This can be worked into the bran with the hands or with a paddle. There may be some danger in using the hands to mix this poison if there are cuts or sores, and care should be taken in removing any arsenic that may have lodged around the finger nails.

Another method is to mix the arsenic and bran in a barrel with a shovel, or in a mortar bed with a hoe; then dilute the molasses with water and work it in as in mixing mortar. In any case, mix it thoroughly. It is a good plan to let the material stand from twelve to twenty-four hours, then remix it, so as to allow the arsenic that is dissolved to soak well into the bran.

The usual practice is to place as much poisoned bait as can be held in a soup-spoon in a pile on the ground; or, perhaps better, on a shingle at the base of each tree or vine. If the grasshoppers are coming into the orchard from one side only, poison need only be placed along the first six or eight rows of trees. It was found very effective in such cases to place a series of piles of poison, about a foot apart, along the threatened side. As soon as the poison is dry it should be moistened, as the grasshoppers will not eat much of it when it is dry. In our experiments it was found that when properly mixed, the bait was evidently preferred to the foliage of fruit trees. The placing of the poison on a board is recommended in order that it may be gathered up after the danger from grasshoppers is over. Serious results to stock may accrue if the poison is left in the field and cattle be allowed to get hold of it.

In some cases the poison was scattered broadcast over the orchard, but the results obtained were by no means as satisfactory as from the other method. The poison in such cases dried quicker and afterwards could not be remoistened conveniently.

He—I have a sweet little home in which I would like to install you as its mistress. She—Indeed, sir, I'll go into no home on the installment plan.

Tommy—Pa, what's the board of education? Mr. F.—When I went to school it was a pine shingle.

The Young Minister—Ah, Miss Ethel, may I ask you if you approve of theater-going? The Young Woman—Oh, thank you, yes! When shall we go?

Mistress—Jane, I saw the milkman kiss you this morning. In future I will take the milk in. Jane—'Twouldn't be no use, mum. He's promised never to kiss anybody but me!

Mrs. Nagget—You don't love me as much as you used to. Mr. Nagget—Think not? Mrs. Nagget—No; you used to say I was worth my weight in gold, and —. Mr. Nagget—Well, you're not as stout as you were, you know.

AGRICULTURAL REVIEW.

Glenn.

MAY COLONIZE KRAFT RANCH.—A dispatch from Red Bluff says: There are rumors abroad that a syndicate of Los Angeles capitalists is contemplating the purchase of the Kraft ranch of 9000 acres in Tehama and Glenn counties. This property was the subject of a lawsuit in which the Central Canal and Irrigation Co. was instructed by a jury to pay to the bankers the neat sum of \$25,000 for a right-of-way for the canal which is intended to irrigate 10,000 acres east of Willows. The sale of this property would undoubtedly end this lawsuit and open the way for the corporation to deliver water to the land for which contracts have been signed. The Los Angeles people will probably subdivide this large tract.

FIELD FIRE DESTROYS BARLEY CROP.—Willows Journal: Another bad field fire occurred south of Norman on the Stanton ranch and destroyed over 50 acres of barley before the flames were checked. The section gang has been burning weeds and grass from the railroad right of way and it is supposed that they lost control of the fire which spread to the growing barley. A large force of residents of that section fought the fire but it was not until back-firing was resorted to that the flames were stayed.

WHEAT HARVEST BEGINS.—Dan Shelloe, whose ranch is near German town, is the first farmer in the county to begin the harvest of wheat. The grain is yielding ten sacks to the acre. Mr. Shelloe imported all his seed this year from the State of Washington, and planted several varieties, all of which promise a large yield.

GRAIN FIRE NEAR WILLOWS.—Willows Journal: Monday evening about 4 o'clock a fire broke out in a field of barley on the Henry St. Louis ranch southwest of Willows, and 74 acres were destroyed. Mr. St. Louis carried

no insurance on the grain. How the fire originated is not known. By hard work and back firing the surrounding country was saved from a conflagration.

POULTRY IN SACRAMENTO VALLEY.—Willows Journal, June 29: Statistics show that there are fewer failures in the poultry business than in almost any other industry. The vicinity around Petaluma is given over almost exclusively to this business, and that section is known everywhere as the greatest poultry producing region of the coast. The dividing of large ranches in the Sacramento valley into 5, 10, 15 and 20 acre tracts will have the result of making poultry raising one of the important industries of the valley. Certainly no country in the world offers better inducements for this business than this great interior valley.

Monterey.

FIRST BARLEY OF THE SEASON.—Salinas Index: W. W. Zabala received today the first sample of this season's barley. It is excellent quality, weighs 43 lb. to the bushel and was harvested by Wiley brothers on their ranch near Soledad. A number of thrashing outfits will begin work in the Soledad district next week.

Mono.

AFTER SHEEP MEN.—Sacramento Bee, June 30: The first gun in the battle that is to be fought between the sheep men and Mono county was fired Thursday when seven sheep men were attached by Sheriff Kirkwood for the amount due for the license and which they refused to pay. Five owners were also arrested for the non-payment and let out on \$100 bonds each. The cases will be taken up at once, and will probably be appealed to the highest courts. The sheep men sued and arrested are from Kern county. District Attorney Patrick Parker is fighting the battle for Mono. Mono county imposes a tax of five cents per head on all sheep grazing in the county. This is cheerfully paid by the Mono owners of sheep, but the sheep men from the outside consider the tax an injustice upon them. The case will be hotly contested.

San Bernardino.

HIGHGROVE ORANGES PAY.—San Bernardino Sun: Twenty-five thousand dollars for one crop of oranges from something like 60 acres would have been deemed a fabulous price a few years ago, but these figures are coming from more than one quarter in this year of magnificent returns to the orchardist. Among the fortunate owners, one is J. Barnhill, of Colton, president of the San Bernardino County Fruit Exchange. From orchards covering about 60 acres, it is estimated that his gross returns for the season are \$25,000. Another owner is M. A. Murphy; he owns 60 acres of oranges in Highgrove, and his gross returns are \$22,500.

San Luis Obispo.

GRAIN FIRE.—Paso Robles Record, June 30: A grain fire on Friday of last week destroyed 132 acres of hay and grain belonging to A. F. Benton of the Nacimiento ranch. The crop was insured with the Home Insurance Co. of New York. The amount paid was \$1057.65, which the company paid in full. The fire was started by campers who had built a fire in the county road.

SUGAR MAKING BEGINS.—Santa Maria Times: The Union Sugar Company will begin operations on Monday next, barring any unforeseen accidents, and to that end is now hauling beets into the sheds. A number of carloads have already been taken from the field, and henceforth the work will progress uninterrupted. Beet field No. 7, which was one of the first to be planted, is now being stripped of its crop and the scene presented as the work progresses is most

unique. The beets are plowed out with a new beet plow, which has recently been imported from Leeds, England, especially for this kind of work. This new plow is a great time and labor saver as well as being able to reduce the expense of harvesting. Superintendent Atkinson informs us that the new plow easily does what it would require 100 head of horses to accomplish. The plow is operated by a cable which is strung across the field and is manipulated by two powerful traction engines. The plow loosens the beets, it reaching to a depth of about 18 inches, which makes it an easy matter for the Japs to follow up and do their work. The harvesting is done so systematically and thoroughly that it cannot help but interest an onlooker. Inside of a few hours a crop standing in the field is plowed out, topped, stacked and gathered.

WILL TRY PISTACHE TREES.—San Luis Obispo Telegram: Dr. V. F. Page, of this city, recently received a consignment of pistache trees, the beginning of a new industry for this county, namely, the raising of pistache nuts. The pistache is a tree of slow growth, but is long lived and the crop is a valuable one and never injured by late frosts. The Pistacia Atlantica and Pistacia Mutica are somewhat drought resistant and will thrive with less moisture than an olive. They require treatment similar to that given an almond, but come into bearing much slower. The crop, however, is of such great value that this disadvantage is entirely obviated. The Department of Agriculture sent Dr. Page plants of three varieties of Pistache stocks: Verestina Hybrid Pistacia Atlantica from northern Algeria and Pistacia Mutica from Smyrna.

Solano.

SALE OF FINE BRED COLTS.—Solano Courier: Increasing interest is being taken each year in the annual sale of fine bred colts from the Suisun stock farm. The sale for 1906 was held Saturday at the farm of Mrs. M. Fields. Only a few really good sales were made. The average prices paid for the stock ran from \$65 to \$180. Lewis Pierce also sold some good roadsters, realizing low prices. His stock sold for an average of about \$81.

SOME CHERRIES SURE.—Solano Courier: L. Oberte of upper Green valley has three acres of bearing cherry trees from which he shipped this season 3000 boxes of fruit. He also sold to the cannery a large quantity of fruit too ripe for eastern shipment. As cherries brought a big price this year, this little cherry orchard must come near holding the record for profitable fruit returns. Ben Griffin of Winters sold a few cherries at prices that would have made an acre average \$980. The local packing houses have been lately buying up the dried peach crop at prices ranging from 8 to 10 c. per lb. This is an advance of more than 2 c. above the average price. The prices for apricots are very high. Up Winters way as high as \$78 a ton net has been paid for the fruit green.

NONPAREIL CHERRIES.—Vacaville Reporter: The seven fine boxes of Nonpareil cherries which were exhibited two weeks ago by the Earl Fruit Co. in Reid's show window, together with three others, filling up a pony refrigerator brought \$56 in the New York market, an average of \$5.60 per box.

VALUABLE ASPARAGUS FARM.—Solano Republican: W. Emmington owns a valuable asparagus farm near Collinsville. Although the market for asparagus was badly demoralized after the San Francisco fire, still the crops from this farm yielded a profit nearly equal to that of last year, which was about \$150 per acre net. Considerable interest is being manifested in the raising of asparagus on the marsh lands around the

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bay in this county, as it has been demonstrated that the crop can be made a profitable one.

Stanislaus.

BIG VEGETABLE FARM FOR THIS COUNTY.—Oakdale Graphic: G. J. Lange has secured an option on 548 acres of land from Mrs. S. P. Mehler, south of Oakdale, and also on 200 acres adjoining owned by Fred Nelson, and on a piece of land for cannery purposes. Mr. Lange and associates propose to plant the acreage to peas, and other vegetables suitable for canning. They have two establishments in the East, and when the season closes there Mr. Lange will return and mature his plans for the Oakdale plant.

WILL BREED NEW POTATO.—Stanislaus News: Four thousand varieties of potatoes were planted at the Burbank farm near Santa Rosa, constituting part of the 14,000 species of the tuber family with which Mr. Burbank will experiment this year in his plans to give to the world a new potato. Burbank desires that the new potato shall be more prolific, that its yield shall be practically impervious to disease, and uniform in size.

NEW VARIETY OF CHERRY CROP.—Vacaville Reporter: H. A. Bassford shipped the first box of a new variety of cherry originated by him, and which he has named the "H. A. Bassford." It is very black in color, resembling the Bing and Black Republican in this respect, and is very firm, having the characteristics of the Bing as to shipping qualities. What particularly distinguishes it, however, is its size. All the cherries in the box came from one tree, and the fruit was so large that in one-half of the box the cherries packed eight to a row and in the other half nine, three tiers filling the box so full that cleats had to be used.

Shasta.

WRECK CLEARED AWAY.—Sacramento Union, June 30: The terrible wreck which occurred at Kennett Friday has been cleared away. The carcasses of 40 odd head of steers which were killed outright or had to be shot as a result of their injuries have mostly been disposed of to local butchers and mining camps. While none of the train crew of either oil train or cattle freight lost their lives, the scene when the oil train jammed into the rear cattle cars was not lacking in tragic features. Three cars, including the caboose, were telescoped and a mass of bellowing steers jammed into a pile overtopping the engine. Several broke away from the wreckage in a frenzy of fear and threatened the lives of women and children on the streets.

Sutter.

GOOD ASPARAGUS CROP.—Sacramento Union: Asparagus-growing is one of the industries of this county which promises to be an important and lucrative business. Mrs. M. S. Smith of Yuba City, is the pioneer in introducing the culture of this plant and this season received handsome returns from a field of seven acres, which will be increased to 25, 20 of which will be ready for cutting next year. The city of Marysville and nearby towns furnish a ready and profitable market. Owners of lands well adapted for this purpose are preparing to plant extensively the coming season.

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THE LAWRENCE-WILLIAMS CO., Cleveland, O.

San Joaquin.

COYOTES BECOME BOLD.—Sacramento Bee: Several successive nights recently coyotes came onto the farm of E. H. Hemphill, about five miles west of here, and at each visit killed a lamb. As soon as Hemphill made the discovery he poisoned the remains of the partly devoured lamb and the past three mornings has been rewarded for his work with three dead coyotes, as well as three of his neighbor's dogs.

Tehama.

FAWN ADOPTS A FLOCK OF SHEEP. Red Bluff Cause: Henry Heitman returned recently from the Coast Range mountains, where he went with a band of sheep several weeks ago. While on the mountain range a young fawn got mixed up with the sheep and Mr. Heitman's children cared for it by catching some of the ewes and holding them while the fawn fed. The fawn is now about four weeks old and beginning to care for itself. When Mr. Heitman started for the valley a few days ago the little animal was put in a sack and hung on a pack horse, for transportation to its new home. The fawn got out of the sack several times while on the way down, but in every instance it followed after the horse and made no effort to escape. Mr. Heitman says that fawns were so frequently picked up in his band of sheep last season that he and his son put their earmarks on about 19 and turned them loose.

FRUIT PRESERVATION.

PRESERVING FRUIT JUICES.

Those who desire to preserve fruit juices without fermentation for refreshing beverages, may take hints from the writings of Prof. E. F. Pernot of the Oregon Experiment Station, for the Orange Judd Farmer. He writes of cider but the same method is applicable to other juices as well.

Take clean quart bottles, preferably beer bottles, fill them with cider fresh from the press, leaving all of the neck of the bottle empty for an air space; then place the bottles in a steam chest, so that the steam when turned on will circulate freely all around them. Next steam or scald with boiling water, good sound corks, and leave them in water until needed. Then fill one bottle with cider, place it in the steam chest close to the top where a hole is provided to admit a long thermometer which passes into the bottle, so that the mercury bulb reaches about the center.

When all the bottles are in place and the door closed, steam is turned on and the temperature of the material raised to 160 degrees, as indicated by the thermometer, which may be seen without opening the door. The heat is maintained for 10 minutes, after which the bottles are immediately corked, and corks tied down. After 24 hours, the bottles are again heated to the same temperature, and the operation repeated the next day for the third time. The air space in the neck of the bottle allows for expansion, which prevents bursting of the bottles. If the bottles are to be stored in an upright position, the corks should be dipped into hot canning wax after heating the last time. If they are laid down, this is not necessary, because the fluid keeps the cork swelled and airtight.

Steam was admitted to the chest by a three-quarter-inch pipe passing through the side wall, near the bottom, reaching to about the center; an elbow was placed on the end of the pipe, with the opening down, to distribute the steam by first striking the floor of the chest. Inside the chest there were three trays with coarse screen wire bottoms, to allow the steam to circulate. It was found necessary to turn on a good head of steam to

equalize the temperature throughout the chest.

It is essential to bottle and sterilize the material as soon as possible after it is taken from the fruit, as there are less yeast cells, and other organisms in it at that time. After standing 24 hours or more before bottling, they will multiply into millions, and not only are there more to destroy, but the enzymes formed during their growth, will not be destroyed by heating, and gradually react on the material, changing its flavor in time. To do this work on a large scale, it would be advisable to use at least three steam chests.

For home use, where steam is not available, a wash boiler could be used. It should contain a small amount of water, and be provided with slats to prevent the bottles from touching the bottom; a tightly fitting cover must be used to retain the steam, so that the necks of the bottles will be sterilized.

THE RANGE.

A ROUND-UP OF WILD HORSES.

The high prices of all commercial grades of horses have led to an appreciation of the value of the wild stocks in the hills and ranges of Oregon and Washington, and the ranchmen have been gathering in the stray herds through regularly organized hunting parties. One of the latest round-ups is thus described in a news article from an Oregon paper:

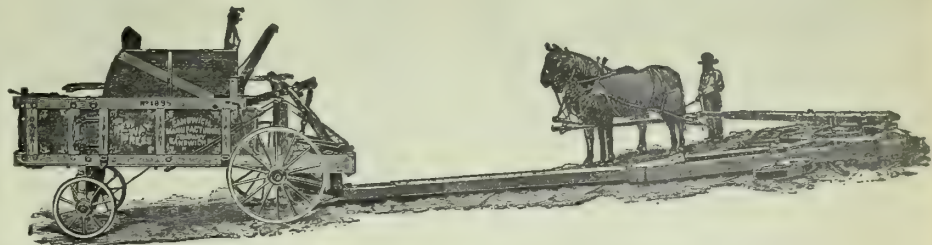
Sweeping down the mountain through a narrow ravine, out of the clouds it seemed in the dim light, came the wild band, followed and herded by the riders, down to the water. They were all thirsty, and after a drink it was a short task to place them in the corrals. Many of the riders' horses had given out with the hard work. Some came in on foot and others had to camp on the mountain for the night.

About four hundred horses were the result of the day's work. Fully 1500 had been started, but in the afternoon, when the riders and horses were tired, it was difficult to hold them and impossible to overtake them when they once got under way in their efforts to escape. This promiscuous gathering resulted in leaving many orphan colts with the band, and fully fifty were shot during the afternoon. While it may seem cruel, this practice is certainly more merciful than to leave the little fellows slowly to die of starvation on the range, while their mothers are miles away in the accustomed haunts searching for them. Several orphans were brought into camp, and nearby settlers came and took them to feed them on cow's milk till they were able to forage for themselves.

The partial failure of the ride on Crab Creek mountain necessitated a conference of the horsemen, and it was finally decided to rest the horses and try once more. Accordingly, the next day's work was taken on the south side of the Frenchman hill, lying to the north of Crab creek and a gently rolling country. The drive extends only about 15 miles and about 600 horses were turned in at four o'clock in the afternoon. The fact that sheep had been through the country near the corrals now necessitated the driving of the saddle horses and wild band some eight miles from camp to forage and more herders for the days and night wranglers for the saddle horses.

Some fine specimens of saddle horses were found among the wild band and they were speedily roped and saddled. Many of them were buckers of the first grade and in the trying out there was plenty of sport. The "Texas Kid," Jack House of Coolidge, Kan., a lad of about 19 years, won many compliments among the old riders for the way in which he handled himself and his mount when breaking in a new one.

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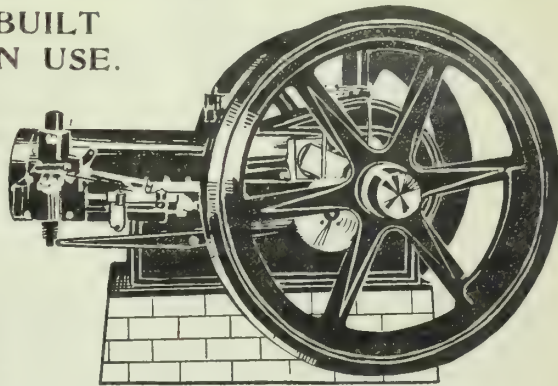
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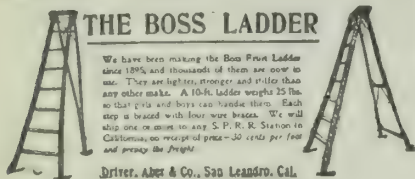
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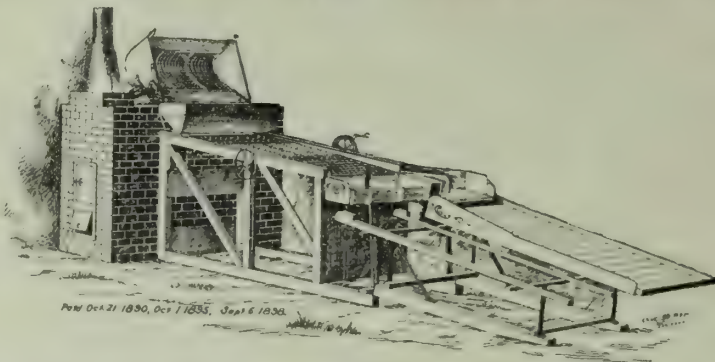
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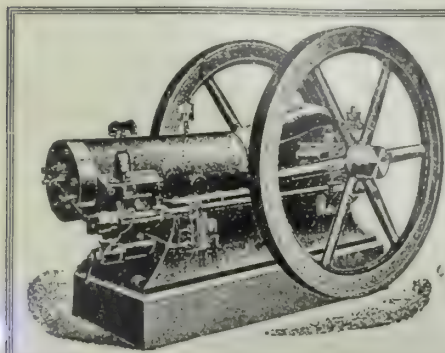
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Vol. LXXII. No. 2

SAN FRANCISCO, SATURDAY, JULY 14, 1906

THIRTY-SIXTH YEAR

A GLIMPSE AT CUBA.

For a midsummer outing this week we take our readers to the West Indies and draw for their entertainment upon a series of bright travel sketches which Mr. T. A. Rickard is publishing in the Mining and Scientific Press, choosing principally his references to the famous city of which the accompanying engravings afford glimpses.

The port of Havana is guarded by the Morro, a castellated fort standing on a promontory to the left of the entrance. During the late Spanish-American war, Morro castle was often busy, but it did no execution until the very last day; in fact, after the armistice had been signed at Porto Rico. On that solitary occasion a shell went through the New Orleans, a cruiser, from stern to bow, between decks, killing no one, but playing sad havoc with the officers' quarters. Within the harbor one is still reminded of the late unpleasantness by the remains of the sunken battleship Maine. The military mast and a portion of the "strong-backs," or iron superstructure, project above the water. To them I saw attached a metallic wreath on which was inscribed "Memori Missouri," evidently placed there by the men of another battleship. The Maine was blown up on February 16, 1898, and I recollect the stir it made in distant lands for I happened to be at Cairo, in Egypt, where everyone in the Anglo-American colony confidently accepted the tragedy as the forerunner of war. There have been many discussions as to the responsibility for the crime, but it is generally accepted among the well-informed that it rests upon the 'partido revolucionario,' the revolutionary party of Cuba, whose object it was to embroil the United States in war with the Spanish Government. How well they succeeded, all the world knows.

I shall not try to give any account of Cuba, even at second hand, for is it not told, and told well, by Robert T. Hill, whose "Cuba and Porto Rico" is a monument to his insight and industry. Cuba is a lovely island, about the size of New York State with every acre covered by

good soil and possessing a variety of economic resources. Only 10 per cent of the island is cultivated; in the valleys of the western hill-country is grown the tobacco which has done so much to soothe mankind, to express the courtesy of the civilized and to promote the friendship of the thoughtful. Naturally, I went to a cigar factory and bought some real Havana cigars on the spot fresh from the making. In a large room about a hundred men sat in rows before small tables, like school-

boys' desks. They were wrapping the tobacco leaf into cigar form. As they worked, a man standing on a stool read to them from the daily paper; he read dramatically and well, the purpose being to keep the workers interested. The proprietors of such establishments encourage this practice, which is general, because the men do not talk while the reading proceeds. When a Spaniard talks he uses his hands in gesture, hence he cannot employ them in labor; therefore the reading encourages efficiency. The men pay 10 cents per week from their wages (\$3 per day) to the reader, who, in large establishments, makes as much as \$125 per month.

Most travelers have spoken of the unhealthiness of Havana, of the dirt and filth that force their contrast with its beauty and color. Whatever criticism may be passed by an unfriendly historian, on the American interference with Cuban affairs, it is certain that the sanitary measures undertaken after the war have wrought wonderful improvement. Garcia Palma, even Sampson and Schley, were great men, but greater than these were George Waring and Leonard Wood, who did more for civilization than the leaders of war. And theirs was a contest with dangers as great as come to those on the battlefield, for Waring died, the victim of the yellow fever which he almost eradicated.

But Havana interested me most as a link in the story of the Spanish conquest. Hernando Cortez, after outfitting at Santiago, called at the port of Havana before starting upon his great quest, on February 10, 1519. His fleet consisted of eleven vessels, more than half of them open brigantines, and the biggest not to be rated at over 100 tons. Thence he went to the coast of Yucatan, making a halt at the island of Cozumel, before proceeding to the mainland of Mexico, and landing at Vera Cruz on April 21. We followed nearly in this course for from Havana we went to Progreso, which is the chief city of Yucatan, and thence to Vera Cruz—as did Cortez to Mexico City.



In the West Indies—A Glimpse of Old Havana.



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THE WEEK

There is still too much water on the rich low lands of the interior valley and considerable losses have occurred during the week by breakage of levees and overflows. In some districts the water is higher than it has been for a decade and a half and some reclamations have been saved at great cost. It is a great thing for California to have plenty of water and some day we shall learn how to use it, as we have repeatedly suggested, but in the present condition of things it is hard to see the blessing in it.

The Atlantic cables convey information which our transmitters seem to think new. It is to the effect that for the first course at a dinner the fashionables now have a fad which makes the table a miniature Garden of Eden. Instead of plates of peaches or plums or apples, as the case may be, the tree occupies the center of the table, and the guests may pluck the fruit. When strawberries or currants or any of the varieties of berries are used the vine or bushes are run around the middle of the festal board in oval fashion. This is all very nice and perfectly feasible if one will undertake the cost and trouble, but there is nothing new about it. In fact, if we are not mistaken books have been written about pot culture of fruits and European gardeners have known all about it for a half century, possibly much longer. There is therefore no reason why Californians should not at once enter upon this style of table decoration if they will do the work or pay some one else to do it. The beauty and delight of it can hardly be exaggerated.

Another case of old news comes a little nearer home. One would think Californians would know all about the bisulphide of carbon treatment of ground squirrels which was prescribed by the agricultural department of the University of California about thirty years ago and has become so common that the bisulphide is sold in all country stores. And yet we read of a man in Tulare county who made haste to tell the local paper that he had learned of a method of killing squirrels through a Nebraska correspondent of a Chicago journal and had used it with wonderful success. The account is so ingenuous and refreshing that we take the nut of it:

I have found that carbon bisulphide is much better than poison, safer, and the amount of labor a great deal less. It works a great deal better in moist soil, for if the soil is too dry a great deal of the drug will evaporate.

If used then, an ounce of the liquid is enough for each burrow. Pour the drug on a small piece of cotton batting or old rags and push it rapidly into the hole and cover the hole with earth. The gas is heavier than the air and will settle into the remote recesses of the burrow, destroying every living thing therein.

This is quite true and if any new reader of the "Rural Press" can get news from it we shall be glad of it. Our Tulare contemporary, with becoming editorial caution, says he "gives the recipe for what it is worth." We would add that there is probably nothing to compare with it in worth as a winter treatment for squirrels, but for summer use a good poison is better.

The railroads ought to have consideration enough for their chief patrons, the crop producers, not to take away their supply of harvest help. A dispatch from Kansas states that the farmers of that State have sent out a

strong appeal for men to work in the harvest fields. At least 25,000 more men than are now available or even in sight will be needed to gather in the harvest in Kansas and the farmers are at a loss to find means for securing the required help. Mr. Gerow, the State free employment agent, holds that the railroads are largely to blame for the shortage of harvest hands. He says the railroads need every man they can get to complete their own work, and for this reason have refused to grant the one cent a mile passenger rate that usually is made for harvest hands. They fear, it is said, that the call from the wheat fields with the attractive wages, will draw away their laborers, who get only \$1.25 per day for working on the tracks. This is a bad situation, surely. What is the use of railways if crops cannot be saved? Certainly railway builders can contrive some way to do their heavy work before and after harvest, both for the advantage of the farmer and the laborer.

Speaking of labor, the opposite disposition to that complained of is discernible in San Francisco. One thousand persons, many of them occupants of refugee tents, will be given employment next week when the California Canneries Company will resume business in new buildings at Eighteenth and Minnesota streets. The resumption of business took place July 14, when Mayor Schmitz, ex-Mayor Phelan, Labor Commissioner Stafford and others delivered appropriate addresses to the employees and invited guests. As we recently stated in another connection, the San Francisco fire destroyed seven canneries with a canning capacity of a million and a quarter cases or nearly 40 per cent of the canning capacity of California, and the establishment opened on Saturday is the only one to be rebuilt this season. The enterprise will help the fruit market and the labor market also. Such spirit of wide helpfulness should prevail in all relationships of great industries.

The humane in cattle handling makes a concession to trade exigencies but will insist absolutely upon observance of new regulations. Secretary Wilson has sent notice to all railroads concerning the new law permitting cattle to be hauled continually for thirty-six hours without stoppage for rest and food. The old law fixed the limit at twenty-eight hours. "At the expiration of thirty days," the notice reads, "the inspectors will be directed to report all violations, and they will be transmitted to the Department of Justice for institution of suits and the collection of penalties. Under the old law the department pursued the plan of allowing railroad companies to confess judgment and pay the minimum penalty of \$100 per case. This practice will not be followed in the enforcement of this law."

The next great irrigation event will be the meeting of the National Irrigation Congress for which the local executive committee at Boise, Idaho, is making grand preparations. Governor Pardee of California, is president of the congress, and it will be a good thing to have as large a California delegation present as possible. There is much in the irrigated districts along the Snake river to interest California fruit growers and the irrigators generally. Governor Pardee has written a personal invitation to the Governor of each State and Territory of the United States, asking them to head the delegates appointed to the congress. Favorable replies have been received from a majority of the chief executives, and those who cannot come in person will send personal representatives. A special train of Pullman cars will be made up at Omaha and Kansas City to bring the governors and their parties through to Boise. It seems probable that the Fourteenth Irrigation Congress will be honored by the presence of a larger number of State governors than have been assembled since the opening day at the World's Fair at Chicago. The Idaho people expect to make the Congress an exposition of the resources of the

Northwest. In addition to the exhibit of grains, grasses, fruits and sugar beets, there will be an extensive display of lumbering, as well as an exploitation of the unlimited water power in the State awaiting development. The great railroad systems of the West will give the most liberal rates ever offered to the West. Boise is preparing to entertain 2,000 delegates and as many more visitors who will take advantage of the opportunity to study irrigation. The Congress will be in session from September 3 to 8, inclusive.

The exhibition features at the Congress should be very attractive and instructive. The Great Western Sugar Company offers a magnificent solid silver loving cup, valued at \$500, for the best State exhibit of sugar beets. For this valuable trophy the sugar beet raisers of Colorado, Utah, Idaho, Washington and California are invited to enter into competition. The subject of sugar beet culture will be one of the most important agricultural topics discussed at the Congress. Another silver cup, valued at \$500, is to be given for the best State exhibit of fruits, and should be warmly contended for by the fruit growers of Colorado, Utah, New Mexico, California, Oregon, Washington, Montana and Idaho, and is expected to be the most varied display of fruits ever made in the Northwest. More than twenty valuable silver cups will be given for association and individual exhibits of different varieties and collections of fruits. The latter prizes will be permanent gifts to the winners, while the State cup is for future contests to be held during succeeding sessions of the Irrigation Congress. California has not done much at the congresses hitherto. At Ogden the effort was made by a few enterprising individuals, but the display was not in it with the exhibits made by wide State collections. California is winning many settlers from the Northwest and if a display is undertaken it should be a great one, and undertaken with money and work. No little show will do us any good.

Uncle Sam is going to buy back as lumber the Calaveras big trees which he sold a generation ago by the mistake of one of his agents. The present owner of the trees, it will be remembered, bought the grove on speculation and offered to sell it to the government at a certain figure, but the price was considered too high by some of the officials, and it was suggested that data be secured by a survey to determine the actual value of the timber. It is understood that the figures secured last year have shown that the price set upon the big trees was far less than they would bring if sold to a sawmill, but the government determined to continue the survey until both groves were measured by experts who are familiar with this kind of work. At one time it was reported that they had been sold to a company and would be turned into lumber, and this caused a strong protest. Steps were taken at once to have the grove turned into a national park, but it will probably be three years yet before this can be accomplished, even if the owners and government come to terms.

QUERIES AND REPLIES.

EXTERMINATING BERMUDA GRASS.

To the Editor: On the subject of eradicating Bermuda grass, Prof. Dodson, of the Louisiana Experiment Station, says: "By breaking the sod shallow in December, and following with a crop that produces dense shade, such as cowpeas or velvet beans, Bermuda grass can be exterminated in a single season."—READER, Florida.

This looks to us like a prescription for a place which does not have much winter frost, unless the advice means to plow up Bermuda in December, allow it to freeze well during the winter and then follow, after the frosts are over in the spring, with cowpeas or velvet beans. But these plants will not make much summer growth in California without irrigation, unless it be on moist bottom land. The advice therefore seems to us of limited application.

WALNUTS AND PECANS.

To the Editor: I have 17 acres of rolling hill land, red, sandy loam soil, here in Santa Clara valley. I would like to know your views as to planting walnuts and pecans. If you think walnuts would do well, what kind would you advise planting? I have read about a Mayette walnut. What do you know about it? What could be expected of pecans as a money-maker per acre?—HILL-SIDE, Santa Clara county.

The success of walnuts on the land which you speak of will depend upon the available depth of the soil and the moisture supply during the late summer and autumn. The character of the soil you mention is all right, providing it has depth and sufficient retentiveness for moisture. The Mayette is a thoroughly good French variety and is being considerably planted, although the Franquette is at the present time more popular and its suitability for various situations in California rather more fully demonstrated.

The pecan nut is altogether experimental as yet and its record for bearing in the Bay district is altogether unsatisfactory thus far. It seems to do better in interior situations with more marked differences in summer and winter temperatures.

ALFALFA GROWING.

To the Editor.—Have you any literature you can send me on alfalfa? I have about 40 acres of sandy sediment land $3\frac{1}{2}$ miles south of Stockton that I am going to put into alfalfa. What is the best time to put it in, and is it best to sow it alone or to put a crop of barley in and seed with that, or with wheat? I am going to irrigate with a pump.—FARMER, Stockton.

You will find a notice of a very good little book on alfalfa on the page which we give to book advertisements. The subject is continually being discussed in our columns. Alfalfa is sown in the fall or early spring. In your part of the State probably more alfalfa is sown in the month of February than in any other month, although to get an early fall start is good practice. It is better to sow it alone and not with a grain crop.

IRRIGATION DETERMINED BY SOIL AND RAIN-FALL.

To the Editor.—In your articles on irrigation and fruit growing (issue of June 9) you published the opinions of various growers and one from this district. Evidently there are two sides to this question. My experience in Anderson leads me to believe that more than nine-tenths of the fruit raised is from non-irrigated trees. I believe that when the rainfall is over 40 inches, fairly well distributed, as here, and the soil good and deep, there is no need for irrigation. There may of course be some few places where the soil is poor and shallow that every year needs artificial watering whatever the rainfall may be, and I cannot but think your correspondent had some such places in his mind when he wrote you. Nearly all our large orchards lie near the river bank and could easily be irrigated if they needed to and three or four years since a few did, but have ceased to do so.

As to yield: Your correspondent estimates irrigated trees, 200 lb.; non-irrigated trees, 40 to 50 lb. I could point out many hundreds of trees in this immediate neighborhood which frequently have from 200 to 400 lb. of fruit each year without irrigation. In our own orchard we have Bartlett pears, peaches and prunes that have given over 300 lb. each, without much loss in size as two years running prunes have sold as flat fifties. One apricot tree has borne 800 lb. in a season. As the trees generally hold their foliage till very late in the autumn, I take it as evident that irrigation is not always necessary. After all it is not irrigation vs. non-irrigation, but irrigation to be determined by soil and rainfall.—W. J. H., Redding, Shasta County.

You are right, of course. We thought we had made that point quite clear. Irrigation is necessary or not according to rainfall, character of soil, and whether you are growing deciduous or citrus trees. But it is not only on poor or shallow soil that you may need supplementary moisture. It may be a deep soil if it is loose in character or underlaid by sand or gravel. In fact, we have tried to show that the behavior of the tree is the true criterion and not any theoretical judgment as to natural conditions. If the tree lacks water it pays to irrigate, no matter what the rainfall or depth of the soil may be; if the tree shows the presence of enough water it is silly to irrigate.

A LIPPIA LAWN.

To the Editor.—From clippings of lippia received from the University two years ago I now have a fine lawn started, and would like to know what care and attention it needs to bring the best results as it seems well adapted to our soil here. Any information you can give me will be very thankfully received.—AMATEUR, San Jacinto.

Lippia requires nothing but occasional sprinkling to wash off the dust and keep it fresh looking, providing you like its natural growth. If you wish something smoother you can clip it with a lawn mower.

THE BLACK LOGANBERRY IS THE MAMMOTH BLACKBERRY.

To the Editor.—This year the Black Loganberry was shipped from Watsonville to Santa Barbara. The merchants complained that it was very tender. How does it compare with the Mammoth Blackberry for shipping? Possibly its bad condition was owing to long shipment.—ENQUIRER, Santa Barbara.

To the Editor.—Your inquiry in regard to my berries has been received. The Black Loganberry and the Mammoth Blackberry are identically the same. I raised a great many seedlings at one time, being the same time the Red Loganberry originated, and when I sold the supply to Mr. Watters they were considerably mixed, there being a great variety of berries of similar type but of different value as to quality, in the lot. Prior to selling them to Mr. Watters, a good many had been given out indiscriminately, which scattered them, good, bad and indifferent, over this part of the country. Really, much of it had been done before the value of the Mammoth Blackberry was demonstrated. When Mr. Watters got the supply I had (and he bought the entire output), he allowed them to fruit before he placed any on the market, knowing as he did that many that he had planted out were worthless. The berries put out by Mr. Watters are entirely reliable and are the genuine Mammoth. Many of the berries being sold around Santa Cruz are spurious, not being the genuine Mammoth, although all of them go by the name of the Mammoth or the Black Loganberry.

The original plants showed many different characteristics—many of them were pistillate or uni-sexual; many were small and inferior in growth, and small and inferior in size of berry; some were very long and some were round. The genuine Mammoth has a perfect flower, and the fruit is uniformly long, some of them measuring two and one-half inches, although berries of that size, or even of two inches, are not very common unless raised under high cultivation. The plant of the Mammoth, under high cultivation, is immense. A few years ago I had one cane which was probably an inch and a quarter in diameter, and its length, counting its branches, amounted to one hundred and forty-six feet of bearing wood.—J. H. LOGAN, Brookdale, Santa Cruz county.

By the above communications the reader will observe that we appealed directly to the originator, Judge Logan, to settle the synonymy of two names which are being very loosely used at the present time. There is also much confusion about the origin of these fruits in current prints and they are frequently credited to other plant breeders. We hope Judge Logan will find opportunity to prepare a full account of them for publication that it may stand as an authentic record.

A GUESS AT ORANGE YIELD.

To the Editor.—Will you please tell me what is considered a fair yield in weight and boxes for a Washington Navel orange tree ten years old.—SUBSCRIBER, Chicago.

From two to three boxes per tree, boxes of about 70 lbs. weight, gross.

THE POLLINATION OF CORN.

To the Editor.—Will you be kind enough to inform me what would be the effect upon the ear of corn if the tassel or bloom of the corn should be cut off before the putting out of the silk on the shooting ear of corn? I mean suppose the entire field of corn were thus deprived of the fertilizing pollen contained on the tassel before the coming out of the silk. I believe corn tassels a little before the silk appears. Suppose this tassel be cut away before the silk comes? I ask: 1. Would

the ear of corn come at all; 2. Would the ear be so large or full of grain; 3. Would there be any improvement in the character of the cereal so far as its taste or flavor or succulence is concerned; 4. Would the effect be to render the grains of the ripened ear unfruitful, incapable of producing more corn when planted?—CORN, Alameda.

Theoretically you should not get any corn at all on the ear if the tassel is removed before the pollen ripens and before the issuance of the silk. If the pollen is allowed to approach ripening before the tassel is removed it is probable that some of it would attach itself to the plant, retain its vitality and be carried to the silk in a number of ways. It would be necessary not only to remove all the tassels in the field sufficiently early, but it would also be essential that your field should be located a number of miles away from any other corn field, because pollen will be transported by insects, or upon the wind, for very great distances—no one knows just how great. The effect of completely removing the pollen supply would be to render the ears abortive. A great reduction of the supply, without entire absence of it, would give you an ear with scattered kernels. The improvement of the grain without pollination, or the germinating power of it, are not open to discussion, because there would be no grain.

GRASSES IN CALIFORNIA.

To the Editor: I am an Australian on a visit to your country. Have you grasses which either remain green or continue growing throughout the winter or which if autumn sown will start green feed very early in the spring? Have you any grasses or fodder plants which remain green throughout the summer? This is desirable not only for fodder purposes but to serve as fire breaks against forest fires. There is no irrigation. Have you developed any special strains of English grasses by breeding or acclimatization? Do you grow the edible passion fruit?—VISITOR, Buffalo, N. Y.

The introduced grasses which do best as winter growers in California are the English rye grass, tall oat grass, orchard grass and the Hungarian brown grass. These grasses start very easily in the autumn with the first rains, grow during the winter time and will remain green through the summer, providing there is moisture enough present, in low ground, or where irrigation is employed, but on dry uplands they will not live throughout the summer. We have not found anything which is satisfactory in this respect without irrigation and such grasses will certainly not serve as fire breaks. Growing evergreen fire breaks in such places is probably wholly conditioned on irrigation. We have not done anything very satisfactory thus far in the improvement of introduced grasses.

Edible passion fruit of several species grows freely in California, but is of no commercial importance. We presume you refer to the varieties grown in Australia. Our market does not care for them, although samples have been sent up here from Australia for sale. Some few people grow them in gardens, but there is no commercial demand.

DEBILITATED ALMONDS.

To the Editor: In a little package I have mailed you today some leaves of one of my almond trees. During the last two or three weeks the leaves on this tree have nearly all dried. Another almond tree, about 180 feet away, has just commenced to go the same way. Can you tell me what this is, and whether I can do anything to save the trees?—GROWER, Gilroy.

We do not find any definite clue to the trouble with your almond trees. It is not a disease; there is something the matter with the moisture supply of those particular trees, or something hostile to the root system. The twigs which you sent made exceedingly little growth last year and this year also show failure from weakness and lack of suitable contribution by the roots to the progress of the tree. This might be from the occurrence of sand or gravel, which draws the water away from the tree, or it might be due to the occurrence of alkali at that particular spot, if you have any alkali in your soil. We would dig down three or four feet near the tree and see in what condition the soil and roots are. The appearance and behavior of the leaves seems to be due to lack of nutrition.

THE IRRIGATOR.

IRRIGATED FRUITS AT POMOLOGICAL FAIRS.

(Sixth Paper.)

By E. J. Wickson in the report of Irrigation Investigations of the U. S. Department of Agriculture.

The pomological fairs within the irrigated regions and the great expositions at home and abroad during the last quarter of a century have afforded an opportunity for contrasting displays of irrigated and non-irrigated fruits. Irrigated fruit is conceded to be rich in show features. Its size and beauty have always commanded admiration, and its superior attractiveness has been sufficiently demonstrated by the fact that in earlier expositions in California, and possibly elsewhere also, it was often set apart in a class by itself, so that the competition of non-irrigated fruit with it for the same awards might be avoided. A question was, however, addressed to growers as to their experience with irrigated and non-irrigated fruits at the fairs, in the hope that some instructive contrasts might be brought to light. The answers received do not, however, attain such ends, although they do constitute an interesting record of experience, and in some cases shed a unique light on the durability of irrigated fruits in long shipment and during the trying exposure on the show plates. There has perhaps been no clearer demonstration of these facts than the award at the Paris Exposition of 1900 to the apples grown with irrigation in Idaho. The same behavior of irrigated fruits has been manifested at all American expositions since the Centennial, at Philadelphia in 1876, which was the first great opportunity for the irrigated fruits from California. The following declarations of individual experience along these lines are of interest:

Idaho.

L. A. Porter, Porters: My irrigated fruit was given awards at the Columbian Exposition, at the Pan-American, and at the Spokane fruit fairs for many years.

A. McPherson, Boise: My irrigated fruits have taken prizes at the Chicago, New Orleans, and Omaha expositions.

Washington.

E. H. Libby, Clarkson: Irrigated fruits of this valley have won prizes at the Columbian Exposition, at Omaha, at Spokane fruit fair year after year, and sweepstakes regularly at the Lewiston State Fair.

F. E. Thompson, North Yakima: Our irrigated fruit has taken awards at Washington State Fair and at Spokane fruit fair.

Oregon.

S. A. Miller Milton: I was given awards at the Spokane fruit fairs in 1895 and 1896 for the largest apple on exhibition.

Seufert Brothers, The Dalles: We took prizes for our irrigated cherries and Hungarian prunes in the Oregon exhibit at the Columbian Exposition.

J. R. Casey, Ashland: I have taken prizes with irrigated fruit at the southern Oregon district fairs.

California.

W. E. Hazen, Manton, Tehama County: My irrigated fruit has won prizes at the Red Bluff district fairs.

J. L. Barham, Manton: Our irrigated apples have taken prizes at the State fairs whenever exhibited.

George H. Flournoy, Corning, Tehama County: I have always received a majority of the premiums at county fairs in my county and received gold medals at the Midwinter Fair in San Francisco.

L. F. Moulton, Colusa: My irrigated prunes won the highest awards at the Midwinter Fair of 1894.

John Rock, Niles, Alameda County: My irrigated fruit took a gold medal at the California State Fair in 1896, also a Wilder medal for olives at the meeting of the American Pomological Society in 1895.

A. Block, Santa Clara: The American Pomological Society at its Cedar Rapids meeting gave me a Wilder medal for irrigated pears.

T. J. Wagoner, Rough and Ready, Nevada County: Placer and Nevada counties have taken leading prizes at leading fairs and the fruit was all from irrigation.

P. W. Butler, Penryn, Placer County: Ten to fifteen years ago I exhibited irrigated fruit yearly at the State fairs in Sacramento, and on peaches have always taken prizes—sometimes more than any other exhibitor in the State.

W. N. Sherman, Fresno: We received a gold medal for irrigated fruits at the Paris Exposition; two gold medals and eighteen blue ribbons at the California State Fair of 1902 for irrigated fruits and other local awards.

George C. Roeding, Fresno: Our irrigated fruits won prizes at the State Fair in 1902 and at county fairs for a number of years.

C. A. Walter, Independence, Inyo County: I have taken prizes with irrigated fruits at the Inyo County fairs a number of times.

A. D. Bishop, Orange: I was awarded a medal at the Columbian Exposition in 1893 for irrigated fruits and have taken numerous premiums at our county fairs.

C. P. Taft, Orange: My irrigated loquats took a diploma at the Pan-American Exposition. I have won many prizes with irrigated fruits at the fairs in California.

D. Edson Smith, Santa Ana, Orange County: My irrigated deciduous fruits, both fresh and dried, have taken first prizes at several fairs of the Southern California Pomological Society in Los Angeles.

James Boyd, Riverside: I have had the best success and have taken premiums at the Los Angeles and other fairs, both for fresh and dried fruits, in competition with unirrigated fruit from other southern counties.

H. Culbertson, El Cajon, San Diego County: I have taken prizes for irrigated fruits at our county fairs and at the Columbian Exposition.

Arizona.

A. J. McClatchie, Phoenix: Our irrigated fruits won prizes at the Pan-American Exposition.

INJURIES ALLEGED AGAINST IRRIGATION.

The last inquiry submitted to correspondents was intended to afford opportunity for alleging all objections to the use of water in fruit growing, so that full measure could be taken of this phase of the collective mind of fruit growers. Naturally, though many correspondents expressed themselves in answer to the question: "Do you know of fruits or fruit trees or vines being injured in any way by irrigation, and if so, in what respect?" there were but few distinctive objections and much repetition in the recital of them by different observers. For this reason the plan of citing individual declarations, which has been followed in the compilation under the previous headings, will be abandoned and, in the interest of brevity, only objections in some respect different from others will be entered upon the following rough classification of statements:

Injuries Due to the Grower Himself.

Careless irrigation often injures trees and vines.

The things to know are when to irrigate and how much. Just enough at the right time insures the best possible results, but some growers seem to be unable to learn this.

Trees are not injured when intelligence enters into the use of water.

Fruit trees are often injured by too much irrigation—in fact, many are killed by it. It also spoils the fruit.

Injuries Due to the Water.

Too much water remaining too long around the stems of low-set orange trees causes root rot or gum disease.

Some kinds of fruit are especially injured by over-irrigation.

Trees can be drowned by too much water or may die from too little of it.

Some grapevines have been killed—apparently by too much water.

Deciduous fruit trees are injured by too much water and by allowing it to run around the body of the tree.

Too much water on or near the surface will injure fruit trees. Some orchards where water is plentiful are being ruined by too much of it, even in the mountains where natural drainage is usually all that could be desired. The trees are sickly and the fruit of little value.

If too much water is used the fruit will drop and the trees show a sickly appearance in the middle of the spring. Moderate irrigation will not do this.

Orchards and vineyards are killed by overirrigation, because of the raising of the water level too near the surface.

In low places, especially where the ground water is too near the surface, irrigation has had bad effects. Fruits have not such good flavor, grapes are late, and sometimes trees are killed.

Orchards have been killed outright by constant irrigation by Chinamen growing vegetables among the trees.

One prune orchard of 150 acres, in Santa Clara County, Cal., has been abandoned and the trees dug out. For ten years they have been irrigated abundantly, at great expense, and supplied with fertilizers also. Adjoining orchards not irrigated are still thrifty and bearing tolerably well. It has been claimed that the water washed the fertilizing substances out of the soil.

Summer irrigation promotes a root system near the surface and proper development of fruit on trees with such a system of feeders requires irrigation. In other words, an orchard once irrigated will suffer more from drought than one never irrigated.

Injuries Due to Lack of Drainage.

Where water is allowed to stand or there is insufficient drainage the leaves turn yellow, and if the trees are not looked to they are apt to die.

Too much water with poor drainage will sour the soil and cause gum disease and yellow leaf.

Trees can be injured, especially on roots which do

not like too much water and on soils where the sub-drainage is defective.

Thousands of acres of trees and vines are seriously injured by seepage of water from ditches and the raising of water levels. Drainage of land to remove surplus water is one of the greatest needs in some localities.

There are 35-year-old apple trees at the Hicks ranch in San Bernardino County, Cal., that have a ditch of water running constantly within five feet of the trunks and yet are very thrifty and bear nearly every year apples of highest quality. They will not grow, however, in a swamp, but must have some drainage.

Fruit trees are injured by subirrigation without drainage for surplus water. Standing water is destructive to the roots.

There may be injuries by irrigation in the case of using excessive amounts of water a few days before picking. Walnuts are never injured by irrigation on land that has good underdrainage. The land might be leached out, perhaps, but there is no direct injury to the tree.

Injuries Due to Lack of Cultivation.

Trees are injured by too much irrigation and not sufficient cultivation.

Too much water continuously will check growth, turn foliage yellow, and stunt the tree. The land should be cultivated between irrigations until there is but little moisture at the surface, but not allowed to become dry enough to curl the leaves. This will make healthier trees and a better quality of fruit than overirrigated land, but the irrigation should be thorough and deep.

Too much or too frequent flooding around the tree with too little cultivation between irrigations may do injury. Too many people who have plenty of water use it too frequently, thinking to escape the trouble of cultivation.

Sometimes fruit trees are irrigated continuously and never cultivated so as to open the soil to sunshine and air. Such trees are not so stocky and strong.

Irrigation without cultivation—and that in the most thorough manner—is productive of injurious results, and where irrigation has not given satisfactory results it will be found that it was not followed by the proper cultivation.

Injuries Due to Temperature During Irrigation.

Where hardpan is near the surface, care must be taken or the tree or vine is very likely to be injured if much water is applied in warm weather.

Carelessness in flooding trees in hot weather may injure them, but when judgment is used in irrigating, trees are not injured by water.

Both trees and vines may be "scalded" by allowing water to stand too long in hot weather.

Orchards have been injured by too much irrigation, causing the roots to scald.

In the daytime the ground and water get hot, and to let the water strike the tree then will scald the bark. It takes very little of that to ruin a tree.

Sunshine reflected from water running below against the trunk causes sunburn.

There have been a good many orange trees ruined by flooding the trees, running a furrow, or digging to the root crown, thereby cooking it and finally ruining the tree.

Fruit trees are sometimes injured by receiving too much water during hot spells during the summer.

In Arizona fruit trees have been injured by scalding even when a very small amount of water has been put on in hot weather.

In Idaho trees left to dry out in summer have been made to take a late growth by irrigation and have suffered by early freezing. It is also true that trees have been saved, by having irrigation late in the fall, from a heavy winter freeze where there was a lack of moisture, while unirrigated trees in the same locality were killed by drying out by such severe freezing. Water to keep trees from destruction by "freezing dry" must be applied late and when the temperature becomes low enough to prevent new growth.

Injuries to Fruit by Irrigation Too Near Ripening.

Flavor and keeping quality of the fruit are hurt by heavy irrigation just as the fruit is ripening. The best time to irrigate is early in the growing season.

Water at some periods is said to retard the ripening of fruits.

Late and excessive irrigation is injurious both to fruits and their products.

If irrigation is applied within three weeks of ripening the fruit is apt to be watery and liable to decay.

In Nevada County, Cal., a large, late blue grape (Ramonia Transylvanica), with water running near the vine all summer, never ripened and hardly colored, keeping sour and green, while on the other vines of the same kind (but little irrigation or none at all) the grapes ripened nicely, being of a dark-blue color.

Winter irrigation is often superior to summer irrigation for deciduous fruits. Many injure their orchards

and affect the fruit disadvantageously by late irrigation, especially after the fruit begins to mature.

Some peaches and apricots have overgrown and lost flavor from too much water. Apricots are very sensitive to water, and with reasonable rainfall, and well cultivated and thinned, will mature good fruit without irrigation, as they nearly all ripen in July. Early peaches will not stand much water.

Study of these alleged injuries due to irrigation clearly shows that they are attributable not to irrigation, but to errors in the use of water. Every other agricultural agency is not only subject to misuse, but is actually misused with resulting injury, hardship, and loss; but as irrigation is a newer art to Americans and its requirements not well understood, it is not strange that injury properly attributable to the actor is frequently attributed to the instrument. It becomes clear, then, that there is no blame attaching to irrigation which might not also attach to rainfall or to natural overflow—in fact irrigation, being wholly under the control of the operator, should be held the more innocent. It is an old proverb that "no man can farm against the weather," but it is certainly a fact that a man can farm against injuries by irrigation as soon as he has the requisite intelligence and the energy to act upon it. There is, manifestly, no injury by irrigation which can not be avoided by the use of the right amount of water at the right time and in the right way upon the soil naturally right for it, or corrected by the arts of tillage and drainage, and these corrective arts are neither new nor peculiar to irrigation practice; they are the old arts which have demonstrated their value through centuries of rainfall farming.

And yet, simple as the matter is upon last analysis, the steps of attaining it are really new and strange and are apt to fail of recognition and appreciation. In connection with his response to the questions of the present inquiry, Mr. J. H. Reed, of Riverside, Cal., gives these pertinent observations and conclusions:

"There is one thing we must keep more prominently in mind; that is, that successful, practical irrigation is not so easy a thing to learn and practice as many suppose. The blundering unsuccess of untrained beginners does more to retard the progress of irrigation in new districts than all things else. I recently visited a semi-arid section in Nebraska where a few years before a much-needed irrigation plant and plenty of cheap water had been secured. It had proved so unsatisfactory as to discourage not only those immediately interested, but the whole region as to the practicability of successful irrigation. I found the condition easily explained by the utter carelessness of application and management of water, while with practical direction it might have been made of vast benefit locally and a useful object lesson for the whole region.

I fully understand that irrigation of deciduous fruits may be mismanaged or overdone, as with citrus fruits, but I can not understand at this late day how there can be any question as to the great value of irrigation intelligently applied to deciduous fruits, both as to quality and quantity of product."

The foregoing observations and conclusions explain why it is necessary to undertake such inquiries as form the basis of this report. Though the practice of irrigation will be continually improved by the results of scientific experimentation and exposition, the extension of the practice and the realization of the benefits thereof will be largely achieved by the wide publication of the teachings of experience.

[The End.]

THE MARKETS

Wheat.

Market conditions and prices for spot wheat show very little change in the local market. The present situation is about normal for this season of the year when producers are busy harvesting and exporters figuring on future operations and paying little attention to cash business. Cables indicate that the situation abroad is a little firmer. Trading in Chicago is light. The shipping season for last year's crop is about over, one vessel is loading in Puget Sound and with the sailing of this the season will end. The crop is being harvested rapidly in California and within a few days harvesting will begin in Oregon and Washington. The arrivals of new wheat in San Francisco are still rather small though the total is considerably larger than last week. There will be no new wheat in Portland or Seattle before August 1st. A considerable amount of tonnage is headed for the Pacific Coast and the engaged list is slowly growing in San Francisco and in the other ports. Millers are now holding off partly because they are well supplied and partly because they hope to make better terms when the new crop is marketed.

Flour.

The past week in the local flour market was a dull

one. From start to finish there was very little life in it from any source. Stocks on the coast at the close of the cereal season are large and the outlook for much business is not very bright at present. The trade in general has been hoping for an active revival of business from Japan before the new duty goes into effect, October 1st, but no signs of any increase in demand for flour from that country have as yet appeared. It looks as if buyers are well stocked up, and propose to let their stocks decline somewhat before placing any new orders. China buyers have not made any calls for prices recently, and it looks as if either the Australian stock must be very large, or the Chinese boycott is still in force. Some demand exists for Siberia, but the volume is not large. Heavy shipments are being made to Central and South America, and the prospects for a good trade with those countries for July and August are quite in evidence. The foreign outlook is not very bright at present, but millers have all bought heavily of wheat and are prepared to resume operations at once, if the demand should come on.

Barley.

The best quality of feed barley is now quoted on 'change at prices ranging downward from 97½ cents. New and old now have about the same general range of prices. Several days ago some off quality barley was sold as low as 90 cents. Feed barley is in good demand and prices are expected to maintain a fairly high level for some time. The interest in futures is a little more marked and these are generally a little firmer. In the Pacific Northwest where the new crop has not yet come in stocks are light and prices high. Transactions are of fair volume though corn is still being substituted to a considerable extent. It seems to have been a good barley year all along the coast and all reports agree that the coast yield will be large.

Oats.

There is promise of considerable more interest in the oat crop within a few days. The total arrivals of oats in the market are now running above 1,000 per day and new crop oats are coming in in a small way. The first arrivals were sold at a rather wide range of prices bringing all the way from \$1.15 to \$1.40 per cental. Choice quality of coast grown oats are in excellent demand, but buyers are showing little interest in Eastern oats. Feed mills are said to be in the market for desirable lots. Prices are expected to be good throughout the season.

Corn.

Business on the corn market is very limited and offerings of spot are exceedingly small. The small stocks now in hand are firmly held though no great interest is expected to be taken before the new crop begins to arrive. Prices are largely nominal.

Millstuffs.

Bran and shorts have been advanced on account of short supplies which have resulted from the inactivity of the mills. Notwithstanding a plentiful supply of new hay the demand for millstuffs continues good. In the North the market for bran is decidedly easier and most of the mills have overtaken their back orders, and as the weather there of late has been very favorable for the meadows, the consumption of bran has fallen off considerably. Puget Sound mills have been shipping considerable to help San Francisco buyers out but from Portland very little is coming down.

Beans.

There appears to be less than an average amount of beans in the hands of dealers, but no special activity is reported. So far as known the crop outlook is good and the yield will be fair.

Seeds.

All seeds to be had here have come from the East. A few dealers are getting into shape but so far they report that in this between-season time nothing is stirring. Little is expected before October 1.

Hay.

The hay situation continues to be more or less unsatisfactory owing to the poor railroad service. Arrivals have not been particularly heavy and of the receipts the bulk is coming in by water. San Francisco demands seem to be fairly well satisfied for the time being. Prices are weakening somewhat though it is still a little hard to fix definite values for the new crop. The National Hay Dealers' Association which held a session at Put-in-Bay a few days ago, expressed the opinion that the total hay crop of the United States this year will not exceed 60 or 65 per cent of last year's crop and will not be over 75 per cent of the average crop. The clover crop throughout the East was declared a practical failure and the timothy crop is very poor.

Hops.

Growers report that the outlook is for an excellent hop crop in California. The output of Sonoma County will considerably exceed that of last year. Buyers are taking some interest and though little business in the coming

yield has been done within the last few days, it is understood that prices will be good. Picking will begin about the usual time. Prices show little change.

Hides.

The hide market continues in its previous state. The market is well cleaned up and the demand is good especially for sound hides. The quality of the take-off is now beginning to improve and still better prices will naturally be realized. As a rule the California tanneries were not badly damaged by the earthquake or fire and the demand for hides has not suffered the same temporary falling off that has affected other lines.

Wine.

All indications seem to point to a large wine yield this year. In all the principal wine grape districts large crops are in prospect and large areas of new vineyards are just coming into bearing. There is some report of mildew in the vineyards of Fresno and vicinity, but no details as to the extent of the damage are at hand. In Napa county the crop will exceed that of last year. Growers are talking \$30 per ton in that district but it is not known that the wine makers are buying at that figure.

Butter and Cheese.

A fairly firm market marks the week's end in butter. But little change has been visible during the week. Sales are good and the supply is plentiful for all demands. Creamery goods are firm now, but dairy butter is not much in evidence. Cheese has proved itself very steady and no great change is anticipated in that line.

Eggs.

Eggs have gone up a cent, the demand for fresh warranting the rise. There is practically no demand for storage goods, too many spoiled ones developing among the stock in hand. In case the price goes higher there will be many eggs left on the market for while they are selling readily at ruling prices any more will check the demand.

Poultry.

The poultry market is still a long way from coming into its own with other produce. Very few shipments have arrived and dealers show no enthusiasm about getting more. Little change in this direction can be expected until the people of San Francisco get their homes re-established and the better class of hotels and restaurants reopen.

Vegetables.

Potatoes are selling now in good shape and so far arrivals, especially the new, are very fair in quality. Dealers have been keeping a close watch on the rise in the Sacramento river for in case Union and Victor Islands are flooded the crop will be diminished to a very large degree. Onions are arriving in fair sized quantities and sales are reported as only fair. Little change appears in fresh summer vegetables, as arrivals appear to about balance the consumption. The strike on the water-front has hindered the usual large shipment of potatoes and onions to points north and south. Were it not for this, trade to out of town points would now be brisk and an active market would prevail. There are very light stocks of peas and beans in the packers' hands as yet and prices rule firm in the market.

Fresh Fruits.

It now looks as though the canned and dried fruit situations were to have a steadying influence on the fresh fruit market throughout the season. Nearly all canned and dried stock is exhausted, both east and west and canners and dryers are in the market in earnest. The light crop of apricots is holding out and as the quality is good high prices prevail. The cherry season is about over and prices will soon be nominal. There will be a large pear crop with Bartlett's particularly plentiful. Figs are of fine quality and are held at high prices though the demand is limited. Fancy apples are in good request. The yield of plums is reported short.

Dried Fruits.

Hardly enough stocks of dried fruit are left in the San Francisco markets to give an index on conditions. The spot market is bare as regards peaches and prunes. Raisins remain quiet, but the crop is expected to prove better than an average one.

Nuts.

Few dealers show concern over the conditions prevailing in nuts or profess any knowledge of crop outlooks. All stocks are at present very low and until the crop is put on the market there is no movement. Advices from the country are generally to the effect that short crops of both almonds and walnuts are to be expected.

Citrus Fruits.

Orange sales picked up little during the week, the supply easily meeting all demands. However, none of the stocks are being sacrificed and conditions are such that an improvement is hoped for. Quotations on lemons show no change and an average market prevails. Grape fruit is still selling readily and all arrivals are quickly disposed of.

CROP REPORTS.

CALIFORNIA CROP REPORTS FOR JUNE, 1906.

By J. A. Filcher, Secretary California State Agricultural Society.

In this, our crop report for June, we are enabled to give a good idea of the condition of California's principal crops at this season when many of them are matured and the promised yield practically insured. We are enabled also to make an intelligent estimate of the amount of damage to grain and hay resulting from the unseasonable rains in May and June.

It may be stated as a general fact that the greatest damage to grain resulted where the stand was heaviest. Hence the San Joaquin Valley suffered the worst, as most of the grain counties in that part of the State had prospects for an unusually heavy crop. In Kern County the best crops suffered from an unseasonable overflow of its streams, while lighter grain on the higher lands was rather benefited than otherwise. In Tulare the damage to grain is estimated by one correspondent at 20 per cent, while another correspondent estimates the damage to barley at about four sacks to the acre and to wheat at about two sacks to the acre. In Kings much heavy grain lodged and was cut for hay, and then being rained on was injured in quality. This condition cuts into the promised grain yield considerably. The grain crops in this county suffered also by unseasonable floods. Fresno, Madera, Merced, Stanislaus, and San Joaquin all report about the same condition, variously estimating the damage to the grain crop at from nominal to 30 per cent, according to locality. Yet in spite of the damage every part of the valley, excepting Hanford, where so much lodged grain was cut for hay, reports the crops better than last year, in some places promising 100 per cent better, indicating an extraordinarily strong stand early in the season. The yield for the entire valley will far exceed an average, being estimated in different localities at from 25 to 50 per cent better than the average for the last five years. The hay crop in this part of the State was correspondingly heavy, and while but a small percentage was actually rotted by the rains, from a half to three-quarters of the grain hay was more or less damaged in quality.

In the Sacramento Valley, with the exception of a few localities where the land is very rich, the stand of grain was not so heavy as in the San Joaquin Valley, and our reports indicate that excepting in the rich localities referred to, the grain crop was rather more benefited than injured by the unseasonable rains. On the west side of the Sacramento Valley as far down as Yolo, it is fair to estimate an increase of 25 per cent over the grain crop of this same region last year, while in Yolo and Solano there are varying conditions which will cut the crop to a little less than last year. In Solano the crops are reported almost a failure on the adobe land, while on higher, well-drained land they are good. On the east side of the valley, excepting around Chico and near the rivers in other localities, where loss resulted from lodging, the crops are better than were promised a month ago. The different localities report the promised yield compared with last year as from not quite so good to 30 per cent better. In general terms we may say that in the localities of very rich land in this valley there is complaint of lodging and loss, but the rains and accompanying cool weather which helped the late sowed grain and caused all fields to fill well lead to the conclusion that on the whole the grain crops in the Sacramento Valley were helped more than they were hurt by the late rains. Everywhere in the State, almost, the rains had a tendency to discolor barley, while wheat generally is better filled and will be plumper and therefore better than usual. In this part of the State there was an unusually heavy hay crop, as much foul grain was harvested for hay, and while only a small percentage actually rotted from a half to two-thirds was more or less damaged. The balance is of good quality.

In the Bay counties there was promise of one of the best barley crops ever raised and a good crop of wheat, though in the case of the latter a much reduced acreage. There is a little damage to the wheat by lodging, and to barley by lodging and discoloration. The yield in these counties as a whole will be very much better than an average for five years. There is in these counties an unusually heavy hay crop, with damage by late rains about the same in character and proportion as in other parts of the State; that is, a little ruined and a large percentage of the balance more or less injured in quality.

In the northern coast counties the grain crop promises about an average; hardly so good as last year, but about equal to the average yield for five years. In some localities there is complaint of rust, which will cut the

yield some this year. Otherwise grain was not much hurt by the late rains. The early-cut alfalfa and grain hay was damaged about half; the balance is in prime condition.

The central coast counties report good grain crops; better than last year and better than an average for five years. In spots a little damage was done to grain by the late rains, but throughout this part of the State much more benefit resulted than injury. In some localities it is estimated that the benefit to late grain was fully 50 per cent. In localities where the hay crop was late and not cut at the time of the rains, it was helped rather than hurt, while in other districts the damage to the hay crop is estimated at from 25 to 40 per cent. The hay crop of the district was very heavy, and that not hurt by the rain is of superior quality.

All Southern California reports a better grain crop than usual. It is reported from as good as last year in two localities to from 10 to 50 per cent better in others. Oats in most sections suffered from rust and barley from discoloration, and in places where these crops lodged badly a great deal was cut for hay. Take the southern counties as a whole, however, the yield of grain promises to be much better than an average. The hay tonnage is large also, but as in other parts of the State there was some damage, especially to the quality, by the late rains; not so much, however, as in the counties farther north.

In the foothill and mountain counties, what little grain is raised, as in Modoc, Siskiyou, and the mountain valleys, is generally late and therefore was benefited by the unseasonable rains and promises a much better yield than usual. This is true of the hay crop in the mountains. In the lower foothills, where a good deal of grain hay is raised, much of it had been cut when the late rains come, and the damage to hay in those sections is variously estimated at from 20 to 30 per cent.

In estimating the total grain crop of the State on these conditions the shorter acreage must be taken into account. In the first place, owing to the lateness of the season, there was less sown than otherwise would have been; in the second place, by reason of an excess of foul grain and lodged grain, more grain was cut for hay than usual; and in the third place, the tendency in California is toward a reduced grain acreage and a corresponding increase in alfalfa and other crops. Making allowance for all these, however, the favorable conditions reported from practically all parts of the State, and the much better than usual conditions in many parts, would seem to justify the conclusion that while the quality of the barley crop will be injured some from discoloration, the wheat will be better in quality than usual, and the total cereal yield in California in bushels or tons will be considerably in excess of the crop of last year, and a little above the average in bushels for several years past.

Summing up the hay situation it may be said that the tonnage is the greatest ever harvested in the State. Of this great crop, however, it may be said that about 5 per cent was actually ruined by the late rains, while fully 50 per cent of the balance was injured in quality to a greater or less degree.

From every locality where vegetables are grown in any considerable quantity, including potatoes, beans, and sugar beets, the crops are reported a little late, but very good. Watsonville report says: "Sugar beets, beans, and garden truck never looked better."

In regard to the fruit crop, conditions vary in different localities, and it is difficult to make a summary that will intelligently indicate the prospective yield of the different varieties. The favorable condition of the grape crop continues, and the big prospect reported in May still holds good. In both the wine and raisin sections the outlook is very promising. The uniformity with which the prune crop is reported as good indicates the promise of a large yield of this staple fruit in the State at large. Plums of different varieties are also turning out well in most of the fruit centers of the State. Pears in a few localities are good, in most localities medium, and in a few light. We think it is safe to estimate the promised yield as approximating 90 per cent of the average crop. This is the estimate at Vacaville, and we think the balance of the State will sustain this average. Apples give promise of a good crop in the principal apple districts. Peaches, a staple fruit in California, are reported light or medium in more places than they are reported good; in a few places of secondary importance there is a good crop, but in most localities the crop is reported as medium or light, while in some points in the Sacramento Valley it is practically a failure. On the whole the peach crop in the State at large will fall considerably below an average yield. The apricot crop, now largely harvested, was practically a

failure; in only three places in the State was a medium crop reported, all other localities reporting light crop, very light, or a failure. The almond crop will not be large; the reports vary from light to medium, indicating considerably less than a full crop. The walnut crop promises well, and unless it meets with some unusual set-back the output will be fully up to the average.

On the whole, considering promised yield and prices of farm and orchard products, the season promises a little better than average returns for the California farmers.

Sacramento, July 2.

HORTICULTURE

A NEW CALIFORNIA GOOSEBERRY.

A gooseberry remarkable for its vigor in growth and the small amount of acid in the berry has been developed from the Walla Walla gooseberry and another unknown variety by Albert F. Etter, a horticulturist of Ettersburg, Humboldt county. Mr. Etter has been working upon his creation for years. The new berry has been named the Ettersburg gooseberry, after the little village, which is itself named for Mr. Etter.

The fruit has remarkable carrying qualities, and from its tendency to variation, would, it seems, be most prolific of new varieties. By crossing some of the varieties developed by Mr. Etter with the larger English ones there could probably be produced a notable fruit of a size which would command attention, even in places where gooseberries are a good deal more highly esteemed than they are in California. The fruit of Mr. Etter has a new and aromatic flavor not possessed by the other domesticated gooseberries, which are of eastern and European origin.

Strong points of the Ettersburg gooseberry are great vigor and resistance to heat and drought. It sunburns less than other varieties. It blooms later and ripens earlier, and the fruit does not change color in ripening or turn white in cooking. As a bearer it is said to be unsurpassed. The berry is of medium size, conical on both ends and has very few seeds, usually between one and three. It is remarkable for its tender skin and has only from one-half to three-fifths as much acid as other gooseberries. The plant has about one-half more foliage than any other variety. The leaves are dark green, and nearly all stay on the bush until frost comes. Then they all turn yellow and drop together, while the other varieties are dropping from August until the coming of heavy frosts.

APPLE GROWING IN MOUNTAIN VALLEYS.

Mr. J. J. Doyle of Porterville has prepared for the realty board of that town an interesting sketch of apple-growing in the valleys of the Sierra Nevada mountains:

While it is true that the warm season is too long for the apple in the valley and extreme lower foothills, the upper foothills and lower mountain valleys are, in my judgment particularly adapted to this standard fruit. All kinds of deciduous fruits and berries, and particularly the apple, can be and are grown to perfection in the upper foothills and lower mountains, at elevations from 2500 to 5000 feet. When properly cultivated and cared for, they have the delicious flavor, the juicy brittleness, of all first class fruits, and will compare with any raised in the Eastern States.

It has been my privilege to be more or less interested in the apple since boyhood, and more particularly during the past thirteen years. I have an orchard in the lower mountains on the Tule River at an elevation of 4100 feet. In this orchard I have quite a variety of apples—the Winesap, Rhode Island Greening, Yellow Newton Pippin, Winter Pearmain, Pound Pippin, Spitzenberg, Bellflower, Ben Davis, and others that I do not recall. At eight years old I have gathered three hundred pounds from the Winesap, two hundred and fifty pounds from the Newton Pippin, and three hundred pounds from the Winter Pearmain. I have trees now—thirteen years old—that will bear five hundred pounds of fruit, and with proper care, produce a brittle, juicy apple, of unexcelled flavor. It is claimed by people of the East that California cannot produce such apples as are grown there. I was East in 1903, and attended the St. Louis Fair in 1904. I saw there nothing in the apple line that I could not duplicate, if not excel, from my Tule River orchard. And the reason that I was not represented at St. Louis with apples in 1904 was because "Jack Frost" visited me May 20, 1903.

Our only enemy, so far, in the higher valleys of the Sierra, is frost. But if we can get a crop every other year, at my elevation, apple growing is as profitable as orange growing.

THE BOTANIST

ALFILARIA AS A FORAGE PLANT.

By J. J. Thornber, Botanist of the Arizona Experiment Station, in Bulletin 52 of that Station.

(Second Paper.)

Wherever alfilaria has become abundant in a vicinity in Arizona it has doubled the spring forage supply, without interfering in any way with the later growth of summer species, chief of which are the grasses. Once established in a region, it requires no special effort on the part of the rancher to insure its growth from year to year, provided it is not grazed to the extent of seriously interfering with its seed production, which is not likely in a country with an unlimited grazing area and with a necessarily limited number of range stock.

Stockmen everywhere speak in the highest terms of it as a forage plant. All kinds of range stock eat it from the time its succulent and nutritious rosettes attain any considerable size, in February, until late in June, when usually the last remnants of the dried, broken and discolored stems, and the occasional matted bunches of awned seeds, are eaten from among the rocks and shrubs. While relished by all kinds of stock, it is for obvious reasons the forage plant par excellence for sheep. With a seasonable rainfall, and the occasional browse at hand, it supplies them with a nearly continuous feed from February until June, after which time the summer species appear. In virtue of their capacity for close grazing, sheep are able to nibble its flattened leaf-tufts, or rosettes, some little time before other range animals. During the lambing season, especially, alfilaria furnishes for ewes and lambs an unexcelled supply of nutritious and succulent forage. Dr. L. Trabut, government botanist of Algiers, in which country the plant is indigenous, writes as follows concerning sheep grazing it: "*Erodium cicutarium* is quite widespread in our region, where it presents a great number of varieties. It forms rosettes which lie close to the ground, and is much eaten by sheep."

The fact must not be lost sight of, however, that sheep grazed over an alfilaria country are certain to get a large amount of the seeds in their wool, thereby reducing its value one to one and a half cents a pound. So far as the southwestern sheepman is concerned, he has ordinarily to choose between an ample supply of alfilaria feed and the sparse and less certain native forages. Mr. C. H. Bayless, who owns a large sheep ranch in the vicinity of Oracle, and who is a stockman of wide experience, says that this loss in value of wool is reduced to a minimum by shearing twice annually, that is, in March and September, in which case the second clip will contain practically all the seeds.

Alfilaria as a Hay Plant.—Alfilaria is used to a limited extent for hay, though, for this purpose it is employed only as a temporary makeshift, and, of course, is not depended upon from year to year. As early as 1890 alfilaria hay was put up in the Dripping Springs valley and also in other parts of the Territory. Mr. Bachtiger of Wickenburg, writes that he has fed it from time to time for fifteen years and that last year (1905) he put up fourteen tons, cutting it when in blossom and otherwise treating it as he would alfalfa hay. Mr. Bachtiger is of the opinion that, when properly cured, it is equal to alfalfa hay for milch cows. As a hay crop the growth of alfilaria is limited to the richer soils of valleys, swales, and similar favorable areas, where, as already stated, it produces a heavy, continuous growth twelve to eighteen inches in height. In such situations, in 1905, between Oracle and the Tortillita mountains, it produced at the rate of one and a half to two tons to the acre. It must be noted, however, that these heavy yields obtain only in the more favorable situations, and that they are not to be expected over any considerable area. Under ordinary conditions, perhaps a ton and a half of hay to the acre would constitute a fair yield.

The ordinary method of harvesting alfilaria hay, if such it may be called, is indeed primitive, and will undoubtedly be improved as its use comes to be more general. The crop is allowed to remain on the ground during the late spring months until thoroughly dried, when the broken, fragile and discolored stems, which are destitute of leaves and seeds, are gathered into shocks and stacked, or rather, piled up. It goes without saying that such hay has lost, to a very great extent, its value as a feed. It must be apparent to all that if the crop were cut in full blossom and properly cured, both the quality and the quantity would be raised by the addition of the nutritious leaves, young stems and seeds, at the same time avoiding the detrimental effects incidental to long weathering. With a good horserake and a crib hayrack two persons would be able to put up several tons a day, provided the hauling distance is not great; while with the ordinary crude appliances that are made use of, perhaps a thousand to twelve hundred pounds represents a day's work for one man. It is interesting

to notice to what extent all kinds of stock relish alfilaria hay, even when more or less broken up, discolored and otherwise uninviting. The University horse, which has the reputation of being a well-fed animal, ate more readily of it than of his daily allowance of alfalfa hay, which may have been due, in part however, to a change of feed.

Chemical Analyses of Alfilaria Hay.—Discussion of analysis of alfilaria by A. E. Vinson, associate chemist, Arizona Experiment Station, yields the following points:

Considering the analyses as a whole, we are at once impressed by the high percentages of ash in all samples of alfilaria. This is, however, nothing unusual for uncultivated plants of the arid regions. The great amount of transpiration carried on by them causes an accumulation of salts in the stalks and leaves, which is further increased by the fine sand blown by the winds into the flower heads and other parts, where it remains until eaten by the stock. From the standpoint of animal nutrition, this indigestible extraneous matter must be regarded as a component part of the feed; therefore, no determinations of pure ash were made. Considerable quantities of such sand could be recognized by testing the ash between the teeth, and has, of course, the effect of lowering the percentages of the other constituents. Alfilaria is, however, per se, a plant rich in mineral matter, and should tend to produce strong, healthy bone in growing animals.

The fat is fairly uniform in the dry matter of all the samples and is in all cases higher than in alfalfa. It appears to be slightly less than that of most varieties of hay. All animals require some fat in their daily rations, but the ether extract of fodders in general, containing large amounts of coloring matter and resinous substances has not the same value as that found in grain and the concentrates, which is more nearly pure fat.

The protein content of alfilaria is very high and compares favorably with hay from the legumes. The Wickenburg sample shows about the same amount of protein as red clover hay of the north. In the rosette stage we find an unusually high per cent of protein, but, as is the case with all young, rapidly growing plants, this protein is partly represented by amide compounds, which give an apparently high result, but do not have the nutritive value of true protein. Their effect, however, is often believed to be very favorable on milk production, as is experienced when feeding "June grass" and malt sprouts, both of which are rich in amide compounds. Furthermore, the protein of young plants is much more digestible than that of old ones, in which it exists to a large extent as indigestible nuclein. Likewise a hay that is well cared for, as the Wickenburg sample, contains more nutrients and is more digestible than one that has been rained on or has lost its leaves, seeds and more tender parts. Hay exposed to the weather, as is the case with No. 4, suffers three losses: the yield per acre is lessened, the composition of the hay is unfavorably affected, and less of the nutrients which remain are assimilated by the animal; therefore such hay is less valuable.

The crude fibre in all samples is very moderate, even that from the dried, weathered stems is not higher than in good timothy hay, and is considerably less than our average for alfalfa.

The carbohydrates are, par excellence, the energy and fat producers. In this respect alfilaria shows about the same per cent in the dry matter throughout the various stages; but, as with the protein and fibre, its coefficient of digestibility would undoubtedly show wide variations—more digestible in the young and tender, less so in the old and woody material. Considered as they stand, we should expect alfilaria of good quality to equal hay of similar quality from any other source in fat producing effects.

If our suppositions as to the digestibility of alfilaria are correct, it should take a place among our best hay producing plants, especially as the other very important feature, the way in which stock take to it, has been favorably answered in practice.

A Grower's Views.—In answer to questions submitted to growers, Mr. J. J. Bachtiger of Wickenburg, Arizona, made these answers:

For sheep alfilaria is the very best feed, being very fattening, also the same for horses and cattle; in the green state it is best when one to four inches tall; after it gets taller stock don't eat it any more until it begins to dry up, when they eat it again with great relish until it is all gone; it is eaten by stock in preference to any kind of grass.

As hay it is not surpassed by any other; it is very fattening, and none is wasted by stock in feeding, everything being eaten up clean. It grows about fourteen inches tall, and when cut in bloom makes a first-class hay for milch cows. As for my part I find alfilaria hay better than alfalfa hay.

In good moist years it will average a ton of hay to

the acre as it grows in the wild state. When very heavy it lies down. When cut during the latter part of April or the beginning of May, it will make another growth for pasture, about four inches tall, and re-seed the fields for the next year's crop.

Last spring I cut in my pasture fields about fourteen tons of first-class hay for my own use. Generally through this country filaree is only a failure in dry years. I think it a very valuable pasture and hay plant. Where plants like alfalfa would not grow it grows certainly with a quarter less moisture than alfalfa needs.

Sheep have carried the seed in their wool, so that it grows everywhere about here now.

The best time to sow alfilaria seed to my notion is from November to January, and no later. The seed should not be covered more than a quarter of an inch and well pressed with a roller and kept moist or rather wet. After it gets four inches high it needs very little wetting or rain. I think three pounds of seed would sow an acre. The seed which I get around my haystack I put on my pasture when it needs it. When I put seed on the ground I never plow. I draw a harrow over the ground so the loosened soil will cover the seed, and I have very good success in this way.

THE FIELD.

CELERY GROWING IN SOUTHERN CALIFORNIA.

Down in Orange County, between Santa Ana and the ocean, says the California Cultivator, lies the largest, most productive and most profitable celery fields of which any record exists. But a dozen years ago this vast tract was nearly useless, furnishing a scanty crop of stock forage at such seasons as it was dry enough for cattle to roam thereon. For a large part of the year much of it had water standing on or very near the surface.

When it was discovered that wild celery, so common in California, was growing all over the tract in unusual luxuriance, it was realized that here was an unusual opportunity. We may say in passing that wild celery differs in no wise from the cultivated sort, except the improvement by the enterprising horticulturist. *Apium graveolens*, the wild plant, has by selection been brought up to its present standard of perfection by many years of careful selection.

When celery of commercial value was first tested on the drier portions of this territory, and its wonderful possibilities demonstrated, the problem of reclamation became a serious one. First open ditches were resorted to, but as the area of celery culture extended, under-drainage by tiles became necessary. The last few years have seen train loads of tiles placed beneath the surface and the work is still progressing. By the system in vogue the water is absolutely under the control of the growers. When the drains are opened the lands drain until the water is three or four feet below the surface. When drains are closed the water soon rises to the surface, giving the most effective mode of irrigation ever practiced by man. While further drainage will add a few more acres to the celery-growing area, the soil suitable for its most successful culture is limited, and the future will see little addition to the present acreage. Future development will lie in getting the better returns from the lands already under control.

Celery is first sown in beds—either broadcast or drilled as the grower prefers, beginning the first of April and continuing up to the first of July. Celery sown the first of April will be ready to harvest in November, while that sown in July will not mature until February or March, thereby enabling the growers to ship celery from the first of November to the first of April. About June 15th transplanting commences and continues until September 15th. The celery plants are pulled out of the beds by laborers, who prune the tops and roots properly. The roots should be left about two inches long, and after being pruned are placed in tin pans in about one inch of water. The beds should be well irrigated before drawing the plants, and the ground in which the celery is transplanted should be well worked and moist.

It is set out in trenches made by an implement designed especially for the purpose. Rows are placed four feet apart, and the plants are set six inches apart in the trenches as soon as they are made. In about two weeks after celery is planted the dry dirt is crowded away with a most valuable implement made V shape with two steel blades, each three-eighths of an inch thick, six inches wide and four feet long. The implement is six inches wide at the mouth and three feet at the rear, is drawn by two horses and cuts all weeds between the rows, besides pushing the dry dirt from the celery.

The plants are kept thoroughly cultivated from this

period until the time comes for hilling up, which begins about October 15th, and continues until the end of the season, as celery is much better when banked only a few weeks prior to marketing. Hilling or banking up the celery is begun by working the dirt gradually to the celery till it is nearly buried.

In about three weeks after the celery is hilled up it is ready for the market.

The roots are cut with a machine made for this purpose and drawn by two horses. The laborers take the celery up in their hands and very carefully break the undesirable leaves off, trim the roots properly and pack it in crates or tie in bundles of twelve, as may be required. It is then immediately placed on wagons, hauled to the packing-house, packed securely in refrigerator cars and is ready for its eastern journey.

Celery is shipped in crates, 22x24 in. base, which holds six to eight dozen of celery, according to size. An average crate will weigh about 145 pounds, and 160 crates make an average carload. Some eastern dealers prefer the celery shipped in bulk or on decks built in the car. This is a much cheaper way to ship, and is claimed by some to be just as safe. In shipping in this way, three decks are built in the car, and the celery is tied in bunches of one dozen each and stood upright with roots resting on the decks. By this method three or four hundred dozen more celery can be packed in a car.

Celery is shipped to all the principal cities of the United States and Canada, and carries successfully, especially under refrigeration. All celery is sold f. o. b., none being consigned. It is all handled at present by the California Vegetable Union, who not only control the Orange County output, but that of Central California as well.

POULTRY YARD.

Drawn or Undrawn Poultry.

This question is pertinent because of city market ordinances which are being urged by boards of trade. The Storrs (Ct.) Agricultural Experiment Station has issued a bulletin on marketing poultry and it contains the following on drawn poultry:

Practically all dressed poultry should be shipped to market undrawn. Most commission men and dealers prefer to handle undrawn stock, claiming that it keeps much better. The basis for this claim is that the incision in a drawn fowl readily admits moulds and germs of different kinds into the body, where they find ideal conditions for rapid multiplication. The cavity is dark, damp and not easily accessible, and frequently a drawn bird, which outwardly appears all right, is really unfit for food. As it requires considerable time to draw the birds contained in an ordinary shipment, and there is a decided loss in weight as well, stock should be shipped undrawn whenever the market will accept it.

When birds are to be drawn, the operation should be performed immediately after the pin-feathering is finished or after they have become slightly cooled, as it is more difficult after they are thoroughly chilled. A sharp knife is essential, although some dressers prefer to make the necessary incision with curved scissors similar to those used by surgeons. Drawn fowls usually have the head removed also, and this should be done first. Sever the neck close to the head, taking care not to cut the windpipe and gullet, which can be more easily pulled out if left attached to the head. Draw the neck skin back and remove a short section of the bone, thoroughly washing out any blood which may collect. Finally draw the skin forward and tie firmly. Remove the intestines through a small opening, as a large aperture is unsightly as well as unnecessary. Cut carefully through the walls of the abdomen, making the incision entirely around the vent, then hook the first finger into the loops of the intestines and thus pull them out. Usually the heart, liver, lungs and gizzard are left attached in their natural position, as ordinarily the removal of the intestines is considered sufficient. After this has been accomplished the cavity should be thoroughly rinsed to remove all blood and other secretions.

A select private trade often demands that poultry be even more carefully prepared, in which case the giblets should be removed and cleaned. Cut the gallsack from the liver, the blood vessels from the heart, and remove the contents of the gizzard. Cut off the shanks after first removing the sinews, which run up through the leg and injure the quality of the "drum stick." To take out these sinews, run a knife blade down the back of the bone of the shank, between it and the sinews, and pull the latter out singly by means of a strong fork or skewer. A still easier way is to have a strong hook fastened to the wall at the proper height. Place the

point of the hook under each sinew, which can then be easily drawn out. The bird is now ready for tying up. Replace the giblets in the body cavity, draw the end of the drum sticks down to the "pope's nose," and there tie firmly. Finally fold the wings behind the back. Birds so tied are unusually attractive, always appearing plump and chunky, due to the absence of sprawling legs and wings.

Broilers may be attractively prepared for private trade as follows: Pluck carefully and remove the legs and sinews as above. With a heavy sharp knife make a cut each side and the entire length of the backbone, severing the ribs. Let these incisions meet in front of the neck and below the vent. This permits the removal of the head, neck, backbone and entire intestinal tract, and the bird opens out flat in most convenient form to be placed upon the broiler. The giblets should be cleaned and should accompany the remainder of the carcass.

SHEEP AND WOOL.

ALFALFA LAMB AND MUTTON.

We have consistently and persistently urged the chance for sheep on an alfalfa basis in this state and we are glad to learn from a Modesto exchange that the venture is being entered upon in that vicinity. Mr. W. A. Daggs, who has had experience in that line in the alfalfa belt of Arizona, purchased what is known as the race track property, on the outskirts of Modesto, a year or two ago. He has 60 acres of the land in alfalfa now and for some time has been casting about for ewes and bucks of the variety he fancies. This is of two crosses of Shropshire with the French Merino. Lately he succeeded in purchasing a bunch of 200 and will receive them this week. Sheep of this variety not only grow rapidly and large but are prized for their mutton. They are also valuable for their wool.

Taking the past season for an example, lambs selling in the Modesto market at 14 cents a pound, net weight, equivalent to from \$5 to \$7 for a four-months' lamb, and considering that each ewe represents one and one-half lambs annually—fully 40 per cent of the Shropshire-French Merino ewes cast twins—and the wool of the ewe adding \$2 to the total, it is seen that each ewe represents an income of say \$10 annually. They require nothing but the alfalfa forage and thrive amazingly on it. A tract of Canadian field peas, which may readily alternate with wheat and afford a feed value for sheep of \$15 an acre, while at the same time representing a fertilizer value of \$10 to \$12 an acre through its root system, is favored by Arizona and New Mexico sheep raisers, and the plan will be followed by Mr. Daggs.

In this climate and on alfalfa pasturage lambs may be readily marketed in February, when range stock cannot be gotten to market in sufficient supply to meet the demand and prices are correspondingly high. In February and March an offer of 25 cents a pound for dressed lamb was made to a representative of Mr. Daggs by the manager of the St. Francis hotel in San Francisco, the inquiry having been set on foot to determine just what kind of a direct market could be looked for, independent of commission and wholesale buyers. There is also an excellent market in the East for early lamb. Mr. Daggs noted that early in April, 12c. per lb. net weight was paid for lambs in Kansas City, by the packers. He relates, too, that while in the business in Arizona he made an experimental shipment of a carload of sheep to Kansas City and landed them there with an average shrinkage of only three pounds, at the same time deriving a very satisfactory price.

Down in Arizona the sheep men figure that the alfalfa pasturage required for one steer will support ten sheep. Only recently, near Ceres, a sheep man leased twenty acres of alfalfa and ran 900 sheep on it for thirty days, the sheep taking on flesh right along.

Sheep on alfalfa require comparatively little attention and work, save during the lambing season, and are not subject to the diseases that affect bands driven from range to range. Their hoofs will require pruning, however, "curling" to a crippling degree unless trimmed.

[If we are not mistaken sheep are somewhat subject to bloat on alfalfa, consequently they should not be given too rapid a change to wet or enticing pasturage with their full appetites on.—Ed.]

THE STABLE.

THE DEMAND FOR MULES.

The mule trade in California has been unusually brisk this year and large herds have been made up for shipment. Stockton is a center for this trade.

The mule movement in California is only one feature of the exaltation of this animal. The Breeders' Gazette, speaking of the whole country, makes these interesting points:

Some folks seem to believe that we are soon to have a boom in mules. Whether we are or not, the fact remains that mule dealers and feeders are paying very long prices for their supplies, and they are raking the breeding districts over with the finest of fine-toothed combs to scare up any lone big mule that by some mischance has lain close in cover during recent raids. Big mules are much wanted and at prices related to be the longest ever offered.

Several causes have operated to make the present mule trade active and very strong at the best recorded prices. First there was the elimination of the smaller sizes, which went to be killed in the Boer rebellion in South Africa and unlike the historic cat never came back. We were well rid of these little climbing hybrids. They were far better clambering up the kopjes of the Transvaal than cumbering the ground in the United States. After Kitchener had got through with the rebellion in question a lot of these little mules were sent to Tasmania, in which island they were put to agricultural work. This exodus of diminutive mules from the United States made for an increase in price of those that were left, for the most of the available supply at the time left their country for their country's good. There have been fewer small mules bred since the last of the nineteenth century. Breeders have found that a cleaning up of the dwarfs comes only once in a generation, if so often.

Then the good prices paid for cotton in the South of late years have greatly stimulated the planters' demand for team power. Sugar and cotton mules have been keenly sought for and at values from 50 to 100 per cent higher than prevailed a decade ago. With cotton selling at around 11 cents a pound at the present time and with many of the planters opulent beyond common by reason of successful purchase and sale of the fleecy staple and successful speculation in hog products there prevails among the men who sell on the great markets and among those who gather up the mules from the breeders a state of activity altogether unprecedented.

Now comes a third and most important factor in the trade. Uncle Sam has undertaken to make two islands of the Americas by trenching the Isthmus of Panama. The steam shovel and the dump car running on track are already biting away in the cuts, but soon there will be need for thousands of mules to do hauling and the other labor common on such construction work. The heaviest mules are being sought for this demand. Prices in the court day markets in Kentucky and Tennessee up to \$500 a pair have already been paid for "Panama mules." This is encouraging. It makes no difference whether Uncle Sam is going to peel off his coat and do the work himself or whether he shall let out the big job to contractors, the mules will be required and the money will be forthcoming for them. This demand will take out of the country thousands of the long-eared hybrids. We can well afford to lose them—they are without hope of posterity—and one man's money is as good as another's when it comes to paying for a mule. There is nowhere else for the Government or the contractors to go to get the mules for the work on the big ditch. They must spend their mule money in the United States and they must have big animals in order to make working them pay. It is not thought that horses will thrive down in the tropical isthmus and there the chances are all in favor of the mule from his greater perversity of disposition to his practical immunity from suffering caused by insect bites.

Regarding the immediately available supply, information is not so easy to obtain as it might seem on the surface. The fine-toothed comb process goes on apace. That would indicate scarcity, but some men will tell you that there are plenty of mules—that the South, Missouri and Texas are full of them. If that story is true, then the price is sadly out of line with the size of the supply. It is going to take Uncle Sam a long time to dig his ditch. Under tropical condition work animals do not live to great age. The work will be hard. There will be a gigantic collection of mule bones in the canal zone before the formal opening of the canal.

World's consumption has apparently overtaken cotton production. Recently a well known cotton factor in Liverpool predicted that cheap cotton was a thing of the past. Possibly two of the great nations may go to war with one another soon, in which case the mountain-climbing artillery mule would once more come into his own proper estate of being food for powder. With all these things operating in favor of the breeder of mules, are not his prospects rosy-red with prosperity and, what is more, with promise of more prosperity?

THE DAIRY

JERSEY MILK FOR CHEESE MAKING.

In some parts of the country owners of dairy cattle are interested in the question of cheese making, and are inquiring if Jersey cattle can be expected to score as cheese-producers, their quality as butter-producers being no longer in dispute. Now, most producers of Jersey milk can find a more profitable way of disposing of the milk of their herds than in making cheese; yet as the manufacture of cheese from Jersey milk may be a matter of importance in the case of some dairymen, it is worthy of examination.

In the first place, it may be stated that milk which is but indifferently suited to the production of butter, by reason of its low fat percentage and lack of "churnability," may do fairly well for the manufacture of cheese. But, on the other hand, milk that is superior for the production of butter is equally good for the production of cheese. And the reason is plain: milk that is rich in butter-fat is also rich in total solids, and from these solids of the milk the cheese is made.

In the second place, it may be asked whether any reliable test has ever been made as to the capabilities of Jersey milk for cheese-making? In this connection it will be recalled that the Columbian Exposition at Chicago, in 1893, there was an official "cheese test" under the control of the exposition management. For this cheese test, and the butter tests which followed after, the following breed associations had pledged themselves to enter cows: The American Jersey Cattle Club, the American Guernsey Cattle Club, the American Shorthorn Breeders' Association, the Holstein-Friesian Association, the American Devon Cattle Club, the Red Polled Cattle Association, the Brown Swiss Cattle Association and the American Ayrshire Association—in all, eight breed associations.

However, although barns had been built by the exposition management to accommodate them all, but three of these breeds were represented in the test, viz., the Jerseys, the Guernseys and the Shorthorns, the others withdrawing. The latter three breeds were represented by twenty-five cows each, and the cheese test was continued for fifteen days.

The Jerseys ate food to the value of \$98.14, produced 13296.4 lbs. milk, containing 1871.41 lbs. total solids, making 1451.76 lbs. cheese. Their net profit, after deducting cost of the feed, was \$119.82.

The Guernseys ate \$76.25 worth of feed, produced 10938.6 lbs. milk, containing 1503.8 lbs. solids, making 1130.62 lbs. cheese, their net profit being \$88.30.

The Shorthorns ate \$99.36 worth of feed, produced 12186.9 lbs. milk, contain-

ing 1544.28 lbs. solids, making 1077.6 lbs. cheese, their net profit being \$81.36.

From the above figures it will be seen that the Jerseys not only gave more milk than the other two breeds, but their milk contained more solids and made more cheese per hundred pounds than that of the others, and, consequently, they yielded a higher profit. The scores of the cheese, flavor, texture, keeping quality and color being taken under consideration, were as follows: Jersey cheese, 90.7 counts; Shorthorn, 90.5; Guernsey, 87.2.

The award for the best cow competing was won by the Jersey Ida Marigold. Of the best five cows of any breed, the first four were Jerseys and the fifth was a Shorthorn. The most important award in this test was for the herd that proved itself the most profitable in the production of cheese, and it was won by the Jersey herd.

It required 9.16 lbs. of Jersey milk to make a pound of cheese, 9.67 lbs. of Guernsey milk, and 11.31 lbs. of Shorthorn milk.

The Jersey milk contained more solids than that of the other breeds. Consequently, it took less Jersey milk to make a pound of cheese, and the Jerseys produced more cheese in the total, and of a higher quality, and proved themselves the best and most profitable cheese-producers.

In the St. Louis Exposition dairy test the Jerseys won the award for the "economic production of milk for all purposes of dairying," and the manufacture of cheese is, of course, one of the purposes of dairying. At St. Louis the competitors were representatives of the Jersey, Holstein, Brown Swiss and Shorthorn breeds.

No cheese was made at St. Louis or officially credited to the cows by the Exposition authorities, but it is easy to make a computation of the quantity of cheese the milk of the various herds

there would have made, as the average weight of cheese that it is possible to produce from milk of any degree of richness is a matter of record (see Prof. Woll's "Handbook for Farmers and Dairymen"). The cheese production as given below is computed by Dr. Babcock's formula—to wit, that the yield of green cheese=1.58 (1.3 solids not fat+.91 fat).

The milk of the Jersey herd at St. Louis tested, on the average, 4.7% fat and 8.8% solids not fat. From 100 lbs. of milk of this quality 11.39 lbs. of cheese can be made. The milk of the Holstein herd tested, on the average, 3.4% fat and 7.9% solids not fat, and 100 lbs. of milk of this quality will make 9.048 lbs. of cheese. The milk of the Brown Swiss herd tested 3.6% fat and 8.9% solids not fat, and 100 lbs. of it would make 9.862 lbs. of cheese. The milk of the Shorthorn herd tested 3.6% fat and 8.6% solids not fat, and 100 lbs. of it would make 9.704 lbs. of cheese.

The Jersey milk at St. Louis amounted to 124,524.2 lbs. in the 120 days, and would make 14183.3 lbs. cheese, or 567.3 lbs. per head, as there were 25 cows. For the sake of making a comparison, we will value the cheese credited to all the breeds at 10c per pound. At this rate, the value of the Jersey cheese would be \$56.73 per head. Their feed cost \$28.90 per head, and, deducting this amount from the value of the cheese, we have a net profit of \$27.83 per head for the 120 days of the test.

The Holstein milk at St. Louis amounted to 96,175.3 lbs., and would make 8,701.9 lbs. cheese, or 580.1 lbs. per head, there being 15 cows. At 10c per pound the cheese value would amount to \$58.01 per head. But it cost \$34.38 per head to feed the Holsteins, so that their net profit would be but \$23.63 per head in the 120 days.

The Brown Swiss milk amounted to 26,508.1 lbs., and would make 2,614.2 lbs.

cheese, or 522.8 lbs. per head, as there were 5 cows. At 10c per pound this cheese would bring \$52.28 per head. The feed of the cows cost \$32.89 per head, so that the net profit on the cheese would be \$19.39 per head.

The Shorthorn milk amounted to 103,800.5 lbs., and would make 10,072.8 lbs. cheese, or 402.9 lbs. per head, there being 25 cows in the herd. At 10c per pound, the value of this cheese would be \$40.29 per head. Their feed cost \$26.56 per head, so that the net profit would be \$13.73 per head.

In brief, in the St. Louis Exposition dairy test, the Jerseys considered as cheese-producers, valuing the cheese credited at 10c per pound, surpassed the Holsteins by an excess net profit of \$4.20 per head in 120 days, surpassed the Brown Swiss by an excess net profit of \$8.44 per head, and surpassed the Shorthorns by an excess net profit of \$14.10 per head.

The idea that the fat content of rich milk is largely lost in cheese-making, although current, is fallacious. One hundred pounds of milk testing 3% fat should produce 8.05 lbs. of cheese, whereas 100 lbs. of milk testing 6% fat should produce 12.69 lbs. of cheese, assuming the lactometer reading to be the same for both. So the richer the milk the greater the quantity of cheese, in proportion, and the better the quality; and Jersey milk, being admittedly superior for the production of butter, is also superior for the manufacture of cheese, if the latter should be more of an object with any particular dairyman.

R. M. GOW.

[This is, of course, a special plea and is in large part on theoretical grounds. The practical result depends upon what kind of cheese you find it profitable to make and how well you can succeed in keeping the fat out of the whey.—Ed.]

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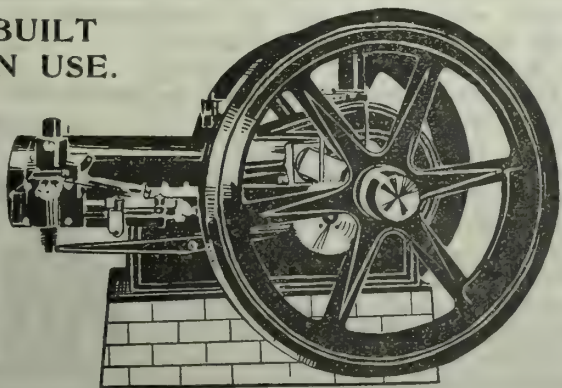
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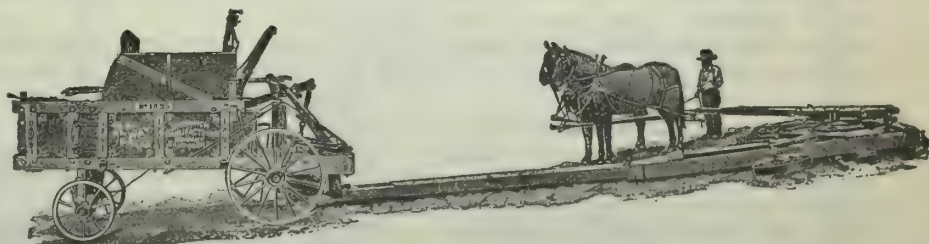
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HOME CIRCLE.

I ASKED FOR BREAD.

I asked for bread: God gave a stone instead.

Yet, while I pillowed there my head,
The angels made a ladder of my dreams,

Which upwards to celestial mountains led.

And when I woke, beneath the morning's beams,

Around my resting-place fresh manna lay;

And praising God, I went upon my way,
For I was fed.

I asked for strength; for with the noon-tide heat

I fainted, while the reapers, singing sweet,

Went forward with ripe sheaves I could not bear.

Then came the Master with his blood-stained feet,

And lifted me with sympathetic care.

Then on his arm I leaned till all was done;

And I stood with the rest at set of sun,
My task complete.

God answers prayer; sometimes, when hearts are weak

He gives the very gifts believers seek.

But often faith must learn a deeper rest,
And trust God's silence when he does not speak;

For He, whose name is love, will send the best.

Stars may burn out, nor mountain walls endure!

But God is true, His promises are sure
To those who seek.

—Myra Goodwin Planz.

PROCESSED DRIED BLACKBERRIES.

Hitherto what blackberries have been dried, says the Lake County Bee, have had a shriveled and unattractive appearance and consequently have not been easily marketed, but the efforts of the Barlows in Green valley, in Sonoma county, after a number of years of experiments, have finally shown that the berries can be processed after the manner of the prune, and packed so that they are most tempting in appearance and bring a good price, too.

In years when there is over-production in blackberries and when the canneries cannot take all the surplus an ability to dry and process the fruit for sale in eastern markets makes the business of raising them much more certain and profitable. This is what happened last season, and before the drying and processing were finished the Barlows had forty tons which sold well.

The manner of processing is simple. The dried berries are dipped in a syrup which gives them a rich color and a gloss like the processed prune, and afterward they are placed on trays and put through an evaporator which takes out all the surplus moisture. Then they are all packed in fifty-pound boxes and are ready for the market.

Care of the Piano.—The tiny moth is a great enemy to the piano, as it attacks the felt used in the various parts. Only constant care will prevent these little pests from permanently infesting the piano. Keeping the piano closed is not sufficient protection. Examine your instrument closely and see if you find any little particles of wool. If so, the moths are at work inside. Pieces of camphor tied in little muslin bags and suspended inside the piano by means of a bit of stout thread will rid the piano of its unwelcome visitors. The camphor will need renewing from time to time, as it wastes away.

FASHION NOTES.

Home Dressmaking.

Here are a few hints which the home dressmaker will appreciate and which, some of them, the professional would do well to store away for use:

To prevent the otherwise inevitable sagging of the circular skirt, hang it up by the binding, or better still, on the form, before the bottom is finished, and allow it to remain for three or four days or even longer. Then trim it off to the desired length and evenness and you may rest secure in the fact that it will remain a "good hanging skirt."

In sewing a lace frill on the stock don't attempt it German fashion, "over and over." It will stay "over" if you do. Hold it straight with the collar and run it on, then, even though closely gathered, it will stand up as it should.

If sleeves are too long or too full, don't rip them out. First take a tuck or fold in the tops, making them the desired length, and baste. Try on, and, if right then cut off the superfluous material.

Keep a tiny vial of powdered slippery elm in your work basket, and thrust the needle into it occasionally. It helps to make sewing a pleasure.

Make a proper selection of needles. That is, do not attempt to make a coarse needle do fine work nor a very fine needle carry coarse thread. The rule works both ways—wrongly.

Beyond and above these "hints" remember to sit properly, and take a "breathing spell," if only a couple of minutes, whenever there is a feeling of exhaustion.

Shadow embroidery is one of the prettiest and most sensible forms of fancy-work that we have ever had. It is no great tax on the eyes, is inexpensive, and very effective.

Next to the one-piece costume which is most popular, there is the blouse, which harmonizes or matches the color of the skirt.

In the fall plaid skirts, and particularly shadow plaids, will be accompanied by waists of the predominating shade in the plaid.

Embroidery will be greatly in vogue during the fall and winter, and those who are inclined to keep their fingers busy while whiling away the summer hours on the hotel veranda, had better be embroidering wild roses or poppies or something or other on silk or satin.

Hints to Housekeepers.

A couple of handfuls of sand or small pebbles put in the bottom of Chinese lanterns around the cup which holds the candle, will prevent the lantern from swaying, and very often keep it from catching fire.

A bag for soiled handkerchiefs is as indispensable as a dust bag, where there are children. It teaches them to care for their handkerchiefs, and they are easily counted for the laundry and less liable to be lost than if placed in the hamper with other clothes.

A woman who enjoys cooking says she finds that thickened soups require nearly double the seasoning used for thin, clear soups.

When you build your new house have an upstairs back porch, where the bedding can be thoroughly aired.

Draw a sugar sack on your hand when stirring mush, and it will not burn if it splutters out at you.

After blacking your stoves apply a coat of linseed oil. The stove will not burn red spotted near so quickly.

If coffee grinds as if it were tough, the flavor will be improved by heating it and letting it get cold before grinding.

For setting colors I find that very hot salt water is better than cold, and does quite as well as any other preparation.

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All silk braid should be shrunk before putting it on skirts, or it will shrink afterwards and draw the skirt in little wrinkles.

When sewing steadily a frequent change from a long to short needles, and vice versa, is a very restful thing for the fingers.

Kerosene added to boiled starch, a tablespoonful to a quart, will prevent the irons sticking, and give a good gloss to the clothes.

Rats will leave a place where plaster of paris is mixed with bran or flour or anything they will eat. It interferes with their digestion.

The ugly green marks caused by damp on stone steps can be removed by scrubbing with water in which chloride of lime has been dissolved.

DOMESTIC HINTS.

Potato Salad.

While warm chop freshly boiled new potatoes rather fine or so that no pieces are as large as a pea. Mix with a generous amount of French dressing and let stand an hour to absorb the seasoning. Add a tablespoon of minced parsley to each four medium-sized potatoes used and as much lettuce shredded fine as can be heaped on a tablespoon. Serve on a bed of lettuce leaves or of shredded lettuce.

Eggs and Cheese.

One egg for each person. Break carefully into a hot skillet and allow them to "set," then grate some cheese (more or less, as you like), and cover the top of the egg; add salt and pepper to taste. Set in the oven until the cheese is melted, and serve hot.

Boiled Breast of Mutton.

Breasts of mutton are economical if cooked in this way. Boil until the bones will slip out easily. When these are removed, lay the meat flat on a board and sprinkle with chopped sage and onion mixed with a few breadcrumbs and pepper and salt. Roll it up, tie with string to keep in the stuffing, then brown in the oven, basting with dripping.

Chicken Cream Soup.

An old chicken for soup is much the best. Cut it up into quarters, put it into a soup kettle with half a pound of corned ham and an onion; add four quarts of cold water. Bring slowly to a gentle boil, and keep this up till the liquid has diminished one-third and the meat drops from the bones; then add half a cupful of rice. Season with salt, pepper and a bunch of chopped parsley.

Persian Cakes.—Make a jumble paste by beating together one cup of butter, one of sugar, four eggs, two cups of flour and one-half teaspoonful of bak-

ing powder, roll into any desired shape, then cut some thick, narrow strips of the paste and lay around the cake to make a cup-like edge; spread on a buttered tin and bake. Dip slices of canned fruit which have been well drained, in the white of an egg slightly beaten, roll in powdered sugar and fill the centers of the cakes. The tops may be covered with a meringue if desired.

Sliced Cucumber Pickles.—Slice large yellow cucumbers and boil them for half an hour in enough vinegar to cover them. Meanwhile into a gallon of cold vinegar stir a tablespoonful each of onion juice, ground horseradish, cinnamon, black pepper, ginger, a half teaspoonful of paprika, a tablespoonful of celery seed and a half pound of sugar. Drain the boiled cucumbers, turn them into the spiced vinegar, put all into a kettle and simmer for two hours before putting into glass jars.

Strawberry Jam.—Hull and wash the fruit and drain in a colander, then mash. For every three-pint bowl of mashed fruit take two bowls of sugar even full; put the sugar in a kettle with enough of the juice to moisten it, and then let cook until thoroughly dissolved; then add the fruit and rest of the juice; cook almost twenty minutes. Try by taking out some in a dish to cool; it will seem thick if cooked enough.

TO CLEAN WHITE STRAW HATS.

With five cents worth of flowers of sulphur and one lemon a sailor hat can be cleaned and whitened to look like new. Sprinkle the sulphur over the straw, rub well in with the lemon (cut in half), and rinse in tepid water, taking care that all lemon and bits of sulphur are washed off. Dry slowly on a flat surface and see that the brim lies perfectly level.

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PATRONS OF HUSBANDRY

MEETING OF SAN JOSE GRANGE.

A recent meeting of San Jose Grange was held at the Leigh ranch, on Leigh avenue. A large number of the members were present.

Eben Morris, the new entomologist of Santa Clara county, was present, and he was given the first and second degrees, and the Grange discussed his work at some length.

The Fruit and Market Committee reported that they had attended meetings of the fruit growers of the county at Campbell and at Morgan Hill, and that the growers have decided to stick to the 3½c. basis. At a recent meeting it was decided that it would be best for the growers to hold out for such a price until August, but after a careful review of the situation it was decided to hold to that price until July 15.

It was reported that a packer, whose name was not known, had been in the vicinity of Morgan Hill, and that he had given the estimate of the season's crop of prunes at between 135,000,000 and 150,000,000 pounds. The growers do not estimate the number of pounds to be over 75,000,000, or 60 per cent of the usual crop.

Mrs. S. P. Saunders read an article on "Woman as a Factor in Civic Improvement." She recited the work of the South Park Improvement Club and also of a like organization in Vallejo. She also reviewed the work of the improvement clubs of this city.

An article from T. A. Batchelder, ex-Governor of New Hampshire, was read, showing the attitude of the National Grange towards the ship subsidy bill. A report was made by C. D. Hurlbert of the different bills introduced and passed at the extra session of the Legislature.

AGRICULTURAL REVIEW.

Glenn.

SECOND CROP PREVENTS HARVEST.—Willows Journal, July 6: In many barley fields along the river a peculiar condition exists, something never known. There is a particularly heavy crop of this grain in the river section, and the late rains have flattened it almost to the ground, so that much will be lost in the harvesting. In the now fully ripened grain a second crop has grown up, consisting of a mixture of oats, barley and weeds. The barley is ready to cut, but the second growth is preventing the work of harvest which will be delayed until the second crop has ripened. In many fields where the hay was cut early, there

is also a heavy second crop which would make excellent hay, but in most cases will be used for pasture.

Kings.

SOME FINE POTATOES.—Hanford Sentinel, July 5: M. J. Twining of Guernsey, has experimented on several varieties of potatoes this year and has great success. Last spring he planted three varieties that are a splendid show. These varieties are, first, the variety known as Uncle Gideon's Quick Lunch, a potato of moderate size, of the shape and appearance of the old eastern Early Peachblow, and certainly a charming specimen of the tuber. Another variety is the Vermont Gold Coin, a larger potato than the Quick Lunch, smooth and white—a perfect looker and a good cooker. Then he also brought a sample of Burpee's Extra Early, which is a fine looker, yields heavily, is white and smooth, and a very fine potato for this locality.

TWO GOOD TREES.—Hanford Sentinel, July 5: Mrs. G. L. Young of this city has picked 450 lb. of cherries from the two trees in her garden this season, and there are about 50 lb. more on them, and all sold at six cents per lb. That represents a yield of about \$15 a tree. Who says that cherry growing is not a good industry here? These trees are nine years old.

Riverside.

TO ERADICATE PEAR BLIGHT.—Riverside Press, July 3: Among those present at the Yucaipa conference on pear blight were the horticultural commissioners of San Bernardino county and Professor Ramsey, who is in charge of the biological station at Whittier. Professor Ramsey gave a talk on eradication methods, and at the close of his talk the growers pledged themselves to use every effort to eradicate the blight, for which no remedy has yet been discovered. It is caused by a microbe not unlike the typhoid fever germ. Professor Ramsey has destroyed 3,000 out of 5,000 trees in a single district in the north, where the apple output dropped from 600 car loads to nothing as a result of the blight.

San Bernardino.

SMALL PEST DOES BIG HARM.—San Bernardino Index, July 4: It requires 125,000 of the little pests just now ruining the apple crops of the country to cover a square inch, according to Secretary S. A. Pease of the Board of Horticultural Commissioners. The secretary is under the impression that the blight which attacked the orchards in the Oak Glen region, where by far the largest quantity of the apples of the county are grown, came from some ancient pear orchard in the vicinity. The orchardists are using heroic means to stop the blight, many trees being torn out by the roots and others cut deeply.

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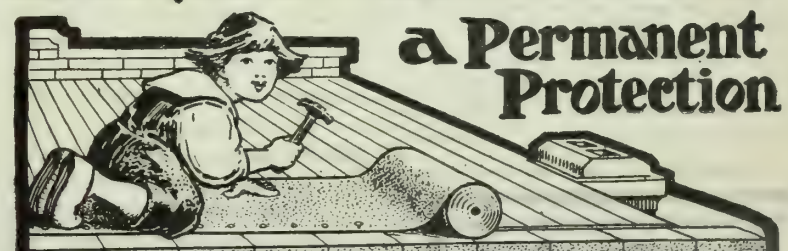
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of the usual output of 600 car loads of apples, the total crop did not amount to more than 100 car loads.

BUY TENTS FOR BUGS.—San Bernardino Index, July 4: The County Horticultural Commission yesterday called on the Board of Supervisors in preparation for the fall campaign against bugs, scales and pests in general that are injurious to plant life. In response to the request of the members, the board ordered advertisements for furnishing two sets of 45x45 ft. tents, 33 to a set, and made of eight-ounce duck. These will cost in the neighborhood of \$3,000. The commission asked that a call for bids be made for the furnishing of 10 tons or more of cyanide of the German manufacture and 10 tons or more of sulphuric acid.

San Joaquin.

GRAPE ACREAGE IN SAN JOAQUIN.—Lodi Sentinel, July 5: Assessor Ortman's list shows some additions to the roll in the way of products. They are flax, potatoes, beans, buckwheat and asparagus. The total acreage planted to grapes is placed at 20,414 acres, which means a big increase.

\$150 AN ACRE FOR TOKAY CROP.—Lodi Sentinel, July 10: In spite of the fact that San Joaquin county this year will harvest at least 2,000 acres more of grapes than it did last season, there seems to be no fear of overproduction. Elbert Covell a few days ago sold his crop of 27 acres to the Pioneer Co. for \$150 per acre; Wright Covell sold 12 acres to the Valley Fruit Co. and the Feyers vineyard of 15 acres was sold to the Buck Co. for the same figures. The buyers assume all risks of loss and all expense necessary in the harvest and shipment of the grapes.

PRUNE SHIPMENT.—Lodi Special to Sacramento Bee: To date this season 8,325 crates of Tragedy, Abundance and Burbank prunes have been consigned to Eastern markets from this place, 4,625 having been shipped this week.

LABOR-SAVING HAY RACK.—Lodi Sentinel, July 7: D. O. Jordan of Sacramento, has made Beckman, Welch & Thompson Co. agents of a labor-saving hay rack invention. The model on exhibition at the store demonstrates the ease and simplicity in the removal of a hay rack from a wagon and its placing thereon. The construction of parallel like board fences, strengthened with posts that are picked up on all farms, and mounted by reversible skids, is the trick in a nutshell. The skids balance and have movable supports at each end permitting the ends to rise or fall when

required. To remove the rack all that is necessary is to drive between the rail-like structure while the skids project at a slight angle beneath the rack, gently raising it from the wagon as the wagon is drawn between the two rail structures. The rack is removed in less than one-half a minute and its replacing requires no longer time.

San Luis Obispo.

NEW FOREST RESERVES.—San Luis Obispo Tribune, July 3: By presidential proclamation two new forest reserves have just been established in California. One of these is the Monterey forest reserve, containing about 287,000 acres, in Monterey county, and the other, the San Luis Obispo forest reserve, containing 315,600 acres, in San Luis Obispo county. The Monterey reserve extends northward along the coast, from a little above the southern boundary of the county for a distance of about forty miles, with a varying width of from 10 to 25 miles, and covering a portion of the Coast Range. The average elevation is 3,000 ft. Annual rainfall of about 30 in. occurs principally from November to April. About 59 per cent of the total area of the reserve affords protection to streams tributary to Salinas valley, which will be used for irrigation; 17 per cent covers the headwaters of the Carmel river, which supplies the city of Monterey, and is also used for irrigation; and 16 per cent is tributary to the Sur and Little Sur rivers, on which water will probably be used for developing power. The remaining 8 per cent drains to the Pacific ocean. The arable lands of the Salinas valley can more than use the waters which can be conserved up on this reserve, as the average rainfall in the valley is less than 10 in.

The second reserve includes a portion of the crest of the mountains forming the termination of the Coast Range, in the southern half of San Luis Obispo county. It adjoins the northwest corner of Santa Barbara forest reserve. One-half of this area is tributary to the Santa Maria river. This extension of the forest reserve system to embrace the watersheds of the Santa Maria and Salinas rivers has been made for the purpose of regulating and increasing, if possible, the stream flow of those regions, which are far from adequate to meet the rapidly increasing demands for water in the valleys adjoining the reserves. As the first step towards this end, a fire patrol will now be stationed on these mountains, and the government will take other measures to protect forest cover from destruction.

Sonoma.

BIG TURNIP.—Stanislaus News, July 6: W. R. Neil, who lives on a five-acre place, brought in a monster turnip which he is going to donate to the Stanislaus Board of Trade for the exhibit which the Board is getting up to use in connection with the State Board of Trade advertising for this county. Mr. Neil's turnip is a whopper of the pink top variety, measuring 26 in. in circumference, and still would have been growing if it had been allowed. Again a red mark for Stanislaus!

GRAIN FIRES.—Stanislaus News, July 6: L. C. Gates lost 160 acres of summer-fallow barley by fire last week. Mr. Gates with difficulty saved the rest of his grain by backfiring, in which he was assisted by a dozen of his employees and neighbors. The loss will be about \$2,500.

which is covered by insurance. Over 600 acres of grain, hay and pasture were burned on the Walther places east of Oakdale last week. The fire started in a wagon load of hay, and swept over the dry fields in short order. Another large grain fire occurred near Grayson Sunday afternoon, the loss falling on the Zacharias estate, E. H. Baldwin, and Nels Hansen. Seven hundred acres were burned over, 238 acres being standing barley and the rest wheat stubble, some stacked wheat also being lost. The fire caught from the cook-house on the Zacharias ranch.

Tehama.

THREE FOR A DOLLAR.—Corning Observer: Sheriff Jud Boyd lately sold the chickens on the Maywood poultry farm to satisfy creditors' claims. The attachment was levied several weeks ago by the Maywood Co-operative Association, to whom the poultry ranch owed \$2,500. The 2,871 chickens brought \$933 and were sold in fifteen coops. The Maywood Co-operative Association purchased ten coops carrying 2,263 chickens, H. C. Remick two coops of 365 chickens and Mrs. F. A. Kauffman of Woodland, the balance, 243 chickens. The average price was a fraction over 32c a chicken, or \$3.90 per dozen.

Ventura.

MRS. SHEPHERD'S NEW ROSE.—Riverside Press: Horticulturists of this vicinity are enthusiastic over a new and beautiful rose. This bloom has the appearance of a splendid bird just poised for flight—the golden oriole. It is an exact counterpart in color of this beauty, and has been named by its propagator, the "Oriole." This wonderful specialty found birth in the garden of Mrs. Theodosia B. Shepherd at Ventura. It is the deep orange color, seen in no other tea rose in the world, that has awakened such universal interest among florists. It is the most beautiful and valuable floral introduction of the year, says one specialist. George Oliver of the Agricultural Department at Washington, visited the Ventura gardens recently for the purpose of seeing the rose and was enthusiastic in his praise. The rose tree, which was propagated from the seed, has been growing for four years and is six feet in height. It was brought into being directly from the seed of the La Jonquille, an old tea rose, rather small and delicate and of dwarf habit. The grandparent of the new seedling is the white La Marque.

Yuba.

MORE THAN \$60 A TON FOR PEACHES.—Redding Searchlight, July 3: Hundreds of tons of peaches have been contracted for here at prices ranging above \$60. In some instances the price has been \$62.50 a ton. The Giblin brothers are understood to have received that price for 300 tons. It took a long time to get things started this season, but prices have been made at last and must be met by the buyers. The Cannery Association is understood to have stated that it will not pay such prices for peaches. The peach crop is not very bountiful this season. Peaches and pears are the leading canning fruits of this district. With peaches at \$60 and pears at \$75, there will be more expense attached to the canning industry, and the tinned fruit will take a jump in price.

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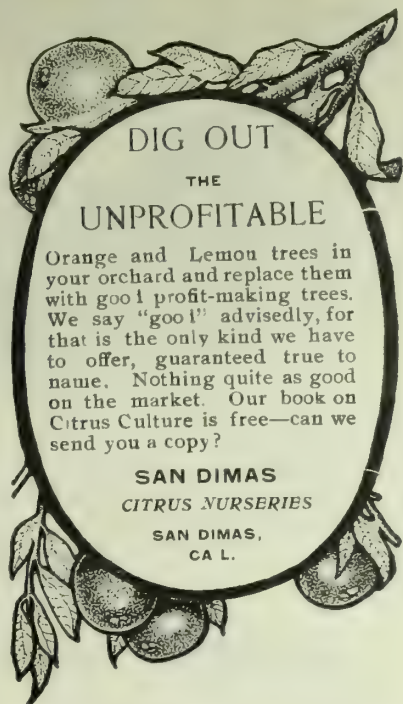
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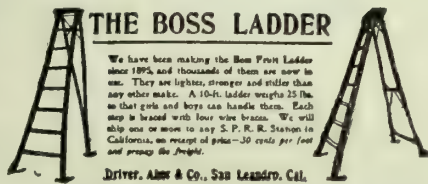
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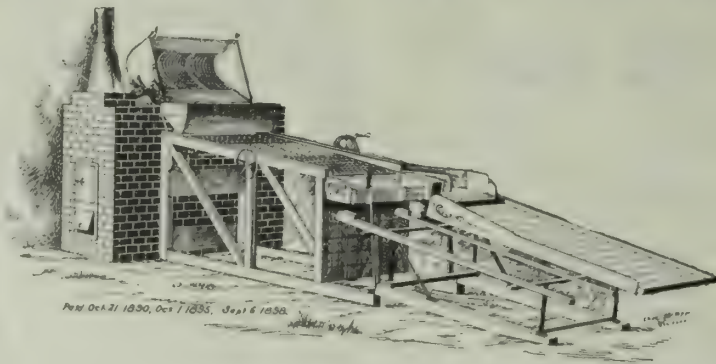
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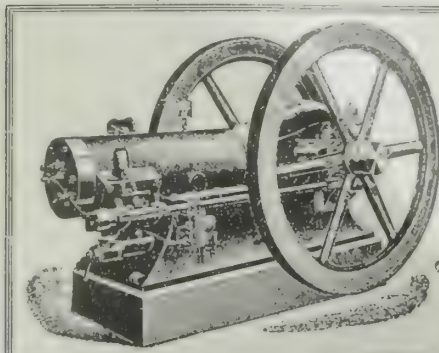
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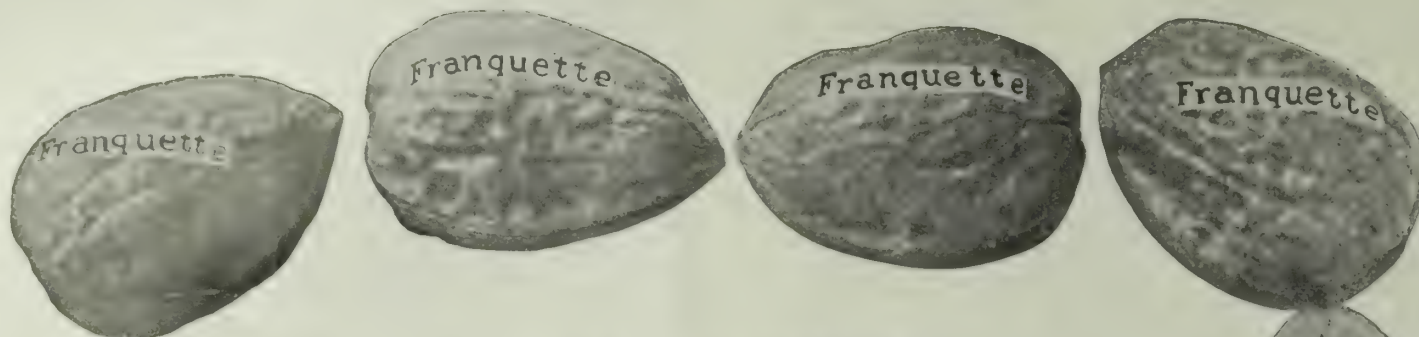
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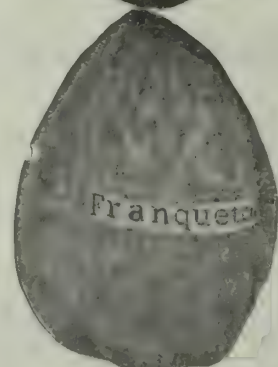
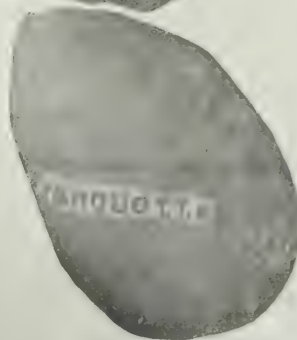
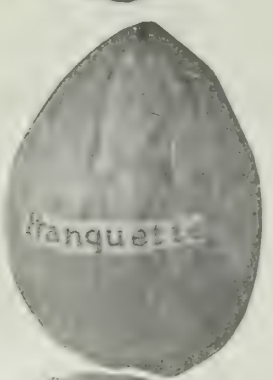
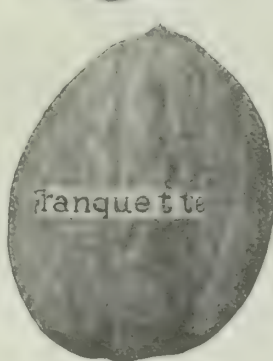
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Vol. LXXII. No. 3.

SAN FRANCISCO, SATURDAY, JULY 21, 1906.

THIRTY-SIXTH YEAR

LIFE AND WORK IN MEXICO.

From the interesting illustrated sketches of travel in southern latitudes which Mr. T. A. Rickard is writing for the Mining and Scientific Press we select another portion for this week's Rural. We take paragraphs which are particularly devoted to rural scenes and actions and to products of the preparation of which but few of our readers have had opportunities for observation.

At thirty miles from Vera Cruz, on the way to Mexico City, the foothills are reached and in this well-watered tract the tropic vegetation is luxuriant in the extreme. Between Camaron and Cordoba the botanical wealth of the tropics is lavishly displayed; nature, stimulated by warmth and moisture, has clothed the earth with splendor. There is the scarlet hibiscus, purple bougainvillea, the lavender plumbago, crimson oleander, pink azaleas, the yellow and red flags of the coleus, even magnificent orchids, with creepers of every shade of green festooning the forest.

Soon the train passes coffee plantations. The wild undergrowth has been cleared, but the larger trees are left in place, so as to give shade to the coffee shrubs (five to six feet high) that are planted between them. The young coffee shrub is delicate and must be protected from the direct rays of the sun for at least two years; maturity is attained in the fourth year. The plants live 25 years and require comparatively little



On a Mexican Trail.

the valley widens, becoming one immense plantation of maguey, reaching in ordered sequence and in lines of mathematical regularity to the dark hills in the south. The accompanying photograph illustrates the appearance of such a plantation. Maguey is the plant the fermented sap of which yields pulque, the national drink of the Mexican. It is the "century plant," which got its name from the idea that it blooms once in a hundred years, which is true in one sense, but the maguey does not bloom each one hundred years or at the end of one hundred years. It matures in seven years; at that time the central shoot springs up with extraordinary rapidity to a height of six or eight feet, and blossoms. But when cultivated as the source of pulque, this flowering of the plant is not permitted; as soon as the stem gives evidence of emergence, it is cut at the basal socket, so as to form a bowl in which collects the sap intended for the nourishment of the gigantic stem we associate with the "century plant." If the incision for the removal of the heart of the plant is done too soon or too late, it dies unproductive. The sap oozes into the socket and is removed twice a day at first, and then each morning. It collects at the rate of one or two gallons per day until, after about three weeks of tapping, the plant is exhausted. In extracting the sap, a slender gourd is used as a siphon; the operator places one end in the bowl and the other in his mouth, then he draws the sap into the gourd and pours



A Coffee Plantation in Mexico.

is a sudden descent to the coastal plains of the Pacific. In traveling from Vera Cruz to Mexico City, a part of this structure is made manifest. The tierra caliente, or warm lowlands, forms a narrow strip to which succeeds the temperate zone or tierra templada, between 3000 and 6000 ft. above sea level. then by abrupt ascent one comes into the tierra fria or cold country of the high tableland, at an altitude of 6000 to 8000 ft. Any rigor of climate which might be due to a high altitude is tempered by the latitude, so that of Mexico City, at 7349 ft., and a little south of Lat. 20 degrees north, has a temperature ranging between 60 and 75 degrees the year round.



Maguey Plantation—The Source of Pulque.

labor, less than sugar, for instance. Speaking of these matters, it may be noted that chocolate is indigenous to Mexico, and the word itself comes direct from the Aztec "chocolatl"; nevertheless Mexico nowadays imports chocolate from Guatemala and Caracas. Shade is imperative for the young coffee plant; in many cases it is cultivated under the protection of banana palms. This is the practice also in Ecuador, Peru and Brazil. It is said that the best coffee in the world comes from the famous Youngar valley, in Brazil, where it is grown in an old cemetery under bananas. The yield is only a few quintals per year, but this coffee fetches enormous prices. As a rule the small berries (caracolillo) are preferred, but the Youngar coffee is of large grain. Owing, however, to rankness of growth, many of the Mexican plantations looked so overgrown as, by reason also of the trees retained for sheltering the coffee, to seem like the bush primeval.

Soon we saw the yellow gleam of oranges and limes amid dark foliage; picturesque hamlets, with red-tiled roofs and thatched houses, and white-clad peasants. At the railway stations there was always a crowd of fruit-sellers; bunches of roses and magnificent bouquets of gardenias were purchasable for a song.

As everybody ought to know, the interior of Mexico is a high plateau enclosed within mountains of volcanic origin; this plateau rises suddenly from the lowlands that fringe the eastern coast and it is bounded westward by the Sierra Madre mountains, a part of the American cordillera, on the further slope of which there



The Palace of Chapultepec.

At Esperanza, 8044 ft. above sea level, the plateau extends with a sandy severity reminding one of parts of Arizona; from the moist air of the tropics we had passed into the dusty winds of the highlands. To the north, Orizaba hid his great head under a panoply of cloud and over the brown plains to the west were the white summits of Popocatepetl ("the smoking mountain") and Ixtaccihuatl ("the white woman"). This part of Mexico is largely given to the cultivation of the maguey or aloe, the agave Mexicana. Just beyond Apam

it into a sheepskin bottle. These bottles are emptied into a pigskin bag, for loading onto the mules and burros that carry the stuff to the hacienda or farm, where it ferments over night, so as to be ready for transport to the city early next morning. In the course of travel this liquid intoxicant gains the smell of the untanned raw pigskin, acquiring a filthy odor, so that the pulquerias or saloons at which it is sold give forth a noisome stench. It is the whisky of Mexico, and when fresh, it is said to be palatable. To me it seemed to have a smell compounded of sour milk and tainted meat; it is good only (if at any time) when absolutely fresh, that is when drunk in the locality where it is gathered. Mescal and tequila are other alcoholic products of the maguey; they are derived from the distillation of the roots. From the heavy pointed leaves, five to eight feet long, the Aztec made the paper on which his picture-writings were recorded. The modern Mexican uses the fibres of the leaf, after the plant has been exhausted as the source of pulque, to make twine (pita) and rope. With it he also makes the ayate or coarse cloth in which earth, corn, provisions, almost everything is packed for transport on his own or his mule's back; for instance, the pigskin bag holding the pulque is held in an ayate. It is said that 1,200,000 pesos are spent each month in Mexico City for pulque, mescal and tequila.

It is recognized by physicians and other thoughtful men that pulque drinking is demoralizing both physically and mentally.

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THE WEEK

Local affairs are advancing quietly. The harvest is on in the earlier districts and the weather has assumed fine phases for it, although near the coast the temperature has been rather low. Fruit shipping is proceeding, and some days are exceeding last year's figures, although the aggregate to this date is much smaller and the rush of canners for supplies is apt to hold it down for the fruits which they prefer. Very tall prices are still being paid, and this indicates a brisk demand for favorite nursery stock the coming fall and winter because nothing promotes planting like high market rates for the product. The rehabilitation of San Francisco is advancing rapidly, and labor is reported in sharp demand. From all points of view the man who has labor to sell carries a popular commodity, and the cities are in the market for it.

Farm labor problems are coming on thickly. Last week we had some of a unique kind. Now there comes from Texas the announcement of a grand farm laborers' union which proposes to enter upon a vigorous propaganda. The name of the organization is to be the United Brotherhood of Rural, Horticultural and Agricultural Wage Earners of America. We presume its program will be U. B. R. H. & A. W. E. of A., which is formidable in itself. Its purposes are as follows:

"This organization in no wise affects or militates against the Farmers' Union or any other organization. It simply separates the employee from the employer and gives the employee a greater opportunity to better his condition.

"The purpose and object is to secure to agricultural, horticultural and all rural laborers better and more standard wages, more uniform hours of labor and the protection and elevation of such laborers and their families.

"All white men over 15 years of age, of good moral character, who believe in a Supreme Being and who are engaged as laborers for wages on farms, ranches, nurseries or in any other rural or agricultural pursuit are eligible to membership."

Unquestionably farm laborers have a right to organize for any laudable purpose, but it is to be hoped that they will be wise enough to see that many things which town laborers insist upon cannot be secured in farming and not forget, also, that the farmer stands next to the wall. Almost all other employers can simply transfer a labor bump to the next one in the commercial line, but the farmer is last in the line and he has to receive and retain the full shock. It would be very easy indeed to put the farmer against the wall so hard that he would lose his industrial consciousness. It is very easy, therefore, for great disaster to ensue if attempt is made to apply city labor methods to agricultural conditions. If farm laborers will acknowledge the leadership of broad-minded men of their own class and not fall a prey to the fallacies and greed of the conventional walking delegate, we have great confidence in the existence of a fair-minded organization.

As conditions now are there seems little need of organization of farm laborers to improve compensation, unless a squeeze is contemplated. From the same State whence comes the news of this organization, these statements are also telegraphed. Throughout North Texas and in the Panhandle there is a great scarcity of farm labor. It is reported in Dallas on very good authority that in many instances the farmers are paying two

dollars a day and board. This is the equivalent of about \$2.75 a day. Such wages are drawing many of the laborers from the city, and at this time, when so many improvements are going on in Dallas, the problem of contractors and others is to get enough men.

By the way, there is one phase of the situation which is interesting. The rural laborer may get his head cracked when he goes into the city to take a city man's job, but he is expected to look pleasant when the city laborers invade his field. The rural laborer should remember in his negotiations with his city mentors that he has a point of view of his own and should not allow himself to be blindly led along lines which may fit city conditions, but are wholly out of accord with country conditions.

The confidence with which some of the interior range states are looking to the coast cities for a market should suggest to those who can develop greater production on the coast itself the desirability of figuring a little on a larger local supply. The Breeders' Gazette notes that the movement of beef from Montana to Chicago is likely to decrease. It says that in the Big Hole country an even larger crop of beef was made, but Pacific Coast buyers got 50 per cent of the supply. Some of it is destined for Alaska, but the bulk of it will be consumed in the Puget Sound country. Feeders were not put to the necessity of shipping on their own account, speculators being on hand to take it all. "Montana is going to sell more beef to the Pacific Coast with each succeeding year," said H. J. Toomey, a large Montana buyer. "A larger proportion of the Big Hole crop would have gone in that direction this year had it not been contracted to go east. In other words, Pacific Coast buyers did not get all they wanted. Alaska's population is growing rapidly and it is a beef-eating country. Population is pouring into the North Pacific Coast region, and it will fall to Montana to supply a large proportion of it with meat." All this is very suggestive as supplementary to the movement from Arizona and Mexico to the southern Pacific coast markets in California. Cannot the coast states do more profitably to supply their own local demand?

It is a very significant fact to those who are thinking and acting in agricultural education that the subject of agriculture is at the same time pushing itself irresistibly into both the highest and lowest schools. A number of years ago the ancient Oxford University provided for it, and now Vice-Consul A. D. Platt writes that, after over three centuries from the date of its foundation, Dublin University has decided to grant diplomas in agriculture to students of the university or external students on the results of two years' study in the school of agriculture which has just been started. The courses to be taken by students of agriculture will consist of—(1) Elementary science in relation to agricultural operations, being teaching by lectures, demonstrations, and laboratory work. (2) Practical agriculture. This course will extend over both years and will be partly carried out by lectures from the professor of agriculture, but mainly by residence with the professor of agriculture during portions of the year at his farm. It will embrace a practical knowledge of the treatment and management of tillage, of grass lands, and of live stock, veterinary science, engineering as applied to agricultural purposes, entomology and other subjects. Entrance to the school of agriculture will be by passing an examination in general education or by matriculation in the university. The first examination will be held next October. Those who may sometimes doubt whether it is desirable to provide for agriculture at the universities should think carefully about what it means that these old, conservative institutions are providing for it. To us it means that in these later days agriculture is really coming to its own proper place among studies of consummate importance and the highest educational value.

The outlook for the coming State fair in Sacramento, August 25 to September 1 is very good. President B. F. Rush, of Suisun, and Secretary J. A. Filcher have

been undertaking a campaign of visitation with very good results. Secretary Filcher says that there had been more space applied for than had been asked for in the last ten years. The visiting committee has been active in the field just two months earlier than usual and already has one more county on the list than it had last year. Mr. Filcher says that every department of the State's industrial life will be represented. The people of the State seem to fully realize not only the importance of such a fair, but also the desirability of it at this particular time, when so many think that industry in California is paralyzed by the earthquake and San Francisco disaster. He declares that it is California's opportunity to demonstrate to the world the fact that the great interior resources of the Golden State are not only absolutely unimpaired, but are flourishing in a greater degree than ever before. We should have a rousing State fair this year.

Dispatches from the East tell of the disaster of the tomato combine. The story is that the tomato syndicate organized last fall to corner the visible supply of canned tomatoes, stands to lose \$250,000. Grocers are not extending any sympathy to the besmeared syndicate. The original holdings of the syndicate, according to its own admission, were 1,800,000 cases. Not more than 500,000 cases have been disposed of, leaving the syndicate to hold a bag containing 1,300,000 cases. Within thirty days the new crop of tomatoes will begin to appear and it is expected that the new crop will create sad havoc for the syndicate.

We have recently had a distinguished visitor from New Zealand in the person of Sir Joseph Ward, the incoming Premier, who proposes to admit free American canned salmon and printing paper, and as a compensation therefor asks to have removed the tariff on New Zealand wool imports and Kauri gum. This would, it is thought reduce the importation into New Zealand of Canadian paper and salmon, which are now preferentially treated, but nothing is said of the injury to our wool growers. It is time for our wool growers' associations to get busy on this matter.

This matter of protecting wool may seem to some rather a small affair, but when we begin to handle wool more largely as a scoured product it will reach many more people and check an industry which should thrive. For example, it is now announced as a probability that Marysville will have one of the finest wool scouring plants in the country. Percy L. Clay, formerly manager of the Marysville Woolen Mills, has interviewed a number of business men in regard to the proposition. If he finds conditions satisfactory and the enterprise promises to be properly assisted by the business men and wool-growers, he will complete the organization of a company in the East, the first steps of which have already been taken. But if foreign wool has easy entrance under these reciprocity schemes, all such undertakings in the West will be knocked out.

QUERIES AND REPLIES.

CURING HARD WOOD AND HARD CIDER.

To the Editor: I ask for information on the seasoning of mountain mahogany, as that is the most valuable growth on my place, provided same can be prevented from checking. Juniper is the most plentiful, but is of such a character that it is almost valueless for purposes of utility. Again, can you inform me as to the best general commercial fertilizer for garden purposes; also the best varieties of trees to produce vinegar, as also cider.—ENQUIRER, Shasta county.

We have nothing on the subject of seasoning timber. Possibly you can get information from the United States Forestry Service, Department of Agriculture, Washington, D. C., as some of their publications are along that line.

The best commercial fertilizers for garden use are what are called "complete" fertilizers—that is, containing nitrogen, phosphoric acid and potash. Fertilizer

manufacturers who advertise will give you the composition and uses of the material which they offer.

Cider and vinegar can be produced from almost any fruit that you have in surplus quantity. In the East cider and vinegar are almost exclusively made from the apple, while in the South orange cider, and its fermented product in the form of vinegar, are used.

In California most of the vinegar is made from wine, although apple cider vinegar is also produced in the coast region particularly. The best way to get information on cider making is to order the book, "The Cider-Makers' Handbook," by F. M. Trowbridge, which will be furnished for one dollar postpaid by the Pacific Rural Press.

WINTER CROP FOR SAN JOAQUIN.

To the Editor: I wish to learn what would be a good winter crop to raise at Lindsay. I have 20 acres of land there and a good pumping plant. Please give me some information on the subject: the kind of crop, the best time to plant, etc., and the best method of cultivation.—READER, Waukena.

Answer to your question depends upon what use you can make of such a winter crop as you propose to grow, and what you expect to do with the land the following summer. Winter crops which are generally most satisfactory are crops of hardy forage plants, like peas, or vetches, combined with oats or rye, or stock beets, but profitable use of such a crop is conditioned upon having dairy or other stock to which it can be fed. Sometimes a winter crop of peas or vetches can be made a most profitable one by plowing in to enrich the soil for other crops which are to follow. We do not know of any crop which can be undertaken on twenty acres, for sale, solely on the winter growth. Winter growth of hardy vegetables, including potatoes, is sometimes quite profitable, if your situation is free from frost. Really, one has to understand the conditions and the use which you intend to make of the land the following summer before advice can be intelligently given.

PEAR BLIGHT, SQUIRREL REPELLENT, ETC.

To the Editor: I send samples of leaves taken from pear trees set out last March. Can you tell me what is the matter with them? The leaves enclosed came from one tree. The trees seem to be healthy and doing well otherwise. If some blight or disease, can you tell me of a cure for it? Also, is whitewashing good to prevent squirrels from biting young trees and to prevent sunburn? Do you recommend any wash for young trees, to prevent disease? If so, what? If I use white-wash, how thick should it be mixed? How much water to lime? What distance apart should gum trees be planted for windbreaks, and how many rows would you recommend?—GROWER, Monterey county.

The pear leaves which you send seem to indicate the presence of pear blight, but the disease can be more safely diagnosed from twigs and branches. To secure a certain determination, therefore, such material should be submitted.

Whitewashing usually has no particular effect in preventing the damage by squirrels, although it is good to prevent sunburn. A wash for the bark, made of commercial aloes, one pound, to four gallons of water, painted on the bark and sprinkled on the leaves, makes them so intensely bitter that they will not be eaten either by squirrels or rabbits. Gum trees for windbreaks can be planted as close as six feet, alternate trees being removed as they crowd each other. A double row will do unless you wish to make a very dense windbreak and at the same time give some land to the growth of the timber. The more trees, the more wind-breaking.

FERTILIZERS AND GRAIN IMPROVEMENT.

To the Editor: Your article concerning barley-growing in California in the July 7th issue of the Pacific Rural Press, under this heading, I have read with much interest. In connection with the use of irrigation, don't you admit a dressing of a desirable fertilizer would greatly tend to enhance the results which our British friend is asking about? Perhaps a superphosphate?—HORATIO BEVERIDGE, San Francisco.

Unquestionably you are right. The use of fertilizers,

and especially of nitrogen and phosphate, will occupy a very important place in our future cereal production. We understand that experiments by private parties are in progress at the present time and likely to yield results important for publication. The experiment station has also work of this kind in progress at its branches which are devoted to grain culture. It is a subject to which every progressive grower should give attention and undertake wise trials to satisfy himself of local points of advantage.

SUFFERING OLIVE TREES.

To the Editor: I have an olive orchard of 800 eight-year-old trees. For the last three years they bore fairly well. This year they bloomed splendidly and little olives set nicely until they were of the size of a pin head or a little larger. They then turned black and all dropped off except a few. This occurred shortly after our last rain. The trees are apparently healthy except there is a black, greasy substance on the limbs and leaves. Is this a disease due to the rain? Should the trees be pruned? I have never pruned them. They are splendid trees, but the crop this year is almost a total failure. Please reply and tell me what to do to prevent a recurrence of this failure.—GROWER, Napa county.

Young olives fall from several causes, among which are frost, lack of pollination, or lack of vigor in the tree through the neglect of pruning and the weakness produced by scale insects. Your blackened limbs and leaves are occasioned by these parasites, and the trees should be pruned out to a reasonable extent and thoroughly sprayed within the next two months with kerosene emulsion or the resin wash. It is impossible to expect satisfactory results in fruiting from trees which are infested as yours seem to be. Regular pruning is necessary with the olive in order to secure growth of new wood each year, because the olives, like peaches, bear upon the wood which grew the previous season, and not upon older wood. It is evident that your trees require a thorough handling for the purpose of improving their growing conditions.

RAMIE GROWING.

To the Editor.—I have in mind the manufacture of certain products from the ramie fibre plant and desire to know just how far I can depend on the domestic market for raw material. If not already under cultivation, can it be cultivated, and if so to such an extent as to be available for commercial purposes? I have already directed an inquiry to the Department of Agriculture in your State, it may be that this will find its way into your hands. In a similar inquiry to our State department they advised me of experiments having been carried on in California. Have you any papers giving the result of such effort?—ENQUIRER, Cortland, N. Y.

Interest in the ramie plant arises periodically in California, but no trustworthy market for the raw product has yet been developed, consequently all plantings have been disappointing from a commercial point of view. There is no difficulty in producing almost any quantity of ramie in this State, but it is very undesirable for farmers to set their land with this perennial plant until some one is ready to contract for the crop just as it comes from the land and prepare himself for cleaning and separating the fiber. The farmer cannot constitute himself a manufacturer to that extent, although he has been frequently urged to do so by those having machines or processes which they desire to exploit. For this reason there is no commercial ramie product now available. The plant is continually grown on the University grounds at Berkeley and small quantities given away to those who desire to undertake experiments.

FAILURE OF YOUNG TREES.

To the Editor.—I take the liberty of writing to you as an old subscriber to the "Rural Press" as I would like to ask a few questions in regard to a four-year-old orchard which I have. All the trees have looked healthy until this spring, when two or three cherries and four or five apricots behaved ill. The trunks of all have turned black. In some cases it reaches up to the lower parts of the first branches. They almost looked charred. Can I save these trees, and what is the remedy? We

also have three or four walnuts that until this spring have done finely, but have seemed to die within a week or two. I have wondered if it was due to too much moisture around the roots, as there was one tree which stood in a very low place and water seemed to settle, but the roots of all these trees seemed to be alive when they were dug around.—SUBSCRIBER, Skaggs, Sonoma county.

You did not tell us how the top of the tree is behaving while the trunk is blackened. Did growth start and go back? Is there gumming above? Did you examine the roots for discolored bark and sour smell? There is a failure due to standing water which manifests itself by going back of the new growth and sour sap in the root, followed by blackening of the main stem which you describe. There is also a failure due to frost after sap becomes active, and then the top of the tree is affected while the root is still sound. Where this occurs it is apt to affect more trees at a time than you indicate. A few trees, of the kinds you mention, failing while others of the same kind are unaffected generally indicates the standing of water in the particular places occupied by those trees and this is the best guess we can make without seeing the trees in place. The ill effects of the standing water are sometimes manifested early in the spring. Sometimes the trees fail in mid-summer.

"DRY FARMING."

To the Editor: I respectfully call your attention to an article in the Century Magazine for July on "Dry Farming, the Hope of the West." I know what an earnest worker you are in your department, and thought you might say something about this. In the Book-lovers' Magazine for this year there are many very interesting articles about the growth of wheat and other things, in British Columbia. If this dry farming is all right, we will be independent of Alberta and the other provinces. I am an old resident of this coast and I take a sincere interest in our keeping our place in everything that is of benefit to the whole country.—READER, Oakland.

We have looked over with interest the article in the Century, and in many other periodicals, the subject of "dry farming." It probably does not occur to readers generally that this subject of dry farming is not a new one in California; in fact all that we have done in California since the American occupation, except where irrigation has been employed, is dry farming. All our unirrigated fruits, grains, vegetables and forage crops are secured by practices which have been largely developed in this State for the purpose of conserving winter moisture for summer cropping. It is true that we have a decided advantage over the interior elevated regions because our winter is really a growing season and we are able to bring our plants to a considerable state of advancement before the dry season sets in, and yet the same methods of cultivation for moisture-retention which we have learned to appreciate in order to guard against destruction by our high summer heat and drought are the same in principle which are now being advocated in the interior regions and about which so much is being published in current periodicals. The constant cultivation of our orchards to prevent hardening of the surface and loss of moisture by evaporation is a dry farming proposition, and its importance in the interior regions is just now being appreciated. Our system of bare fallowing, for the purpose of conserving moisture in the soil for alternate years' cropping, is another dry farming proposition which has started from California and proceeded to the interior regions. California can, therefore, claim to have made already most important contributions to dry farming and is now watching with great interest the many methods which interior experimenters are bringing into use, to discover if there be not some new practices which they can discover which will enable us to work better in the application of principles which have long been discerned in this State. It is true that writers for popular magazines do not always see the connections and historical sequences of their statements and for that reason often unduly excite readers, who have not given particular attention to the subject, with the idea that their declarations are essentially new and original.

HORTICULTURE

Specific Requirements of New Varieties in California Fruit Growing.

By E. J. Wickson, acting director and horticulturist of the University of California Agricultural Experiment Station, at the 31st annual convention of the American Association of Nurserymen at Dallas, Texas.

Upon receipt of the invitation of your program committee to prepare a paper for your convention, I decided to proceed at once with a comprehensive inquiry into the present standing of varieties of the fruits chiefly grown in California for commercial purposes. My objects in such inquiry were, first, to secure exact data which would be of business advantage to you as large propagators of fruit trees; second, to make widely known the particular requirements of California production and trade for the information of originators of new varieties, in order that they might work more directly toward specific opportunities and demands; third, to enforce upon local planters the conviction that their clearest path toward satisfactory income lies in choosing varieties which have demonstrated two fundamental characters, viz, adaptation to the locality and to the uses of the fruit trade.

Mr. Burbank's Work.—California has an enviable reputation throughout the world as the home of unique novelties through the wonderful work of Luther Burbank, our most distinguished horticulturist, and it is only natural that the public should jump to the conclusion that our chief commercial product must consist of these striking achievements. The general reader of the amateur horticultural literature which fills our popular periodicals is not informed that Mr. Burbank is himself the most exacting judge of his own productions, most strenuously insisting that they shall stand all tests of culture and trade and shall survive or perish upon such exacting trial. Mr. Burbank's creations are also contributions to the world's horticulture, and not to that of any State, and no one can tell when or where their greatest victories will be achieved or what particular purposes they will serve. In view of these facts you will not be surprised that the Burbank varieties do not yet enter largely into the aggregate commercial fruit production of California. Any one acquainted with commercial fruit growing knows that it is not possible to revolutionize an established and profitable industry in less than a decade by the substitution of new varieties for the old standards. It takes not less than half that period to determine whether the new variety is really trustworthy and suitable, and it takes much longer to get a large acreage in bearing either by grafting or new plantings, because people are slow and conservative in making changes. It is little more than ten years since Burbank distributed the first grafts of "Wickson," the first of his plums to make a deep impression upon the commercial fruit growing of California.

Preponderance of Commercial Interest.—Another reason why new varieties do not figure more largely in California fruit growing is the smallness of the amateur interest. There is, in fact, almost an absence of pure amateurs, enthusiastic, critical, discriminating, athirst for novelties. Even suburban planters follow the lead of the commercial orchardists and plant chiefly that which has shown adaptations to local growing conditions, and few are averse to making what they can by sale of small surpluses. The result is that California fruit growing is almost wholly commercial in spirit, policy and point of view, which is perhaps only natural in a state where the fruit products reach an annual aggregate value of something like sixty millions of dollars. The effect is to concentrate attention upon varieties which have achieved fame for profit and to repress amateur devotion and indulgences.

At the same time there is and always has been, quite a disposition toward trial of novelties among commercial growers, especially manifested in search for specific characters which are seen to be desirable rather than desire of newness for its own sake, which is often a point of pride among amateurs. To this enterprising and discriminating search is due the prominence of some of the leading varieties, which are chance seedlings recognized as meeting special requirements and grown great because they really did so. The California grower is, therefore, quite certain that he needs not varieties new throughout and of startling characters, but improved varieties which hold the good points of the old and add other points. For instance, he calls for trees resistant to disease, for improvement of the fruit in beauty, flavor and keeping qualities; for varieties, similar in kind, which fill gaps in the ripening season, so that he can employ help continuously, and shippers and canners agree with him, so that they can keep the cars moving and the cannery plants at work. The grower says he must be careful not to plant something different from what is already growing and selling well in his region, and this is also the advice of the trade to him.

He cannot risk much on varieties of entirely different types, although most growers are always doing a little experimenting. Nor should he undertake too many varieties, because a profitable orchard is not a pomological museum. There must be a large quantity of uniform fruit to make any district commercially prominent.

For these reasons the number of varieties now planted is but a fraction of what it was a quarter of a century ago, and stopping at this point, one might get the idea that the California grower was a monument of conservatism and lacking in enterprise and adventure. I hope, however, to show that he has very definite ideas of what he wants that is new, and that he has problems enough to keep plant-breeders busy for a century. This I propose to do by citing the particularly desirable characters which California growers, shippers and canners have described to me in the wide inquiry upon which this paper rests. I was fortunate in securing 1601 observations from men who have their livelihood and fortunes involved in profitable growth and handling of California fruits, and what are given as specific requirements of new varieties in California are not vain imaginings but deeply felt wants.

Apples.—Five apples lead all others by a wide margin in California, and these, in the order of their prominence, are as follows: Yellow Newtown Pippin, Yellow Bellefleur, White Winter Pearmain, Gravenstein and Red Astrachan. Fifteen others, also in order of approval, are widely favored, as follows: Rhode Island Greening, Esopus Spitzenberg, Missouri Pippin, White Astrachan, Red June, Alexander, Baldwin, Early Harvest, King, Winesap, Fall Pippin, Jonathan, Skinner's Pippin and Ben Davis.

There is demand for new early varieties larger and better than the old for early ripening districts where alone early apples are profitable; also for hot interior regions, where they reach good quality before the coming of the high heat which ruins late apples by premature ripening; also for late varieties which can endure such heat without injury.

Specific needs are:

The appearance and keeping quality of the Lawver combined with the eating quality of the Yellow Newtown Pippin.

A Yellow Newtown Pippin, which does not grow in bunches and which will not crack at the calyx and rust at the stem; also with better foliage and resistance to woolly aphis.

A good variety; preferably red, to ripen between Skinner's seedling and Yellow Bellefleur.

A red variety to load with yellow Bellefleur for the Australian trade in September and October. Red Pearmain is used for this purpose, but it does not get the flavor and color desired; also a variety to ship in August with the Gravenstein.

A variety with the spicy flavor of Esopus Spitzenberg, and skin of Yellow Newtown Pippin.

A good, large red apple for a late keeper.

Varieties which will remain as dormant under high winter temperatures as the Rhode Island Greening and be of different character.

Varieties resistant to Baldwin spot or apple speck.

A variety of the firmness, quality and keeping of the Winesap but blooming as late as Rome Beauty.

APRICOTS.—Out of scores of apricots tested in California only a dozen are mentioned as worth remembering and of these only four receive decided favor. They are Royal, Blenheim, Moorpark and Hemskirk; the others have only very limited and local support.

The Royal leads decidedly everywhere, and yet these are desired: An earlier Royal; a larger Royal; a later Royal; a Royal to resist shot-hole fungus; a later-blooming Royal; a Royal to resist more frost.

The Moorpark is an ideal of size and quality, but it decidedly needs improvement, namely: A surer-bearing Moorpark; a more evenly ripening Moorpark; a Moorpark with a smaller pit.

A good bearer like the Blenheim, with canning qualities like the Moorpark.

A variety as early as Newcastle, with as good color and free pit as Royal and as large as Hemskirk.

A variety larger and earlier than the Royal and more prolific than Moorpark, freestone, good blush and golden flesh.

General points to be attained in apricot: Extreme earliness, combined with size and firmness; also more even outline and uniform ripening; regular bearing.

CHERRIES.—One cherry is by far the greatest in California and that is Napoleon Bigarreau, locally known as Royal Ann. This and the other, Black Tartarian, are together greater than all other cherries combined. And yet the queen cherry, which rejected the name of an Emperor, is far from perfect, for these are needed:

A self-pollinating Royal Ann; an earlier Royal Ann; a later Royal Ann; a surer-bearing Royal Ann. These requirements are, however, complimentary to the vari-

ety because of the recognition of its peerless canning quality and good shipping firmness. Still, an absolutely white cherry, with Royal Ann characteristics, is desired.

Black Tartarian is the standard for eating quality, combined with good shipping points; but the latter can be improved, for a variety is needed like the Tartarian, but with the carrying quality of Bing and Black Republican, with flesh hard and firm, and still fine and juicy.

Bing has the good quality of ripening throughout the tree, so that one picking cleans it, but Bing is rather shy at bearing in some places.

A larger early cherry has been desired, but that bids fair to be supplied in the Early Burbank, which is said to be as large and good as the Tartarian and the earliest cherry known. Another variety called the Nonpareil is making a wonderful sales record in the Vaca valley, where it originated.

A sweet cherry like the Black Tartarian blooming as late as the Morello type.

Of six cherries which lead in California three are chance seedlings—Black Republican, Bing and Chapman.

THE PEACH.—The peach is the greatest deciduous fruit of California from a commercial point of view, and varieties of it have naturally commanded keen interest. Twenty varieties which lead are given in the order of present popularity: Muir, Phillips Cling, Salway, Lovell, Early Crawford, Tuskena (Tuscan Cling), Foster, Elberta, Late Crawford, Orange Cling, Runyon's Orange Cling, Susquehanna, Nichol's Cling, Seller's Golden Cling, Lemon Cling, St. John, Henrietta, Mary's Choice, Hale's Early, Alexander, Heath. Of the first four three are California seedlings.

In spite of the valuable points of the score of varieties named and another score which follow them in favor in different parts of the State, there are still specific requirements to be met by varieties not yet widely known here.

Better early varieties, with richer and firmer flesh and free stones.

Two good clingstones to ripen between Tuskena and Phillips, and as good as they are.

A good yellow freestone, to bear and hang on the tree as well as the Muir, but to ripen just before the Elberta.

A good yellow freestone between Late Crawford and Salway. This is one of the worst breaks in the peach crop.

Larger clings with the character of Phillips; also one with small pit, color, flavor and texture of Phillips, to ripen with the Lemon Cling.

A freestone to ripen with Early Crawford, and with same size, flavor and juiciness, but with the color and small pit of the Muir, and free from the red of the Lovell.

As good a freestone as the Lovell, to ripen before or with Tuskena.

A good bearer, free from curl leaf, to replace the Yellow Crawford.

A yellow cling as prolific as Tuskena and with free double pistils, to come between Tuskena and Henrietta.

An Elberta which does not dry away so much and in such danger of overdrying.

Varieties as good as Muir, but both earlier and later.

Good yellow freestones, better quality than Elberta, but other points as good, ripening before Salway. This gap is now chiefly filled with clings.

A yellow peach, early as the Triumph, but with a higher color, larger and freer.

Canners need freestone peaches like the Lovell and Muir to ripen with the Foster and Crawford. The Foster, Crawford and Salway have the undesirable character of redness at the pit in varying degrees. No peach that ripens from within, as the Salway does, is suitable for canning. Of clingstones, from a canner's point of view, Nichols' is good; the pit of Seller's is too large and irregular. The Tuskena comes at the right time, but is too small, and if forced with irrigation splits at the pit. The Henrietta is large and slightly, but has greenish flesh and is very red at the pit. The lemon cling is small, and often red at the pit. The Phillips answers every requirement of the canner—good shape, yellow flesh, small pit and no red center. But the grower needs a Phillips, which is a stronger grower and free from curl leaf. Canners require cling peaches averaging two and a half to three inches in diameter.

It is a very interesting fact that varieties of the Peento, or China Saucer strain, like Luken's Honey, are exhibiting disposition to start irregularly in the winter heat of some parts of the State, and may prove valuable for local markets by bearing when others are very irregular because of winter activity and spring die-back. The Elberta is, however, doing better than most others under such conditions.

PEARS.—The Bartlett is of much greater importance in California than all other pears combined—in fact, it

is four times as great in indorsement as the Winter Nellis, which stands next to it in favor. Commercially, on the basis of acreage and profit, it is many times as great as all others combined. Everything, then, is measured in the terms of the Bartlett, and the only substitutes for the Bartlett must be some improvement of itself, viz:

A Bartlett three or four weeks earlier; a Bartlett more uniform in size and higher color; more solid than the Bartlett and with better keeping and carrying quality; a Bartlett two or four weeks later, but otherwise the same; a blight-resistant Bartlett; a stronger growing Bartlett.

And yet some manage to stray away from the Bartlett type a little and ask for a Clairgeau that hangs well; a Du Comice that bears well; a summer pear with quality and good appearance that resists blight; more sweetness and size for the Madeline; more tenderness and sweetness into the Keiffer, or get the hardiness and bearing quality of these into the Bartlett. And thus the circuit returns to the Bartlett. But the Bartlett is sadly stricken with blight, and a great fight is on to save it. Ordinary blight-proof pears will not suit California. The uses of the Bartlett cannot be met by anything which has been thus far brought forward as blight-proof, but plant breeding may in time attain such an end.

PLUMS.—The foremost of the California plums is Wickson, which local growers are disposed to consider as Mr. Burbank's best achievement. In the inquiry upon which this paper rests, the plums are approved in the following order: Wickson, English Pond's Seedling (locally known as Hungarian prune), Kelsey, Yellow Egg, Tragedy, Washington, Satsuma, Burbank, Jefferson, Climax, Grand Duke, Clyman and Coe's Golden Drop. A score of others are locally favored. The varieties named are almost wholly table and canning varieties—chiefly the former, for the canning of plums is not large. For shipping purposes there is still plenty of room for improvement in plums. The following are specific needs:

A variety like Tragedy or Hungarian, to ripen the last of August or first of September.

A large white freestone, very early and prolific, as Tragedy is in central coast valleys; a substitute for Tragedy of high quality and bearing better than Tragedy in the interior valleys and foothills; a cross of Clyman and Tragedy, early as Clyman and with quality and general goodness of Tragedy.

A Hungarian which does not come double and of a finer flavor.

Better plums of blue color for shipping, as for these uses blue is first and red second.

A Kelsey which will bear, color and ripen well.

Varieties with as good keeping qualities as some of Burbank's varieties, but richer quality; a variety of the same season and as good in all respects as Shiro, but with the color of Sultan.

Later blooming varieties of acceptable shipping characters, better, stronger-growing trees, better foliage and stronger wood.

One of the chief services of Burbank's work with Japanese plum blood is in furnishing varieties which do well in Southern California, where the domestic varieties are almost sterile. Improvements in these districts are still called for: A good standard variety between Chabot and Kelsey; a Wickson which is more productive; a Burbank with better cooking quality; a Chabot more regular in bearing; a Hale which has more color. Wild goose blood seems also a good element for Southern California.

PRUNES.—Prunes are differentiated from plums in California by the suitability of the latter to drying with the pit in place without fermentation. For nearly a half century growers have striven for a variety which would average better size than the French prune (prune d'Agen), but none as yet combines the flesh points, sweetness and regularity in bearing of that variety with greater size. At least a score of aspirants have appeared and failed, and the French prune wins more favor in our inquiry than all other varieties combined. Next to it stands another French variety, Imperial Epineuse, but this has faults, as the record will show. The following are urgent needs:

A French prune of larger size; a French prune of earlier ripening; a French prune with a smaller pit; a selected, improved, pedigreed French prune.

An Imperial that is not shy in bearing and growing worse in this regard as the tree becomes older; an Imperial that does not require such extra care in curing to escape fermentation.

A variety like either Silver or Robe de Sergeant, but a good bearer.

A variety as early as Sugar which does not discolor at the pit on drying, and has the flesh points of the French.

GRAPES.—Raisin and table grapes, the latter chiefly for Eastern shipments, are included in the review. Wine grapes are a separate affair and too elaborate to be entered upon in this connection. The varieties which lead all others by a wide margin are, in the order of approval, as follows: Muscat of Alexandria, Flame Tokay, Black Cornichon, Thompson's Seedless, Emperor, Malaga, Rose of Peru, Black Morocco, Chasselas and Verdal. Recent experience with shipping grapes has been very satisfactory and planting is proceeding rapidly. There are fine points in the most popular varieties which need amendment, namely:

A seedless Muscat, a Muscat with fuller clusters, a more robust Muscat for mesa situations in Southern California; a Muscat not subject to coulure.

A Tokay that will color well in all situations; a Tokay not disposed to crack and slip skin after fall rains; a Tokay to resist sunburn; a Tokay with looser clusters.

A Thompson Seedless with better bearing character; a seedless grape earlier than Thompson and twice as large.

An Emperor with berries better distributed in the cluster; a seedless variety of the size, color and carrying quality of the Emperor.

LEMONS.—Out of the dozen seedling lemons which have risen to prominence in California during the last quarter of a century only three survive and now constitute our commercial product. Of these the Eureka is first and greater than the two following varieties, the Lisbon and Villa Franca, combined. But even present excellence leaves things to hope for, viz:

Eureka and Villa Franca bear most summer fruit, but we need more of this habit to escape long storage and curing; also more resistance to frost; varieties less liable to injuries from bruises in handling; varieties with fewer thorns and full fruiting in the center of the tree; more resistant to gum disease at the ground surface.

A Eureka with more uniform shape and smoother skin, with color like the Lisbon.

A Lisbon with fewer or without thorns, and the hardiness of the present variety.

ORANGES.—Of the score of oranges faithfully tested since the beginning of our citrus industry all local seedlings which were thought worthy of naming have disappeared, and only two introduced varieties survive in large commercial form. They are the Washington navel and the Valencia late (Hart's Tardif). Unnamed seedlings survive only to fill gaps between these. But the two favorites are believed to be susceptible of extension and improvement, viz:

A later Washington navel, to be good after May 1st; an earlier Washington navel, to be good before January 1st; a Washington navel that will hang on the tree like the Valencia; that will not crack on the tree; that will stand hot sun better; that will be free from puffing, as the Valencia.

A Valencia that will not turn green after maturing; a Valencia that will bear more regularly.

A large seedless variety to bridge the gap between the Washington navel and the Valencia, and displace seedlings ripening at that time; also a variety that shall be as good as the navel and late as the Valencia.

A St. Michael not disposed to drop too early.

OTHER FRUITS.—The list of fruits commercially grown in California is so large that I dare not pursue them further at this time. I must say in closing that the various berries, nuts and minor semi-tropical fruits present quite as suggestive opportunities for amelioration from a commercial point of view as those to which I have drawn your attention. There are also many significant reflections which I would like to make in closing as to the duty of propagators, to multiply only the best types of the varieties they undertake; to assure themselves of the demonstrated excellence of the sources from which they take buds and scions, and to become, as far as possible, critical and conscientious pomologists as well as trade leaders. The nursery is the foundation of the orchard and the fruit trade, and it must be sound and true in all the requirements of science and morality if our fruit production and commerce are to reach their widest and most prosperous development.

THE MARKETS

Wheat.

Considerable new grain is offering at the present time, but as a rule sellers and buyers are far apart in their ideas as to values, and but little cash trading is being done. Some little interest is shown in December wheat though the transactions do not show a total of large volume. A few ships have been chartered along the coast for early loading, but as yet exporters have not begun to buy. Crop reports from California continue

as heretofore, while advices from the north are not encouraging as to the size of the coming crop. It is predicted that the yield in the Pacific Northwest will probably equal the large yield of last year. In Oregon and Washington it is expected that harvesting will begin during the present week. European advices are a little brighter with slightly better prices being quoted both in Europe and in the Eastern markets of the United States. This seems to be due to rather unfavorable crop reports which have been coming in from various parts of the world.

Flour.

Millers report that there is practically no change in the flour market. The tone continues dull, but prices are firm. There is little demand for any grade except in small lots for immediate use. There is a general belief that the jobbing trade is low in stocks, but is using up its supplies in order to stock up at lower prices later on. The belief is that with the new wheat crop, prices will drop. Prices have changed very little from those of last week, mills holding about steady, but buyers are out of the market for the time being. From the millers' standpoint the situation is apparently very strong. The foreign demand is very small, and offers received are very unsatisfactory to the mill-owner. As prices of wheat have shown no change, millers are unable to buy any stock unless they pay a premium over quoted rates, and this compels them to reject offers for foreign account on lower bids than are quoted. A few straggling orders have come to hand, mostly for standard brands to replenish stocks for Japan account. The China demand is practically nil. Some flour is going forward from Portland for Siberia, but not enough to cause any extra firmness in the situation. Heavy shipments from the north are being made to Central and South America, mostly on old orders.

Barley.

Considerable arrivals of new barley have been a feature of the market this week, and as a result there has been a weaker feeling. Futures have been dealt in to some extent, the prices showing but little change. The general idea is that notwithstanding the large crop the market will be in pretty good shape throughout the season. Brewers, both in California and in the northern end of the coast, are showing interest in choice stock, and feed barley is also in fair demand, considering the season. Good crops are reported all along the coast.

Oats.

The oat market is moving along about as heretofore, with light stocks and an average demand. Old-crop oats are now out of the market, and new-crop red spot are being sold all the way from \$1.15 to \$1.37½, with lower terms for shipments to arrive. In the North the outlook is for an unusually large crop, and dealers in Portland are counting on eliminating Eastern purchases hereafter. On the whole, the importations from the East have not given entire satisfaction.

Corn.

The corn market is without new features, and quotations, though varying slightly, show but little change.

Rye.

New-crop rye has been offered on 'Change during the week, bringing from \$1.25 to \$1.30. The offerings were, however, small, and prices for the new crop can hardly be regarded as definitely fixed.

Beans.

The prevailing hot weather forbids much interest being shown in dried beans, and quiet rules, though the market is fairly firm. The crop outlook continues good. There has been some selling of pinks, and prices are a little weaker in consequence of unusual supplies being forced on the market. Limas have also declined slightly. Blackeyes are firm, owing to short supplies.

Hay.

During the past week the hay market has been rather uninteresting. Receipts have fallen off considerably, being only 2920 tons in comparison with 3350 tons for the week preceding. Dealers admit that the market could readily have absorbed heavier shipments, as receipts are only sufficient to keep the trade supplied. Reports from the interior indicate that hay is accumulating at many country points, being held back by the shortage of track room in San Francisco. The fact that large quantities of hay are held in the country seems to be affecting the market in San Francisco, and while prices are unchanged, dealers claim that the tendency is downward. These dealers continue to predict a decided drop, but with town trade absorbing all arrivals, growers are becoming a little skeptical as to these predictions. During the last week a little choice old-crop hay came in and was sold at fancy figures. Of the new-crop hay it may be said that prices vary considerably, owing to the divergence in quality.

Millstuffs.

The demand for millstuffs is reported as slow, but prices show no change. Some of the large mills north are operating on part time, and there is an accumulation of offal. These mills are now in position to stock up for fall trade, when the demand will be very good. In fact a shortage is anticipated in California in the fall. Mills up north find no difficulty in disposing of their output at home, and cannot be depended to help out in California.

Bags and Bagging.

The bag situation has not changed during the last week, but the situation is certainly not so bullish as it was two or three weeks ago. Prices are maintained, but the feeling that farmers are already pretty well supplied seems to be general. Governor Pardee states that the sales of San Quentin bags so far this year have amounted to upward of 4,100,000 bags. Reports from Portland are to the effect that approximately 10,000,000 bags have been imported there during the present season. No great change is now anticipated unless it should transpire that a considerable number of farmers have been holding off and should suddenly come into the market for extensive supplies.

Hops.

The chief interest of the hop men is now in the growing crop. Advices indicate that this will be abundant in most growing sections in California. The previous estimates of 2000 bales for Sonoma county still seems to be about the closest approximation to the quantity of the new crop there. Picking throughout California is expected to begin at about the usual date.

Poultry.

Poultry bids fair to pick up from now on. Reasonably good prices are obtained for the friers now coming in. All the coops shown here lately have come from this State, but a couple of Eastern cars are looked for shortly. With a little cooler weather the demand for poultry is bound to begin now, and once really started, it will in a short time regain about all of its old proportions.

Eggs.

The price of the best eggs has eased off a cent, and the continued hot weather killed all calls for any other kinds. The offerings are numerous, but takers are in good numbers, and business as a result, in the market for good eggs, has been fairly active. There is some anxiety that the threatened extension of the sailors' strike may in the end seriously interfere with the delivery of eggs, but as yet there is no sign of any such result.

Butter and Cheese.

Butter demands were firm this week as a whole, and the price rose one cent. Plenty can be had of the best grades, but there is only a slight call for any other kind. Dairy butter is offered in plenty, and dealers can't get over twenty cents for it. The cheese market is very firm, and enough is offered to fill all demands readily.

Vegetables.

Although there are plenty of new potatoes on the market, the best are selling for nearly 1½ cents a pound. The up-river floods have covered up hundreds of acres of potatoes, and the total crop will be seriously shortened by the damage known to be done. The dealers report inability to move the sweet corn offerings and further state large amounts exist at points in the interior that cannot be disposed of. The situation is the same regarding string beans, and the rest of the summer vegetables. Onions continue at former prices, with very little demand for the average run. Miscellaneous vegetables are on the whole weaker than they were a week ago.

Fresh Fruits.

Apples are beginning to be regarded with interest by the dealers at this time, and those which they hold when in good condition, are finding ready takers. The supply of apricots and peaches is tapering off a bit, and few cherries are shown for sale. Some pineapples from Honolulu are shown and are reported as selling very well. Not much was heard of the activity of the canners, but it is presumed that nothing sensational has developed in those quarters. Melons of all sorts are meeting fair demand, and prices here are firm. High prices at the orchards seem to be the rule in nearly all fruits. Peaches are selling in country orchards at as high as \$60 and \$62.50, and pears are reported to be bringing \$75. The demand for grapes for the wineries is also going to affect the fresh grape market to a large extent. The fruit canners, in spite of the destruction of the San Francisco canneries, are taking large quantities and bidding against each other. The strike on the water front is interfering with shipments to a certain extent, but so far the San Francisco trade has been well supplied notwithstanding.

Dried Fruits.

Trading in prunes is now dull, the principal interest being centered in the coming crop and the new prices which will be demanded. The growers in Santa Clara county are endeavoring to take united action, though as yet no organization has been effected. Sales of futures in Santa Clara county have been on a basis ranging from 2¼c to 2½c. The first dried apricots of the season have been shipped East from Kings county, and it is expected that these will bring fancy prices. Spot conditions in dried apricots and peaches are very quiet, owing to the practically bare market. As in the case of prunes, nearly everything done in these lines is in futures.

Citrus Fruits.

Oranges are looked upon now with considerable disfavor, and owing to the poor condition in which most arrivals are found, there is slight call for any. Lemons are in good condition, and some activity is shown in moving the steady arrivals. Little grape fruit is now on the market. The question of marketing the coming orange crop is a serious one, and the threatened dissolution of the selling agencies leaves conditions a little uncertain at the selling end. However, the next crop is a long way off, and it is possible that the growers may get together in the mean time.

Nuts.

Practically no addition has been made to the stocks of nuts on hand, and as a result, the market here is about bare. Reports from growers speak of continued good prospects throughout the State as a whole. The walnut crop of Southern California is placed by growers at about four-fifths of last season's crop, although it is admitted that accurate estimates cannot be given before August 1st. The large handlers of nuts now have their buyers in the country, contracting for almonds, and several of these are making their contracts, leaving prices to be fixed according to the market basis at the time the nuts are taken over.

THE STOCK YARD.**OSTRICH FARMING IN ARIZONA.**

By Watson Pickrell, Tempe, Arizona, in the Yearbook of the U. S. Department of Agriculture.

Introduction.—Ostrich farming in the United States is really only in its infancy. It has been only 23 years since the first American ostrich farm was started. The early attempts met with varying degrees of success. The pioneer breeders in this country had to get most of their knowledge from their own experience. In fact, more than half the ostriches now in the United States are the progeny of a single pair owned in Arizona in 1891. Great progress has been made in the last five years, and there are now (October, 1905) 2,200 ostriches on farms in the United States. Of these, 1,540 (including chicks of 1905) are in Arizona, and the remainder in California, Florida and Arkansas.

Where good alfalfa pasture has been available the birds bred in America have grown larger than those first imported. A full grown fat ostrich will weigh from 375 to 450 lb. He will stand 8 ft. high, but can easily reach to a height of 10 or 11 ft.

Ostriches thrive best in a warm, dry climate, but can be grown in any of the Southern States and Territories in this country. In a moist climate they should have protection from cold and rain.

Salt River Valley, Arizona, is thought by many to be the best location in the United States for ostrich farming. Climatic conditions are favorable to the health of the birds, yield and quality of feathers, and the production of alfalfa for green feed the year round.

Historical Sketch of the Ostrich in Arizona.—The first ostriches brought to Arizona came from the Cawston importation, and were shipped from California in 1888 by M. E. Clanton & Co. There were 13 in the troop, 2 old ones and 11 young birds. While the ostriches were being transported from the railroad station to the ranch 10 of the young birds were smothered. The men, knowing nothing of ostriches, took double precautions to prevent their escaping from the wagon—they put hoods over their heads and a canvas over the wagon. The weather being extremely hot, 10 of the young birds died before they were transported four miles. Before the old pair made a nest the female ostrich died from an accident, which left only the old male and a young female. In 1891 the first ostrich was hatched in Arizona. The birds had then passed into the possession of Josiah Harbert, and the Arizona ostriches remained under his control until 1896, when they were sold to the Arizona Ostrich Company. At that time there were 123 ostriches in the troop. W. S. Pickrell, of Phoenix, was the manager of the ostriches for two years. Under Mr. Pickrell's management the ostriches increased at the rate of 11 to a pair of breeding birds, which was the largest increase ever made

on an Arizona ostrich farm, or even in America. Over 75% of the birds were hatched in incubators.

In 1898 the Arizona Ostrich Company sold its entire troop of over 300 ostriches to Messrs. A. Y. Pearson and M. J. Taylor. These gentlemen purchased 300 ostriches from the Fullerton, Cal., farm, which birds they brought to Arizona.

The next year (1899) Mr. Pearson bought Mr. Taylor's interest. In 1903 Mr. Pearson sold to W. S. Pickrell & Co., of Phoenix, 21 pairs of breeding birds for \$16,800. Within two years W. S. Pickrell & Co. had sold \$30,000 worth of young ostriches, the produce of the 21 pairs.

There are six ostrich farms in the Salt River Valley, Arizona, and on these are all the ostriches in Arizona. They are all owned by the following incorporated companies: The Arizona Ostrich Company, the National Ostrich Company, the Phoenix-American Ostrich Company, the Big Five Company, and the McNeil-Wiley Company, all of Phoenix, Arizona; and the Tempe Ostrich Company, of Tempe, Arizona.

The description of methods which follows is based almost entirely on the experience and observation of the writer, and applies especially to ostrich farming as practiced in Arizona.

Egg Laying and Incubation.—Ostriches come to maturity when about four years of age. The female matures from six months to a year before the male, but she will seldom lay a fertile egg until she is three and a half years old. The nest is a round hole in the ground which the male scoops out with his feet. At first the female may not take to the nest, but may lay her first eggs on the ground, whereupon the male will roll them into the nest. Generally, after the male has put three or four eggs into the nest, the female will lay there. In about 30 days she will lay 12 to 16 eggs, and will be ready to commence incubation.

Incubation under domestication is carried on in two ways—by natural and artificial means. Some growers prefer the former method, others the latter. Either has been found to yield satisfactory results with fertile eggs. About 42 days of very careful attention are required for good results.

In natural incubation the male takes a prominent part, covering the eggs 15 or 16 hours out of the 24. He will usually go on the nest about 5 in the evening and remain there until 8 or 8:30 the next morning, the female taking her turn during the day. It is thought that the color of the sexes has had something to do with developing these instincts. The male, being black, is not so easily seen at night, and the female, being drab or nearly the color of sand, can not be so readily seen in daylight. The male usually begins sitting three or four days before the hen stops laying. If the weather is cold during the laying period the male may often be found covering the eggs at intervals during the night to prevent them from becoming chilled. The birds are also very watchful in the warmest season to prevent the eggs from becoming overheated by the sun. Often, in the heat of the day, one or the other of the old birds may be found sitting on its ankle joints with both wings extended to shade the eggs from the sun. The careful ostrich farmer should make this work unnecessary by providing artificial shade during the hot season. The birds sit very much closer to the nest during the first half of the incubation period, the internal heat of the eggs making this less necessary during the last half. As is usually the case with all eggs in a dry climate, the shell of the ostrich egg becomes dry and hard, and very difficult for the chick to break. When the time arrives for the liberation of the young, they will be heard to chirp and to move in the shell. The parent bird seems to understand the situation, and will often crack the shell with its breast bone, sometimes taking the young bird by the head and drawing it out of the shell. Sometimes three or four days elapse between the hatching of the first and the last eggs in the nest. During this time one or the other parent bird takes care of the chicks while the other is attentive to the nest. Owing to the liability of injury to the young birds by reason of the anxiety of the parent birds, it is a good plan after the first eggs have hatched to remove the remaining eggs to an incubator.

Artificial incubation can be successfully carried on with any good, well-regulated machine that will hatch eggs of common fowls, provided, of course, it is constructed on a large enough scale to accommodate ostrich eggs, which are 5 in. in diameter and 7 in. long. It has been found best to use an incubator which will hold only 30 to 35 eggs, as in case of a blunder or an accident to the incubator the loss will be comparatively small. The incubator should be heated for two or three days before the eggs are put in, to see that everything is in proper working order. The incubation should be started at a temperature of 101° F. In three weeks this

temperature will be slightly increased by the heat generated in the eggs themselves. Every egg should be turned at least once or twice a day. To be on the safe side it is well to adopt the rule of turning the eggs three times daily.

The regulation of the temperature is not the only thing to be considered in hatching eggs in an incubator. The matter of moisture presents quite a serious problem. Inside the shell of the egg are two fibrous coats, of which one adheres closely to the shell and the other incloses the contents, there being a small air space between them. This air space should be carefully watched by the attendant, as its size indicates the moisture condition of the egg. If this space becomes abnormally large, small pans of warm water should be placed in the incubator; if it becomes too small the moisture should be reduced. An intelligent and watchful attendant will experience no difficulty in this matter. Moisture pans are seldom required before the fourth week.

In a warm climate the incubator house should be so constructed as to be as cool as possible and at the same time free from drafts and not subject to sudden changes. During the period of incubation the attendant should observe the growth of the embryo at least once every two days. This he can do by shading the egg with the open hand and holding it to a lighted candle. Careful observation will enable him to detect and remove the infertile eggs by the end of the second week; but whenever there is room for doubt, the egg should be allowed to remain longer, perhaps to the end of the third week, when the internal heat of the eggs will be sufficient to unmistakably indicate the live eggs. Near the end of the sixth week the eggs should be watched more closely. By placing an egg to the ear one can hear the unhatched chick scratch the inside of the shell and chirp; also the air space will be observed to become filled up. It is then time to crack the shell and thus aid the chick in liberating itself.

Care and Feeding of the Chicks.—It is not well to suddenly transfer a newly hatched chick from the incubator temperature of 101° to that of the open air. A well-ventilated brooder kept at 90° F. is the proper thing for the first 24 hours, after which the temperature may be gradually brought to that of the outside air. The chicks should never be allowed to become damp or cold, and they should not be fed for the first three or four days, but they may be allowed to pick up sand and gravel. Dry feed is preferable for the first week. Cracked wheat and moistened bran are excellent, but the chicks should never be given feed which has begun to sour. The inclosure should always be kept clean. At the end of the first week green alfalfa cut very fine may be fed, but not too freely at first. It should not be allowed to become dry, as fresh feed should be the ostrich farmer's watchword at all times.

Young ostriches, like young chickens, should be housed and protected from cool drafts until they are two or three months old, the length of time depending somewhat on the climatic conditions.

Plucking and Sorting the Feathers.—The ostrich is plucked the first time when six months old, and should be plucked about every eight months thereafter during its lifetime. The only feathers removed are those of the wings and the tail. The process of plucking consists in cutting the tail feathers and one row of the largest quill feathers in the wing with pruning shears, and drawing by hand those of the remaining two or three rows in the wing. Two months later the quills of the cut feathers may be removed.

At plucking time the ostriches are driven in from the pasture and placed in a small pen surrounded by a tight board fence 5 or 6 ft. high. The plucking box is about 4 ft. high, 20 in. wide, and 3½ ft. long, open at one end and closed with a door at the other. An ostrich is caught and a hood placed over its head. An old black stocking makes a very satisfactory hood. The hooded bird is very easily handled. It is placed in the plucking box with its head next to the closed door. The plucker stands behind the bird while removing the feathers. This is necessary, because the ostrich can kick or strike very hard, but it always strikes out in front and never behind, so that the plucker is perfectly safe if he stands in the rear.

When removing the feathers from the ostrich, the pluckers usually tie in a bunch the feathers of each length as they are taken from each bird. When through plucking, they have a grading table with enough compartments in it to hold all the grades and lengths of feathers, which are many. The size of each compartment is about 4 in. wide and 4 in. deep, and the length varies from 4 to 30 in. In sorting, the feathers of the male are kept separate from those of the female. The former are the more valuable. Manufacturers in this country usually request that the feathers be graded as nearly as possible as they are in the London market,

where nearly all the feathers of the world are marketed. A London report shows the following classification: White, femina, bayocks, black, drab, floss, spadones, and boos, with numerous subdivisions and grades.

The value of the American feathers depends on the London market. In an American factory they will bring 15% more than the London price, plus the freight charges. In October, 1905, "white primes" and "blood feathers"—the most valuable—sold in London for £30 sterling (\$146) per lb. It takes about 90 of these feathers to weigh a pound. The "white primes" and "blood feathers" are taken from the males, as well as most of the valuable "white firsts," though occasionally a female bird will have what the feather men call a "first white." The black feathers are plucked from the male birds and the drab from the females. "Spadones" are chick feathers, the first plucking. "Boos" are tail feathers. "Bayocks" come mostly from the male birds. The shortest drab feathers, which are frequently used in making feather dusters, are worth about \$4 per lb. An average ostrich will yield 1½ lb. of feathers annually.

The United States is one of the largest consumers of ostrich feathers in the world. During the fiscal year 1903-4 there were imported into this country \$2,292,515 worth of "raw" or "unmanufactured" feathers. The feathers produced in America are fully as good as those coming from Africa, and it is claimed that they are broader and finer looking, though some manufacturers contend that they are not as strong and tough as the wild feathers. There seems to be no reason why ostrich farming may not be developed sufficiently in Arizona and California alone to supply all the feathers consumed in America.

Periods of Life and Markings.—Ostriches are called "chicks" until six months old, or as long as they have their first crop of feathers. From then until one year old they are called "young birds," and from one to four years they are known as the "plucking" or "feather" birds. It is difficult to determine the age of an ostrich when it is more than three years old.

Handling and Feeding Ostriches.—Lands used for ostrich farms in Arizona are worth from \$40 to \$125 per acre. As irrigation is absolutely necessary for farming here, the land value depends mainly on location and water rights. The annual cost of water is from 50c. to \$2.50 per acre, depending partly on the cost of bringing the water from the river to the land and partly on whether the canals are owned by a corporation or by the owners of the land. The land used for growing alfalfa is usually a sandy loam.

Young ostriches are usually kept in troops of 25 to 50. When they are one year old the males should be separated from the females. When they are three and a half years old the birds should be paired off, each pair being placed in a separate inclosure, which, in case the birds are to graze on alfalfa or other green food, should be large enough to furnish them sufficient food. If they are fed on dry food the inclosure need only be large enough to allow plenty of exercise.

The usual way to fence an ostrich farm is to use a woven wire for the outside fences about 5½ feet high and with meshes small enough to keep out wolves and dogs. The fences used to divide the farm into small paddocks may be about 5 feet high and need not extend nearer than 18 inches to the ground. Paddocks for chicks should be inclosed with woven wire, which should extend to the ground, but need not be so high.

Ostriches are easily moved from one field to another by one person going ahead, calling them, and toling them on with grain, while another follows on a horse. The birds are very timid and do not like to be driven unless someone goes ahead of them.

After ostriches are over one year old no one should go among them without a brush or stick in the hand, as at times they will want to fight, and a person going among them is liable to injury unless he has something with which to drive or frighten them away.

One of the very best feeds for ostriches is alfalfa. One acre of good alfalfa in Arizona will maintain four ostriches without their receiving any additional feed. When pastured or fed on green alfalfa they are always healthy. The writer has known troops of more than 100 to be kept on alfalfa for three or four years without a death. Ostriches thrive well on any tender green forage, and they prefer the kind they have been taught to eat. Birds fed on hay, when turned out, often refuse to eat grass until they become very hungry.

For dry feed, alfalfa or clover hay cut up, mixed with bran, and moistened is excellent. An ostrich will consume about three pounds of hay and one pound of bran daily. They should have gravel and broken bone at all times. Occasionally an ostrich will get a piece of bone lodged in its throat. In such case, if the bone can not be worked up or down by external manipulation, the throat may be cut, the bone removed, and the incision sewed up. It will heal very quickly.

Ostriches may be fed on any kind of grain—corn, wheat, barley, oats, or peas. Some farmers feed a little grain while the birds are nesting. Ordinarily, however, if ostriches are in good flesh and have plenty of good green feed they need no grain. Besides, if fed much grain they are liable to become cross and hard to manage.

Although African writers assert that ostriches will live for years without water, Arizona farmers find that they drink water freely every day if it is supplied to them.

The Flesh and Eggs as Food.—The value of the ostrich as a domestic animal depends on its production of feathers for ornamental purposes. It is hardly probable that the relations between supply and demand will so change as to make the ostrich more valuable as a source of food in the form of meat and eggs. The flesh of the domestic bird, however, is said to be much relished by those who have eaten it. The eggs are fine for making omelets and are good scrambled. One egg will make as much omelet as 2½ dozen hen eggs. An ostrich has been known to produce over 300 pounds of egg food in a year.

Age of the Ostrich.—Nothing is positively known as to how long an ostrich will live. Some writers claim that it will live one hundred years. Ostriches which are known to have been in captivity for forty years are still breeding and producing feathers. It is the experience of Arizona farmers that among birds having good nutritious green feed deaths seldom occur except as the result of accident. A dog or other small animal will sometimes frighten ostriches and cause them to run into the fence, which may result in a broken leg. When this happens the bird may as well be killed, as few if any ever recover from such an injury.

The Value of Ostriches.—The question most frequently asked by visitors to an ostrich farm is, "What is an ostrich worth?" The somewhat curt reply usually given is, "The birds are not for sale at any price." The day has not yet arrived when the American grower is ready to part with his birds as the grower of other animals does. The value of the ostrich has only begun to be appreciated. Practically the only inducement that will bring an ostrich farmer to the point where he will sell birds is lack of available pasture for them. Ostrich farmers may name the estimated value of their birds, but there are few who will sell the birds at the prices named. Chicks six months old may be set down as worth \$100 each; one-year-old birds, \$150; two-year-olds, \$200 to \$250; birds three years of age, \$300 to \$350, and birds four years old, the age at which they pair, \$800 or more per pair.

Is Ostrich Farming Profitable?—"Does ostrich farming pay?" This question is asked by almost everyone who visits an ostrich farm. When an acre of alfalfa will furnish a home for four birds, with food enough to maintain them; when an ostrich will yield annually 1½ pounds of feathers, with an average value of \$20 a pound, and from 36 to 90 eggs, which may be used for incubation, or may furnish egg food at the rate of 3½ pounds to the egg if the owner does not wish to increase his troop, readers may be left to decide for themselves as to the profitability of the industry.

HOLSTEIN FRIESIAN SALES.

Mr. F. L. Houghton of Brattleboro, Vt., reports transfers of registered Holstein cattle in California as follows:

COWS.

Armona Lonnie, J. F. Miller to W. H. Breeze, Modesto. Dolly Alma Strother, J. F. Miller to W. H. Breeze, Modesto.

Kaastra Daw's Abbess, J. C. Rice to A. D. Owen, Fresno.

Cleopatra Fox 3d, Jenne Dowager, Lady May Mercedes Aaggie, Lady Wayne Mercedes, La Reina Maud 2d, Lena Hartog Inka, Mandel Wayne, May Peoples, Roxy Mercedes Mechthilde, from J. H. Williams to C. T. Brown & Son, Portersville.

Edrie Queen Netherland, Ozro Mitchell to R. F. Guerin, Visalia.

BULLS.

Corrector of Riverside, Charles D. Pierce to Chris Storm, Watsonville.

Escalon De Kol, J. F. Miller to L. P. Jacobson, Modesto.

Grace Captain of Riverside, Charles D. Pierce to Dr. S. P. Blumenberg, San Francisco.

Paul America of Riverside, Charles D. Pierce to J. H. Harlan & Co., Woodland.

Professor of Riverside, Charles D. Pierce to State Insane Asylum, Highlands.

Rijaneta Barnum, Charles D. Pierce to the Holt Mfg. Co., Stockton.

Ruda Butter Boy of Riverside, Charles D. Pierce to Charles Rule, Jenner.

Ruth Butter Boy of Riverside, Charles D. Pierce to Charles Rule, Jenner.

Sir Vissar of Riverside, Charles D. Pierce to Agnew State Hospital, Agnew.

Waldorf Korndyke of Riverside, Charles D. Pierce to Hans Eskildsen, Ferndale.

Tula Pietertje Netherland, J. A. Yoakam to J. A. Aker, and from J. A. Aker to W. H. Breeze, Modesto.

Lamedora Ignaro De Kol, Dr. C. W. Evans to Wm. Niles, Los Angeles.

Pintada De Kol, Dr. C. W. Evans to Wm. Niles, Los Angeles.

Prince Martagon, The Board of Trustees of The Leland Stanford, Jr., University to A. Meister, Sacramento.

Ukiah Huska, The Board of Trustees of the Leland Stanford, Jr., University to Mendocino State Hospital, Ukiah.

Sir Mechthilde Burke, J. H. Williams to B. G. Blankenship, Tulare.

El Carmelo, R. F. Guerin to Alex Whaley, Tulare.

FROG FARMING.

To the Editor: Will you please tell me what you can about frog raising for market; where one could get a start, and what they eat. And is there money in the business?—SUBSCRIBER, Tehama county.

This subject is a very elusive one. There have been, from time to time, accounts of systematic frog farming here and there in California, but we have never been able to connect with the parties said to be doing it. We imagine the frog farming has been chiefly frog catching. We would like to be informed if we are wrong in this conclusion.

Frog farming is not easy. A few paragraphs from the United States Manual of Fish Culture will help you to appreciate the nature of the undertaking:

Suggestions for Frog Culture.

Frog culture must be of necessity a matter requiring time, patience, and an appreciation of the animal's habits and needs. So far as can be learned, attempts thus far made in the cultivation of frogs from the egg stage have been arrested at the period when the larva assumes the adult form. From this time the food must be living, and it generally consists almost entirely of insects. The difficulty, approaching impossibility, of furnishing these in sufficient quantity has been the great drawback. The placing about the pond of meat and decaying matter to attract flies has been suggested, but the contamination of the water by the poisonous matters of decomposition has counteracted all benefits produced. The frogs, failing in the supply of more natural food, have been compelled to devour one another.

To rear the tadpole is comparatively easy. Anyone may obtain a supply of eggs by visiting the stagnant pools in early spring with a dipper and bucket, but this method is said to be less advantageous than the stocking of suitable waters with a sufficient number of pairs of mature frogs. The young can be protected by building a close fence around the edge of the pond to exclude such enemies as raccoons and reptiles, while a screen must be provided, so that wading birds, whose long legs furnish them special facilities, cannot stand in the water and devour the helpless tadpoles. Any device to be effective must be so arranged that there is no room for birds or other animals to stand on shore or in shallow water, either on or under the screen, and at the same time it must allow the young to come to land, for if there is no opportunity for the tadpole to breathe the air at rest and exercise the legs, the period of metamorphosis will be indefinitely delayed. They have been kept in aquaria for years in the tadpole stage.

Food during this period is readily provided. If a shallow old pond is chosen, already stocked with organic matter, it will supply, unaided, food for a large number of frogs. This may be readily increased by supplying animal refuse, liver and such material, care being taken, of course, not to leave a surplus to putrefy and infect the water. The more abundant the food and the warmer the water, the more rapid is the growth, hence the desirability of selecting a shallow pond. The young should be separated from the adult frogs during this time, as they are eagerly eaten; and it is needless to say that the pond must be free from fish, turtles, snakes, and crayfish.

The critical period occurs at the time of metamorphosis. The creature is now abandoning its aquatic habits and has not yet a perfect apparatus for terrestrial life. Any slight disarrangement of the natural environment is liable to destroy the equilibrium. The rapid resorption of the tail furnishes matter for growth, so that food is not so much a necessity, but as soon as the terrestrial habit is fully assumed, live food is absolutely requisite, and should be furnished in liberal quantities. There seems to be no reason why this might

not be accomplished by transfer of the tadpoles to waters where natural food abounds. It is useless to attempt to supply this food artificially by any method at present known, neither has any device to increase the natural abundance of insects been practicable as yet. The pond should have a growth of rushes and other plants; wild rice (*Zizania aquatica*) has been recommended, but it might attract birds that would prefer young frogs and tadpoles to their vegetable fare. Shade is necessary. Such a pond will furnish natural food for a large stock of frogs, and give opportunity for successful breeding.

One of the most successful frog farms is in Ontario, in the Trent River basin. It has been in operation about 20 years and annually yields a comparatively large product of frogs. The waters were stocked by means of mature mated frogs. No attempt is made to confine the frogs until near the time for shipment to market. They are then taken alive at night, with the aid of a torchlight and confined in small pens that can be drained when the frogs are desired for market. No food is given, as this is naturally present in sufficient amount for successful growth. The species is the eastern bullfrog (*Rana catesbiana*); it begins to breed at the age of three years and reaches a remarkable size in four years. During the years 1895 and 1896 this farm yielded 5000 lb. of dressed frog legs and 7000 living frogs for scientific purposes and for stocking other waters.

While at present it would perhaps be advisable to limit practical attempts at frog culture to stocking natural waters with paired breeders, experiments in artificial methods should not be abandoned. There seems no reason why methods similar to those at present pursued in fish culture may not eventually be successful in the case of frogs.

THE FIELD.

FIELD CORN IN ARIZONA.

Mr. V. A. Clark of the University of Arizona Agricultural Experiment Station, gives an interesting account of tests of field corn which is suggestive for some parts of our own State.

Essential differences between corn growing in southern Arizona and in the East are in season of planting and in irrigation. The planting season is about July 15 to 20, although at the Experiment Station Farm we have matured yellow dent corn planted as late as August 7. At higher elevations, as in Graham County, planting time is about the middle of June. Planting should be done as late as may be without endangering the crop by frost before it is ripe.

A good yield is from 40 to 50 bushels of shelled corn to the acre, though as high as 75 bushels have been made. Corn planted in the spring does not, in most localities, do as well either for grain or forage.

Corn requires considerable water and should be irrigated often enough to keep it growing well. One successful grower remarks that the number of irrigations should be about five. For grain the seed is planted along a water line and while the corn is small it is irrigated through the planting furrows. After it is well started a single furrow is run between the rows. Occasionally a grower omits furrowing entirely and floods the corn like wheat and alfalfa. Of course, the corn should be cultivated after each irrigation.

For forage the seed is broadcasted very thickly, harrowed in and irrigated by flooding.

Three special difficulties arise in corn growing in Southern Arizona: Non-filling of the ears, commonly attributed to the drying out of the pollen or silks; smut; and corn ear worm. These special difficulties limit the selection of varieties.

The difference between varieties in resistance to a dry, hot climate, as shown in the filling of the ear, is great, ranging from perfect filling, as in White Mexican Flint and a few other varieties, to the setting of practically no kernels at all, as in the King of Illinois. The varieties which ranked low in filling in our tests were as follows: Canada Yellow Dent, Calico Dent, Early Eureka, Prairie Chief, Yellow Dent, Golden Beauty, Grimes' Beauty, King of Illinois, Boone County, White Cap Dent, White Rockdale, Compton's Early, Rhode Island White Cap, White Flint, Wills Jehn and Giant Long Flint. It will be noticed that this list includes several of the small early varieties from the extreme northern range of the corn-growing area.

The following varieties were most badly smutted in our tests: Canada Yellow Dent, Calico Dent, Prairie Chief, Yellow Dent, Golden Surprise, Gold Mine, High Protein Content Corn, King of Illinois, Nebraska Yellow Prize, Reed's Yellow Dent, Waterloo Extra Early, Boone County Special, Silver Mine, Snow White Dent, Rhode Island White Cap and Wills Jehn.

The following varieties were badly attacked by the corn ear worm: Canada Yellow Dent, Early Butler, Golden Beauty, King of Illinois, Boone County Special, Silver Mine, Snow White Dent, White Cap Dent, White Rockdale, Large White Flint, Large Yellow Flint, White Flint and Wills Jehn.

A few varieties did not set many ears, most notably Iowa Gold Mine, Wood's Northern and Hickory King (from one dealer). But Hickory King from another dealer made an average showing. Iowa Gold Mine developed only one ear in the entire row and this was very scatteringly fertilized.

In tests herewith reported, 150 feet of row of each of 60 varieties was planted. The quantity is so small that no attempt was made to measure the yield, the relative productiveness of the varieties being merely estimated. In our tests the varieties which appeared to be the best adapted to our conditions, all things considered, and were among the most productive were: Chester County Mammoth, Large Yellow Dent, Queen of the Prairie, Griswold's Bronze, Mexican White Flint, King Philip, Kellogg and Blue Squaw. Four of these eight are flint corns and the other four yellow dents. Perhaps the best variety, all things considered, for this section is Mexican White Flint. This variety has been grown here for quite a number of years and has become acclimated. The ears fill very well, some of them being entirely capped over, and it is little attacked by worms or smut.

It is interesting to note that varieties of corn best adapted to the dry and hot climate of Western Kansas are among those best adapted to Arizona. These are Kellogg and Blue Squaw, both flint varieties which are planted in Western Kansas when dent varieties fail. The only points against them that we noticed are that they do not grow very large and therefore are only moderately productive.

Needless to say, the native squaw corns are well adapted to this climate. They are soft and are easily ground in the Mexican handmills or 'metates.'

Most bronze varieties distinguished themselves by their fine performance. Among such are Griswold's Bronze, Queen of the Prairie and King Philip, the last being about the second best variety tested. The ears were long and uniformly well filled and hardly attacked by worms or smut. But Iowa Gold Mine, a bronze yellow, did very poorly.

The highly bred strains of corn which are now being grown in the East for special chemical composition proved to be more susceptible to attacks of worms and smut and are more liable not to fertilize than are the less specialized and less highly selected varieties from the same region. It would seem that, hand in hand with the increase in protein content has come a decrease in ability to withstand untoward external conditions. This statement is not meant to imply, however, that high protein content corn might not be developed under Arizona conditions, were there adequate occasion.

Some varieties tend to make many small ears on the stalk, the most notable of these being Snow White Dent and Dewdrop Flint. To this class White Cap Dent also belongs, which in our test was fairly productive, but on account of the time required to handle so many more ears for the same amount of grain, would not be profitable.

The large southern white corns as White Rockdale and Mosby's Prolific did not as a class prove to be well adapted to our climate; and this in spite of the fact that the stalks were, perhaps, the tallest in the test. But this rank growth of stock is a merit when they are grown for forage.

THE IRRIGATOR.

SUGGESTIONS ON IRRIGATION.

By Mr. Frank Thompson of the Corona Farmers' Club. "Water is king. Here is its kingdom." These familiar words were used for two or three years by a paper published in the great Imperial Valley. Since the words "here is its kingdom" have become too literally true, they are no longer kept before the public eye.

However, water is king, not only in the Imperial Valley, but over much of Southern California and other portions of the great West. To realize that some agent or element has wrought a marvelous transformation, we have only to remind ourselves that less than a century ago what now constitutes possibly the most valuable acreage property used for productive purposes in this country of incomparable wealth, was used by the Spanish and French sheep herders as grazing grounds for their flocks.

The development of water for these lands has made it possible to grow the magnificent citrus groves, the crops from some of which have, in the year 1906, sold

for \$1,000 per acre—not the grove, remember, but one crop of fruit. Of course, these are extreme cases, and do not properly represent the citrus business as a whole, but let us know what is possible under the most favorable conditions.

Without water the lands which constitute the citrus belt of Southern California would still be of comparatively little value. Intensive farming, the production of early fruits and vegetables, which always command good prices, will be done more and more upon irrigated lands. But this company is probably the most interested in the intelligent and economical use of water that we stockholders in the Temescal Water Company pay our money for.

Here I wish to say that soil conditions vary so greatly in different parts of our colony, changing seasons make so much difference in the same soil, that no specific rules for applying the water to the soil can be safely given. Of course the object to be attained is that each tree in the orchard get sufficient moisture to keep it in a vigorous, healthy state, so that its productive power shall constantly be at the maximum.

There are two conditions of soil which may prevent a satisfactory irrigation; either it may be so hard as to prevent the water from penetrating to a sufficient depth to keep the tree in a vigorous condition, in which case, of course, a large per cent of the water runs off the land and is wasted; or it may be so porous and loose as to make it difficult to get the water down to the lower trees in sufficient quantities for a thorough soaking before the water moves to the next grove, for with us we must irrigate while we have the water, not being able to keep it as long as we sometimes may need it. In the latter case we may have had no waste water worth mentioning, and yet be very far from having a satisfactory irrigation, because some trees are thoroughly soaked while others have little or no water.

Where one has a large orchard and can keep the water two or three weeks a very marked advantage is gained over an isolated ten acres which has the water two days in thirty or thirty-five, as the case may be. And by the way, we have abundant reason for thankfulness here in Corona, that the water gets around as promptly as it does in these later days. Seven years ago this summer we irrigated with 15-in. heads once in 50 days, and our assessments were just as high then as now.

Now for the practical work. We will suppose that we have 10 acres of grove and a 30-in. head of water for 48 hours with which to irrigate it. We want the land well furrowed; if possible, make the furrows so that when the water is turned in at the same flume it will follow the furrow to the bottom of the orchard without turning to the right or the left. Of course the number of furrows varies greatly with soil conditions. The least number I have seen used was two to the row; the greatest eleven to each space. Usually we have from three to six. I like to have as many furrows as I can get thoroughly soaked, starting the water in all at the beginning and letting it run in all continuously. After five years of experience I believe thoroughly in the zigzag furrow, which crosses the space lying between the trees that cannot be reached by the ordinary method of straight furrowing.

Theory and experience agree that a tree will have more vigor and productive power by making use of the patch of ground about 10x15 ft., which in our larger lemon groves would lie dormant during the later summer and fall months unless irrigated. We want our furrows opened to the flume, which must be thoroughly cleaned, with gates and stops regulated before the water is turned in.

In securing a good irrigation much depends upon getting a good start; thus we emphasize having everything in readiness. Where enough water for six or eight acres goes rushing down one furrow, possibly getting clear across the grove before it can be regulated, it silts the furrows over so that during the entire irrigation it would not take more than half the amount of water that it otherwise would, and of course does not penetrate as deeply as it should. The ideal way is to have a gate in the flume to open for each furrow. But, alas, when there is too much trash in the water it is necessary to have the gates open more widely in order to prevent their clogging, so we must run two or three furrows from one spout. This necessitates very constant watching to keep the furrows running evenly, as a very small object, such as a leaf blowing in and drifting down to the dividing point, may turn too much water from one furrow to the other.

Now, having our water started in all the furrows, we want to get as even an irrigation as possible and still keep the waste water down to the minimum. Let us keep our furrows running just as evenly as we possibly can; go over, take notes and regulate before noon. The first day don't trust too much to the eye, some furrows take more water than others. What we want is to have

them get to the bottom of the grove as near together as possible.

Now the question of waste water. Some think it unnecessary to have any. I do not think it possible to get an even irrigation without having some waste water; it need not be a large amount. If two-thirds of the furrows are through the second morning it will keep you busy during the day to keep them running and get the rest through before night. The last night all the furrows should be running through, though of course it should be a very small stream at the bottom of the grove. It is well to have a few rows at the bottom of the piece if the streams are coming through too strongly.

On our large lemon trees, I believe by heavier fertilization and having more water and getting it more frequently we could get heavier crops of fruit. From the 15th of June until the first of October the large lemon trees should get water every 20 days to keep them at their highest production. During the summer six years ago we were able by reason of considerable extra water stock to irrigate between the regular irrigations, making the water come every 20 days. As a result not a leaf curled in the orchard during the summer, and in October we picked 25,000 boxes of lemons. An abundance of water would bring on our fall picking earlier, make it heavier, thus greatly increasing our profits.

The development of water for the arid and semi-arid lands of the great West is just in its infancy, and the not distant future will see portions of the Great American Desert supporting dense populations and with a productive power never dreamed of by the prairie States, famed the world over for their fertility.

THE DAIRY.

BUTTER STORAGE EXPERIMENTS.

Some extensive experiments in the making and storage of butter have recently been concluded by the Dairy Division of the Bureau of Animal Industry, United States Department of Agriculture, in an effort to solve some of the difficulties encountered in the butter trade. A bulletin containing a report of the experiments has just been issued by the Department.

Last summer about 6,000 pounds of butter was made in Kansas and Iowa by Mr. C. E. Gray, a dairy expert of the Department of Agriculture, and placed in cold storage in Chicago, where it remained until this spring. This butter was examined and scored at intervals by Professor G. L. McKay, the head of the dairy school of the Iowa State College, and Mr. P. H. Kieffer, assistant dairy commissioner of Iowa. Some interesting things were revealed by these tests, and while some of the old ideas were sustained, others were practically reversed.

Some of the questions as to which these were expected to give results were (1) the effect of pasteurization, (2) the amount of salt to be used, (3) temperature of storage rooms, (4) the use of cans hermetically sealed for storing butter, (5) the keeping quality of good compared with poor butter, and (6) the action of air in contact with butter in storage.

The butter was made from five lots of cream, three of which were sour when received at the creamery and

A Big Difference

One Minute's Washing as compared to at least fifteen. Wouldn't you like to save at least fourteen minutes twice a day? **One minute** with a cloth and brush cleans the absolutely simple Sharples Dairy Tubular Cream Separator bowl shown in the upper picture. It takes fifteen minutes to half an hour with a cloth and something to dig out dents, grooves, corners and holes to clean other bowls—one of which is shown in lower picture.



Washed in 1 minute

Count the pieces—notice the difference—and you'll understand why the one who has to do the cleaning prefers the simple Sharples Tubular.

There are other advantages just as much in favor of the Tubular. Write today for catalog V 131—it tells you all about the gain, use, and choice of a separator.

The Sharples Separator Co.

West Chester, Pa.

Toronto, Can.

Chicago, Ill.



Washed in 15 to 30 minutes

two sweet. From each lot of cream two lots of butter were made, one pasteurized and the other unpasteurized, and part of each lot of butter was lightly salted and part heavily salted. The butter was packed in tubs and cans, some of the cans being only partly filled, so as to test the effect of air. It was then stored at temperatures minus 10 degrees, plus 10 degrees, and plus 32 degrees F., and at variable temperatures, part of each lot being stored at each temperature. The butter remained in storage about eight months.

The results showed that butter containing low percentages of salt kept better than butter of the same lot containing higher percentages of salt. Butter in full cans and tubs at the lower temperatures scored about the same. At the higher temperature there was a slight difference in favor of cans. Butter in full cans kept better than that in cans only partially full. On the whole, butter held at the lowest temperature kept best, both when in storage and after removal from storage. Butter made from cream received sweet kept well while stored at the two lower temperatures, and also after removal from storage, giving results wholly satisfactory. Butter made from cream received sour also kept well at the lower temperatures, but deteriorated rapidly after removal from storage, giving, on the whole, results which were very unsatisfactory. The conclusion is that light salting and low temperatures and the use of cream received at the creamery in a sweet condition give much the best results for storage butter.

RULES FOR FOREST RESERVE.

To Forest Officers in Charge: Regulation No. 57 on page 58, of the Use Book, has been amended by the Secretary of Agriculture and is now in effect, as follows:

Reg. 57. Under authority given to the Secretary of Agriculture, regarding forest reserves "to regulate their occupancy and use and to preserve the forests thereon from destruction," the following acts are hereby forbidden, and declared to constitute trespass, punishable by fine and imprisonment:

(a) Grazing upon or driving across a forest reserve any live stock without a permit, except as otherwise allowed by regulation.

(b) Placing any fence or inclosure upon a forest reserve without a permit, except on patented land or upon a valid claim when necessary for the actual development of such claim.

(c) Making settlement or squatting upon land within a forest reserve.

(d) Building roads, trails, railways or tramways, and constructing ditches, dams, canals, pipe lines, tunnels, flumes, or reservoirs without a permit, except upon patented land, or upon a valid claim when necessary for the actual development of such claim.

(e) Erecting or conducting telephone, telegraph, or power lines, hotels, stores, sawmills, power plants, or other structures, or manufacturing or business enterprises, or carrying on any kind of work, within a forest reserve, except according to law and forest regulations and except upon patented land, or upon a valid claim for the actual development of such claim, consistent with its character.

(f) Wilfully tearing down or defacing warning notices of the Forest Service.

OVERTON W. PRICE, Associate Forester.

CEREAL CROPS

IS THE COMBINED HARVESTER DESIRABLE?

A question of no dubious import, says the Chico Enterprise, which is being discussed by the ranchers and farmers not only of this immediate vicinity, but of the entire Sacramento valley, has to do with the proper machinery to be employed in the harvesting of the wheat and barley crops. In short, shall the combined harvester be relegated to the past and former methods of heading, stacking, and, in turn, threshing grain, be reverted to?

The apparent lack of yield in the wheat crops of the few seasons just past has been attributed to various causes. Changing climatic conditions, exhaustion of the soil and improper seed wheat have all been put forward as reasons.

Now come many substantial ranchers, who maintain that they have experienced a considerable diminution in the crops from land which has been rested for several seasons and which has been sown, grown and harvested under similar climatic conditions as when the header method was in vogue, but owing to the hasty, and they allege, wasteful methods of the combined harvester the output has fallen far below their expectations.

It would be impossible to ascertain just how far this is true for there is no farmer living who can prophesy what his crop will be when he draws his conclusions from the early evidences in which fickle Dame Nature finds expression above ground. But it is clear to all those who have had to do with ranching, or the layman, who as a mere looker-on follows in the wake of the great cumbersome harvesters and notices the grains of wheat strewn about the ground, will readily see that the combined harvester furnishes a wasteful method.

Granted that the combined harvester does lose a certain amount of grain in this manner, does not the economy of time, and labor more than compensate for this? And again does not the successive handling of the grain from the header wagon to stack and from stack to thresher also create a waste?

There is no gainsaying but there is an actual economy in the use of the combined harvester for the three reasons above stated.

First the economy of time, for but one third of the time is required to place the grain in condition ready for market with a harvester that is consumed by the header method. Second the economy of labor. One-half of the labor is required for one-third the time and practically the same amount of stock has to be used or about the same ratio. Undoubtedly the method now in vogue—the combined harvester—is the cheaper at least as to immediate results.

But it is said that the real superiority of the old-time method has not been taken note of. Is the grain when it is cut and threshed in one process of as good quality and of as marketable a value as when it is allowed to stand in the stack for a period of time before being threshed?

Those who know—ranchers of experience and ability, as well as all authorities on grain—maintain that one of the essentials in the preparation of the grain for market is that it must "sweat," that is to say, that it must stand in the stack for a period of time before being threshed. Grain not treated in this way, they maintain, does not fully mature, is lacking in strength, and the kernel does not contain all of its food value which by "sweating" is drawn from the stalk. That this is so can be readily shown by the statements of the milling companies of this section of the state.

Another and perhaps as great a disadvantage caused by the use of the combined harvester is the indiscriminate scattering of "foul" and extraneous matter—thistles, mustard, etc.

The spewing spout of a combined harvester belches forth with the straw and chaff and spreads broadcast millions of non-productive seeds which previously may have been confined to one small portion of a field, but which under the conditions above mentioned soon grow up and put to rout the legitimate product.

For quick transition, from crop to bank book, the combined harvester is undoubtedly the right medium, but when it is taken into consideration that crops must be grown year after year, and that the standard must be maintained, is it not much better to look ahead and have good clean wheat and good clean fields perpetually?

THE APIARY.

BEE-KEEPING IN CALIFORNIA.

Mr. L. L. Andrews, of Corona, recently gave the American Bee-Keeper an account of his ten years of experience in California.

"Ten years ago I came to Southern California from Oregon, and having considerable leisure time at my disposal, devoted some weeks to bee-hunting, and from the caves and trees managed to secure enough for twenty-four good colonies. These, together with their increase and others bought from time to time, are now in four apiaries numbering over 400, which, with some city property and an alfalfa ranch on Magnolia avenue, are all directly or indirectly the result of bees; showing what can be done with these little fellows by giving them the attention they deserve.

"While I consider this a good showing, considering the fact that in that time we have had, here in California, but two full crops of honey; two half crops; one one-third crop, and five failures—a record unprecedented for poor seasons—I think, with an average series of prosperous seasons, such as we might expect, taking the rainfall reports of years as a criterion, this record could be very materially improved on. Of course, to make it a financial success and be able to lay by a little for a rainy day, one must keep an eye on the bees through the dry years and those months when there is no surplus coming in, seeing that they are well housed, covers tight, no skunks eating up the weak colonies, and that those very light have occasionally a comb from their more prosperous neighbor; all probably requiring only a day once in a fortnight or even once in a month, but nevertheless a prime necessity to the life and continuance of the apiary and laying the foundation for a good honey crop when a season for nectar does arrive.

"Nature will surely, sooner or later, provide a harvest, but the man behind the gun must provide the gatherers, and he that cared for his bees through the dry years and winter months will surely reap the reward. And the balance of his time should be turned to other pursuits such as all men, suitable for successful apiarists, are able to turn a hand to.

"Turning to the heading of this article, I find in looking over those 'ten years of bee-keeping,' there are many things tried and turned aside, and I have come to the conclusion that, for my business, and for a purely profit-rendering proposition, devoting as I do my undivided attention to the business, during the honey season, and only occasionally a day otherwise, that the ten-frame Langstroth hive, two stories, fitted for extracting, top stories left on until late in the season, if season is unfavorable, and not taken off at all if season looks prosperous, with full outfit at each apiary, is the most satisfactory to me.

"Last season I harvested twenty-four tons extracted and two thousand pounds of comb, with the help of one man three

BEEF SCRAPS

GUARANTEED: 65 per Cent PROTEIN.

RAW BONE

GUARANTEED: 25 Per Cent Protein and 45 Per Cent Bone Phosphate

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POULTRY FOODS

Write us for price list and samples; they are free.

We want you to see the kind of Poultry Foods that are manufactured from CLEAN, RAW MATERIAL. This means HEALTHY ANIMAL FOODS for your poultry.

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SOUTH SAN FRANCISCO,

San Mateo County

months. This does not include help of wife and family, as in many cases I find on investigating, is a big help toward cutting down expenses. Also about 700 pounds of beeswax not counted in the crop, as I usually consider the wax will pay for all new hives and foundation, and the increase at a fair valuation much more than pay running expenses, leaving the honey as clear gain."

FRUIT MARKETING.

MR. SPRAGUE'S CAR COOLER.

The California Fruit Exchange, says the Vacaville Reporter, is installing a Cyclone Car Cooler alongside the railroad track across the street from Pinkham & McKeivitt's warehouse. Arrangements for putting in the plant were made with the railroad officials at the head office, but Mr. Spear, the local agent, has not yet been notified, and matters are at a standstill until he receives instructions. It will take about three days to get things in running order when work commences.

Concerning the Cyclone Cooler and what it is expected to do, A. R. Sprague, the inventor, furnishes the following account:

"By the Cyclone Cooler process we cool the fruit within a few hours and so quickly as to prevent the beginning of degeneration, and hence when the fruit is taken from the cars in the East it holds up amazingly well, much better than when shipped greener under ordinary refrigerator methods.

"The process of cooling a carload of fruit by the Cyclone Cooler consists in forcing a large volume of air down through the salt and ice of one tank, then dispersing this blast through the fruit in the car and then sucking it out through the condensing chamber, and continuously forcing it through the same path until the fruit is cooled.

"When there are very heavy shipments from one point we use a brine pipe chamber as cooler and condenser, and otherwise same apparatus for cooling cars, except that they are iced after instead of before the application of the cooler. We save 20% of refrigeration by use in the condensing tube of the brine from the salt and ice melting while the cooler is applied.

"The time required to make a car of hard-ripe peaches secure from decay during a shipment lasting from one to two weeks varies according to conditions, from one to five hours. When the right temperature is reached the connections with the ice tanks and drip tubes are removed, and the car is ready to send on its way with the ordinary refrigeration.

"It will be noted that the usual refrigerator cars, of any pattern, are used

without modification and the fruit is loaded and braced as now, the cooler being then applied for the time necessary.

"In using this quick cooling process it becomes quite immaterial whether the car is delayed a day or two or not after cooling. It will carry safely. Then, too, the fruit may be safely received on the platform or in the loading shed at any time during the day, regardless of whether or not an iced car is ready to receive it, since the exposure is a slight matter for fruit which is to be thoroughly cooled before shipment.

"This invention will not make it profitable to be careless in packing or handling fruit, but it will save almost completely from losses in transit the vast tonnage of good, well-handled fruit, which now breaks down so badly in transit. In the case of all deciduous fruits, when this process is used, the fruit should be left upon the tree until highly colored and sweet, but still hard. In this way 20% is gained in weight, and sweet, high-flavored fruit may thus be delivered to eastern consumers."

FRUIT PRESERVATION

HOW PEACHES ARE HAULED.

The modern fruit cannery is a model of labor saving devices and yet the requirement of human skill and industry is great. A Marysville exchange recently gave a sketch of the opening of a local cannery which is suggestive and interesting:

Peaches make up the greater part of the season's pack and when they arrive at the cannery from the orchards they are dumped from the boxes onto a table in the center of which is a moving belt eleven inches in width. This belt conveys the fruit directly to a large revolving drum containing a solution of lye. In a few moments the skins of the peaches are removed by the lye and from here the fruit is carried by a belt to an enclosed vat where it is thoroughly washed. The next step in the journey is to the grader where the peaches are assorted according to size. Then they go into another washer and emerge from this on a 24-inch belt. This belt passes slowly along in front of several girls who with deft fingers sort out the bruised and decayed peaches from the others, those fit for canning remaining on the belt.

This is the first stage, where hand-work is required as evidently the genius of invention has not yet produced a machine which can distinguish a specked peach from one of pure complexion.

The belt moves on with more speed from this point and conveys the good and wholesome fruit to the cutters. Here there is a row of tables arranged on each side of the belt, affording room for fifty women. This is the second stage

where handwork is employed, the workers cutting the peach in half and removing the pit. As stated, the belt with its load of peeled, washed and selected fruit passes in front of these workers and whenever a fresh supply is needed a miniature gate is fixed at an angle across the moving belt and in a jiffy a box in front of the worker is filled to overflowing.

Next the fruit is packed in the cans and the cans placed on trays carried by an endless chain. From here they start on their journey to the syringing machine where each can of fruit automatically receives the desired amount of sweetening. This accomplished, the cans of fruit travel to and through a steam chest. From the steam chest they go under a set of revolving brushes which remove any particles of syrup that may have remained on the outside of the can. Next they go through the self feeding capping machine where each can is covered with the little disc of tin which is to seal the contents. Next a machine applies a touch of acid around the edge of the cap where it is to receive the solder and then the cans ride onward to the soldering machines. These are interesting devices, heated with gas, and they do their work so rapidly and well that hand labor has no hope of competing. The two machines which have been installed will solder 80,000 cans a day.

As far as the packing of the can is concerned all is now completed except that exactly in the center of the cap a tiny vent hole has been left. To close this hole the can travels to the tipping machine which grasps the can for a second of time and covers the little hole with a drop of solder. Next the can reaches the cooker. This is a large chest sixty-five feet long and when it comes from this the preserving of the fruit is finished. The warehouse is its next destination and here it is labelled, boxed and stored away ready for shipment when the orders begin to come in.

In spite of the fact that so large a part of the work is done by machinery three hundred hands are wanted when the cannery opens on apricots. Later on, when the peach crop commences to come in, there will be work for every willing one who may apply.

HOME CIRCLE.

FASHION NOTES.

Peter Pan waists are the latest and are very natty for girlish figures. They are made plain with wide turnover collar and elbow sleeves with turnover cuffs, and the inevitable little pocket which adorns the mannish waist. They are shown in white linens and in plaid silks. White India silks are very effective in this style, when worn with bright colored tie and belt. Some of them have polka dots with collar and cuffs to match the dot. This is an ideal style for a summer outing waist.

The economical girl has partly solved the glove problem. When the finger tips are worn on silk gloves she cuts off the uppers and neatly sews them to new short gloves. The seam may be hidden by a bracelet or small crease. Some prefer to make them into mits.

HINTS TO HOUSEKEEPERS.

A damp pantry and warm cupboard are both bad places in which to keep bread.

To keep brown shoes clean and new looking, rub well first with a piece of cut lemon and then with a little salad oil, milk, vaseline or boot polish.

To clean raisins and currants, roll in flour and then pick off all the large stalks. If currants are washed they must be dried before being added to cakes.

A strip of carpet glued to a piece of wood will remove mud from boots quickly and without the slightest injury to shoes.

When pouring hot fruit into a glass dish, place the latter on a wet cloth. This prevents any chance of the glass cracking, which would otherwise be very likely to happen.

When bottling pickles or catsup it is a good plan to boil the corks, and while hot press them tightly into the bottles, so when they are cold they are tightly sealed.

When lighting a gas stove it will often give a slight explosion and light wrong, thus giving no heat. Turn the gas off very quickly and on again. It will then light properly without any further trouble.

It is not generally known that eggs covered with boiling water and allowed to stand for five minutes are more nourishing and easier digested than eggs placed in boiling water and allowed to boil furiously for three and a half minutes.

A shiny or greasy skin can be benefited by dabbing with a sponge dipped in eau de cologne, instead of using much soap and water. Being such a skin astringent, it is excellent for preventing acne.

Use soap and wood ashes to brighten pans and kettles that have been used over an open fire.

Grease the upper inside edge of the pan in which chocolate is being made, and it will not boil over.

Always place a knife which has been used in cutting onions immediately under the cold water spigot to prevent the odor from clinging to the blade.

DOMESTIC HINTS.

To Can Corn.—Use ordinary glass cans and new rubbers. To nine cups of cut-off corn add one cup of sugar, one cup of salt and enough hot water in which to boil the mixture, usually about a pint. Boil five minutes. Put in scalded jars and seal at once. When cold store in the cellar. When you wish to use it, drain off all the liquid in the can, rinse well in cold water, drain, cover again with cold water, set where it will heat gradually, and boil five minutes. Drain again, and season with cream, butter and pepper.

Spider Corn Cake (Miss Parloa).—Mix together one and two-thirds cups corn-meal, one-third cup flour, one-fourth cup sugar, one teaspoon of salt and a scant teaspoon of soda. Beat two eggs till light, add one cup sour milk (sour cream or buttermilk is richer) and one of sweet milk, and stir into the dry ingredients. Mix thoroughly and pour into a frying pan, in which one-fourth cup of butter has been melted. Tip the pan (first) from side to side to oil evenly with the butter. Bake about half an hour.

Browned Potatoes.—Put a lump of butter in a hot spider and add bread cut in cubes, and an onion sliced. When well browned, pour over it a can of tomatoes, and season. The more butter the better.

Steamed Fowl.—To steam a fowl to perfection, clean and wipe it, rub the inside with salt and pepper and place it in a steamer over a kettle of boiling water. Have the steamer very near the water. Cover and allow the chicken to cook at least an hour and a half. If the fowl is old, two or three hours cooking will not be too much.

A Handy Salad Dressing.—A jar of this easily made and wonderfully good dressing always at hand makes play of the salad course. Mix together one tablespoonful of salt, the same quantity of dry mustard, four tablespoonfuls of sugar and two of flour. Add four egg-yolks slightly beaten, five tablespoonfuls of melted butter, one and one-half cupfuls of milk and a half cupful of vinegar, the latter added slowly. Cook in double boiler, stirring constantly until thick. Press through a fine sieve and add paprika. This dressing will keep for weeks.

Strawberry Parfait.—Crush one quart of strawberries through a sieve; cook



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one-half cupful of sugar with one-half cupful of water until it will form a soft ball when a little is tried in cold water; whip the whites of three eggs to a stiff froth. Pour the hot syrup over the berry pulp, and cook until thick, then pour gradually on the egg whites, whipping constantly. Let cool, then fold in one pint of dry whipped cream, and freeze as for ice cream.

NOBODY KNOWS.

Only a kiss on the baby's face,
Only a kiss with a mother's grace.
So simple a thing that the sunbeams laughed,

And the bees ha-hahed from where they quaffed.

Only a kiss, but the face was fair,
And nobody knew what love was there;
Nobody knew—but mother.

Only a word to a mother's joy,
Only a word to her parting boy,
And the changing lights on the window shone

As her boy went out in the world alone
Only a word from a mother brave,
But nobody knew the love it gave—
Nobody knows—but mother.

Only a sigh for a wayward son,
Only a sigh, but a hopeless one,
And the lights burned dimly and shone with a blur—

Could a mother condemn? 'Tis human to err.

Only a sigh as she took his part;
But nobody knew what it cost her heart—
Nobody knew—but mother.

Only a sob as the tomb doors close,
Only a sob, but it upward rose,
And the lights in the window flickered and died,
And with them her hope, her joy, her pride.

Only a sob as she turned away;
But nobody knew as she knelt to pray—
Nobody knew—but mother.

—Baltimore Sun.

CHAFF.

They had just moved into a new house, and they stood surveying the situation. "I wish," she said, "that this carpet was velvet." "I don't," replied the husband unfeelingly, "I wish it was down."

"That man is so honest he wouldn't steal a pin," said the admiring friend. "I never thought much of the pin test," answered Miss Cayenne. "Try him with an umbrella."

Teacher—In what way do the Quakers speak differently from us, Johnny?
Johnny—They don't swear.

Jaspar—Don't you get tired hearing your wife talk about her first husband?
Jones—Not at all. You see he left us enough money to live on.

Mrs. Lomas—I don't see what she wanted to marry him for; he has a cork leg, a glass eye, a wig and false teeth.
Mr. Lomas—Well, my dear, you know women always did have a hankering after remnants.

"Looking for work, uncle?" "Yassuh, is yo' got any washin' fuh to do?" "Why, you surely don't do washing?" "Nossuh, ah's lookin' for wo'k fo' ma wife, suh."

SONG OF THE OREGON PINE.

I am a harp of a thousand strings—
Awake to the faintest voice that sings!
Coo of the dove to its mate in the nest
Softly I echo with passionate zest!
Call of the wolf to its whelps in the night,
Weirdly I whisper with wild delight!
Lilt of the lark in the upland lea,
Moan of the waves on the sun-kissed sea,
Joy of the surf on the rock-bound beach—
These I gather and set to speech!
Croon of the river, winding afar,
Crash of the wave on the distant bar,
Sigh of the magical summer night,
Scream of the eagle's dizzy flight—
The song that trembles over my strings
Is the broken chords of a thousand things!

Outward, upward my harp-strings reach,
Bringing from Chaos the pine-tree's speech!

Wonder and mystery, joys and fears,
The multiple song of a thousand years!
—Pacific Monthly.

THE SONG OF THE SEA.

Ho! for the sweep of the swinging deep!
With the lonely moon o'ergleaming;
And the coursing waves, with their crests of white,
That roll and break in the shimmering light;
And the desolate sea, so wild and free,
Like a widespread desert seeming;
And the groan of the teak, and the rigging's shriek—
This is the life of the sea!

His shroud the sail and his dirge the gale;
Whilst the clinging weeds surround him;
And distorted shapes, that, dimly seen,
Float ghostlike by in the depths dark green.

There's naught so deep to disturb his sleep,

And the winds rave not around him;
His rest is found on the oozy ground—

This is the death of the sea!

—H. Bedford-Jones, in Chicago Record-Herald.

EVENING.

The half moon touched with golden light
An orange glow on the marge of night,
The stilly song of the cricket heard,
And the whispering wings of the passing
bird—
The smell of smoke from the upland
blown,
And silent fields lying low and lone.

The laugh of a child from a wooded lane,
The last bright gleam of a window-pane,
And shadow weavers under the moon,
The bull-bats lost in the darkness soon.
A star on the crest of the purpling hill,
And its other self in the river still.

A melody born of days no more,
A ripple listing along the shore,
A voice that speaks to me out of the
gloom
Till the rose of my heart is again in
bloom—
And lo! in the darkness shining free
The window light where she waits for me.
—Ingram Crockett, in the American
Magazine.

DARE TO PRAISE.

"O Master," I implored, "what may I do
To help men walk in easier ways?
How may I to myself be nobly true?"
My Master answered, "Dare to praise."

"O Master, Fate is harsh. Men sigh
Beneath the burdens that she lays
Upon their shoulders. How may I
Restore their faith in Him on high?"

My Master answered, "Dare to praise."
"O Master, there are those that weep
For loved ones lost; through all their
days
The moaning winds of sorrow sweep.
How may I lull their grief to sleep?"
My Master answered, "Dare to praise."

"O Master," I implored, "how may I shed
A little light across the ways
Wherein the broken-hearted, halting,
tread?"
My Master answered, "Dare to praise."
—Cleveland Leader.

AGRICULTURAL REVIEW.

Butte.

PEACHES BRING GOOD PRICES.—
Biggs Argus, July 13.—A representative
of the Code-Portwood Canning Co. was
contracting peaches in the neighborhood
of Yuba City last week. The prices given
were \$40 for Orange and McDevitt, \$50
for Tuscan, \$60 for Phillips Clings; de-
livered f. o. b.; canner to furnish boxes.

SUGAR BEETS NEAR CHICO.—Marys-
ville Democrat, July 12: Tomaki, the Jap-
anese employment agent, has returned
from Chico and brought with him a sam-
ple of the sugar beets grown on the Phe-
lan ranch for the new refinery at Hamil-
ton. One of the beets has been growing
a little more than two months and is a
foot long by a foot in diameter at the
top. As the harvest is not until Septem-
ber the beets should be twice as large
when ready to convert into sugar. It
weighs 8½ lb. now.

Horse Owners! Use

GOMBAULT'S
Caustic
Balsam

A Safe, Speedy, and Positive Cure
The safest, Best BLISTER ever used. Takes
the place of all liniments for mild or severe action.
Removes all Bunches or Blemishes from Horses
and Cattle. SUPERSEDES ALL CAUTERY
OR FIRING. Impossible to produce scar or blemish.
Every bottle sold is warranted to give satisfaction.
Price \$1.50 per bottle. Sold by druggists, or sent
by express, charges paid, with full directions for
its use. Send for descriptive circulars.
THE LAWRENCE-WILLIAMS CO., Cleveland, O.

Colusa.

SHEEP COMING FROM MOUNTAINS.
—Colusa Sun: It is an unusual thing to
hear of sheep being driven out of the
mountains at this season of the year, but
such is the case. Several bands have
come down during the past week and
their owners are looking for range for
them in the valley. The cause of this is
the unusual lateness of the season in the
mountains. Grass is just beginning to
come through in spots, while in places
snow four or five feet deep covers the
ground. The feed will be too late this
season to be of much benefit either to
sheep or cattle. Fortunately for both
cattle and sheep men there are world's
of feed in the valley.

Fresno.

TEXAS TICK.—Fresno Republican,
July 14: Twenty-two cattle, affected with
the Texas tick, may be killed and burned
in an endeavor to stamp out the infec-
tion. County Veterinarian H. M. Hunter
made a statement regarding the matter.
The ticks drop off on the ground, in-
fecting the pasture where cattle are graz-
ing, and others turned into the same
place within a year are almost certain to
contract the disease. It was suggested
that the cattle be condemned, shot and
burned and the owners be paid \$10 a
head as compensation for the loss.

Glenn.

GRAIN SACKS COSTLY.—Willows
Journal, July 12: Farmers who were late
in ordering their grain sacks from San
Quentin will have to pay a high figure for
the balance of the season. During the
past few weeks the price of grain sacks
has gone up to such an extent that it is
difficult for the farmers to secure suffi-
cient sacks to hold their grain. Practi-
cally few lots of prison-made sacks have
found their way directly to the consumer,
although the regulations call for the
prison sacks to be sold only to farmers
for their own use. The bags were all
sold in the manner provided by law, early
in the year; 1808 persons filed applica-
tions and deposits, furnishing the usual
affidavits that they desire the bags as
actual consumers. At the beginning of
the year there were on hand a little over
1,000,000 bags, and the monthly output
of bags runs from 300,000 to 380,000. The
price at which the bags are sold is regu-
lated by law, and the price is fixed by
adding one cent per bag to the actual
cost of manufacture. There was a big
shortage in the bag market and as soon
as the prison bags were all sold off, there
was nothing to prevent the dealers who
held bags from asking their own prices.
The total number of bags sold this year
was 4,134,800, and this divided by 1,208,
the number of purchasers, gives an aver-
age of about 3,400 to each. The affidavits
call for from 300 to 500 bags each; 5,000
is the limit, the law forbidding the sale
of a larger number than that to any one
person.

FRUIT SEASON.—Sacramento Union,
July 14: There has lately been an influx
of people to Anderson. Several families
have located here to work in the fruit
during the canning season. The diver-
sified products of this territory will bring
into the community about \$700,000 this
year. In 1903 the grain, fruit and stock
realized \$650,000. The hay crop has been
baled and is being moved to market.
The crop will aggregate several thousand
tons.

MORAVIAN BARLEY.—Orland Regis-
ter, July 14: G. W. Murdock has experi-
mented with the Moravian beardless bar-
ley, and the following facts show it to be
far superior to the ordinary barley:
From 50 sacks sown to about 60 acres of
land last March, Mr. Murdock has just
finished harvesting 892 sacks, averaging
124 lb. per bag. The yield per acre was
14 sacks. This barley was not affected

by the later rains and wind as was the
ordinary barley, there being no loss or
coloring, but was clear and plump.

REFUSE TO INDORSE STOCKMEN.

—Sacramento Bee, July 9: The principal
business before the meeting of the
Executive Committee of the Sacramento
Valley Development Association here
Saturday evening, was the question of
the Stony Creek forest reserve. Some
time ago the organization went on record
as favoring a permanent reserve. Since
then the stockmen of this section have
opposed the move. Last week it was ar-
ranged to institute a fire patrol, the
Stockmen's Assn. and the counties of
Colusa and Glenn to pay the expense with
the object in view of proving that the
reserve is unnecessary. The Valley Assn.
was asked to rescind its action and ap-
prove the stand of the stockmen, but it
refused to go beyond inviting a repre-
sentative of the Government to visit Stony
Creek and investigate the situation.

Los Angeles.

RETURNS TO CITRUS SHIPPERS.—
Pomona Progress, July 5: The Pomona
house of the California Citrus Union re-
ports the following prices realized for
navels: Shipped in the regular pool,
\$2.33 per 100 lb. from March 1 to April
15; \$2.90 per 100 lb. from April 16 to May
31; \$3.11 per 100 lb. for June. The above
prices are net averages to the grower
exclusive of picking, hauling and wash-
ing.

PACKING HOUSE FOR LEMON.—
Pomona Progress, July 11: Mr. Currier
informs us that the lemon and orange
growers have agreed to build a packing
house at Walnut station on the Salt Lake
line.

Modesto.

GRAIN FIRES.—Stanislaus News, July
13: A destructive grain fire is raging in
the West Side; it is spreading north
into this county and south through Mer-
ced, and the efforts of the ranchers have
proved unavailing. More than 15,000
acres have been burned, including 2,000
acres of barley and wheat, belonging
mainly to the Simon Newman Co., the
Howard Cattle Co., and individual ranch-
ers of large holdings, while more than
10,000 acres of pasture lands have been
swept.

Placer.

VINEYARDISTS OWN THEIR WIN-
ERY.—Napa Register, July 13: The grape
growers of the vicinity of Roseville have
become interested in the Placer County
Winery and have purchased considerable
stock.

Riverside.

SOME ORANGES LEFT.—Riverside
Press: Estimates on the number of car-
loads of oranges left in the valley run
from 150 to 250 cars. Probably the
higher figure would come nearer the
truth than the lower. F. A. Little, sales
manager of the Arlington Heights Ex-
change, estimates that there are still
125 cars of lemons unshipped. The ship-
ments from Riverside for the season are
as follows: Oranges, November to July
7, 4,713 carloads; lemons, November to July
7, 414 cars. This makes 5,127 cars of
citrus fruits for the season. The South-
ern California shipments have been 20,
857 cars of oranges and 3,002 cars of
lemons.

THE GRAIN CROP.—Perris Progress,
July 12: From the best information the
following is a fair estimate of the prob-
able harvest of Riverside county: 230,000
sacks of wheat and 600,000 sacks of bar-
ley for the present season. This is an
increase of fully 25 % over last year,
when the crop was reported as one of the
most satisfactory the county ever pro-
duced. Figured in carloads this means
over 2,000 cars of grain from Riverside
county. The total value of this grain is
\$900,000. The crop of hay has proved
more difficult to estimate, but is close to

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50,000 tons, which is an increase of prob-
ably 10,000 tons over last year. That
means from 4,500 to 5,000 cars, with a
value of at least one-half million dollars.
This makes the total value of the crop
of grain and hay from \$1,400,000 to \$1,-
500,000. These figures do not take into
account the alfalfa. Not less than 20,000
tons of alfalfa hay are produced in the
county, with an aggregate value close to
\$250,000.

San Joaquin.

FRUIT RETURNS.—Lodi Sentinel,
July 14: Through the California Fruit
Distributors Lodi fruit shipped to New
York and Philadelphia made a total gross
of \$3,002. The report on one consign-
ment states the car arrived in good condi-
tion. Prices on Tragedy and Burbanks
ranged from \$1.70 to \$1.85. Car grossed
\$1,579.

VINEYARD RECORD.—Lodi Sentinel,
July 12: One of the best young Tokay
vineyards in this county is owned by G.
V. Langford in the Acampo district. Last
season was its fourth year and notwith-
standing hot winds that prevailed last
season, cooking a big per cent of the
grape crop on young vines, the yield was
over 6,000 crates, with an average net of
88c. per crate. Estimates of the yield
of this vineyard during the coming har-
vest place the crop at 25,000 crates.

GRAPES REQUIRE SULPHUR.—Lodi
Sentinel, July 12: W. H. Thompson, of
the Frank H. Buck Fruit Co., reports that
the past few days of warm weather has
brought out in steam heat much of the
vineyard moisture, resulting in mildew in
some instances in an aggravated form.
Mr. Thompson says the mildew is
not at all general, and suggests to the
growers that the greatest danger from
mildew is at the present time. "Experi-
ence has taught us," continued Mr.
Thompson, "that sulphuring for mildew
brings about better results when the sul-
phur is spread over the vines with a
blower. In order to successfully eradi-
cate the trouble the sulphur must come
in contact with the grapes, and, when ap-

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plied at the proper time, little difficulty is experienced. I am positive that there are vineyards in this district that need attention right now and growers should see that they get it."

San Bernardino.

UNIFORM ORANGE BOXES.—San Bernardino Sun, July 5: Word has been received at Redlands from Congressman S. C. Smith at Washington, of the introduction in Congress of a bill making the standard size of orange boxes the country over $11\frac{1}{2} \times 11\frac{1}{2} \times 23$, the present size of the standard California box. It also makes it impossible to ship oranges in any other size box, half boxes or baskets, or, in fact, any receptacle of any other size or kind. Shippers have in the past seasons worked up a large business in the way of half boxes and basket trade, which would be shut out by the passage of this bill if it stood the test of the courts.

LARGE APRICOT RUN.—San Bernardino Index, July 13: The Ontario cannery has about completed its heavy run on apricots, which has been the largest for years. The work in peaches will commence the latter part of the week. A large crop of peaches is reported.

Sonoma.

HOP MEN HOLD MEETING.—Santa Rosa Press-Democrat: On Saturday afternoon there was a meeting of the Sonoma County Hop Growers' Assn. at Santa Rosa. Reports were heard from many of the growers present that conditions indicate a very good average crop. The yards at the present time are looking fine. There was a discussion regarding the disposition of the hop cloth and twine. The cloth was ordered by the association some time ago and has now arrived. The matter of picking the hops was also discussed and the association will make arrangements for pickers. Nothing was done as to the fixing of the price. One of the growers stated that it was almost certain that the price paid would be \$1 per 100 lb.

FRUIT DRYERS BUSY.—Healdsburg Tribune, July 12: Miller & Wagers have completed their fruit-drying plant and are engaged in evaporating apples. Some three tons daily are peeled and evaporated, the fruit coming from the dryer ready for packing. They are shipping considerable quantities of ripe apples to the markets of this and adjacent States. F. M. Gully has his dryer ready for the season's run, and made his first shipment of cured apples last Saturday.

Stanislaus.

CHICKENS ARE MONEYMAKERS.—Modesto Herald, July 5: Mrs. E. R. Johnston, residing near the Modesto race-track, went into the chicken business a year ago last January with 150 chickens. She was a newcomer and had to buy practically all the feed for the chickens. In her first year Mrs. Johnston sold eggs to the gross amount of \$235, and young chickens that grossed \$40, a total of \$275 from her original flock of 150 chickens. She bought feed at the high total cost of \$96, netting \$179 profit.

ALFALFA YIELD.—Modesto Herald, July 5: W. P. Stephenson, of Ceres, has since April 1 fed 37 head of stock upon 28 acres of alfalfa, and at the same time put up 80 tons of hay. He has at this time 15 acres of alfalfa (third crop) ready for cutting, which will add 20 tons to the 80 tons stacked. He attributes this fine yield to discing in the fall and to the application of gypsum as a fertilizer. It is his observation that the gypsum should

be applied just before the first rains. He is confident that he will shortly bring his alfalfa yield up to an annual average of 10 tons an acre, which, at dairy value (\$10 per ton), means \$100 per acre annually.

Ventura.

GINSENG INDUSTRY.—Oxnard Courier, July 13: Two years ago there was started an industry new to California, but old in Oriental lands. When others in the United States are making from twenty-five to thirty thousand dollars per annum from one acre of land it would seem as if we ought to know more about it. A representative of the Courier called upon John McCluskey, the manager and principal stockholder in the ginseng farm, two miles east of the city. The plants are coming on steadily but slowly, and on digging down into the lath-shaded ground, sprouted seeds are found in various stages of growth, which proves the truth of the statement that it takes five years for all the seeds to show that they are not dead, but sleeping. The little beds into which this slat-covered garden is divided show an average covering of green plants—some one and two years old—and Mr. McCluskey is not particular what the public thinks of his project—he has nothing to advertise, nothing to sell and will not have for three years more. That seems long to wait, but then it takes eight to ten years before lemons and walnuts are profitable. On looking up the uses to which this root is put, it appears that it is practically a food—not a stimulant, but a relief for those who have been using stimulants of any kind, and that as a tea it is not only healthful but most agreeable. That explains why the price continues to advance notwithstanding the fact that there is more and more of it being grown. It is even figured by some that it will be impossible to keep pace with the growing demand which exists in China for this root. Last year the crop sold at from \$6 to \$11 per lb., and a fair average for a garden planted 8 in. apart each way, five years old, is about two and a half tons to the acre. Thus it will be seen as this garden continues to grow that a new industry is being developed which means much to the ease-lovers of Southern California.

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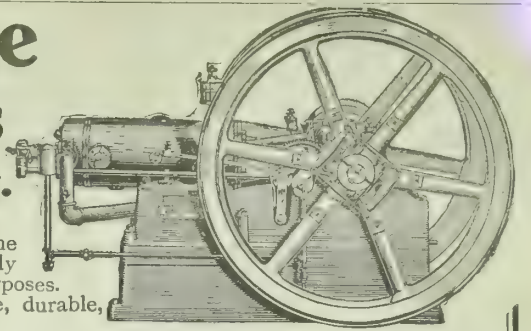
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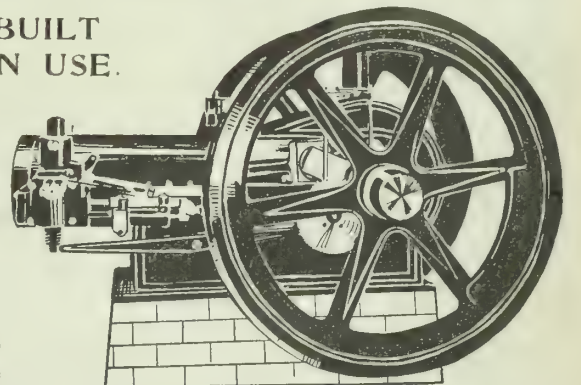
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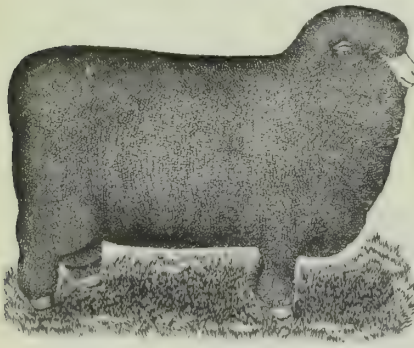
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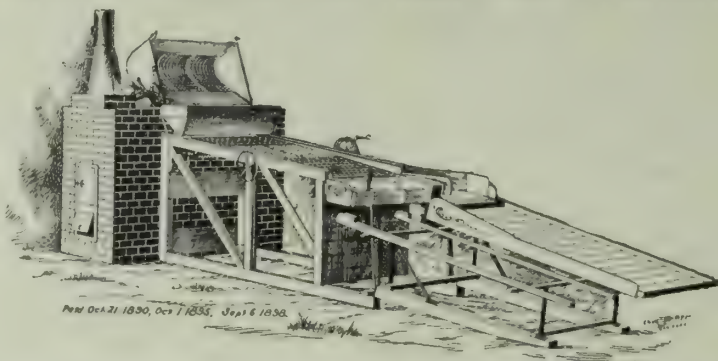
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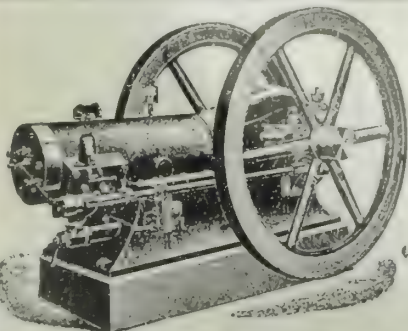
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Vol. LXXII. No. 4.

SAN FRANCISCO, SATURDAY, JULY 28, 1906.

THIRTY-SIXTH YEAR

THE PEACH BLIGHT

The most dramatic horticultural event of the year was probably the prevalence of the peach blight in certain parts of the State. The unprecedented injury which became apparent during the winter when leaves tried in vain to start and when blossoms went to the bad and new bark broke out with gumming, attracted wide attention and apprehension for the life of the trees. It was apparent that some destructive agency, which had not done such evil before to such an alarming extent, was at work. In some parts of the peach districts there came another outbreak of trouble which brought leaves and young fruit to the ground in places where the winter injury was not so marked. Those who have read our issues carefully know that the matter was quite fully explained as its different features were disclosed by Professors Pierce of Santa Ana and Smith of Berkeley. The matter is, however, of such importance in our peach growing that we undertake at this time to reproduce the story of the destroying agency and the very satisfactory method by which it may be held in check. Upon understanding this and energetic application of preventive treatment the success of future peach crops will largely depend.

Professor R. E. Smith of the University of California Experiment Station, in our issue of May 12, gave an excellent exposition of the trouble, the specific agency, the shot-hole fungus (*Coryneum*), having been previously published by Professor Pierce. Professor Smith, however, proceeded in this article to make public the method by which the disease had been effectively controlled, and the engravings on this page show by contrast trees which had received the proper treatment and those which were not protected. This demonstration was made by peach growers in the Suisun valley.

The effects of the disease, says Professor Smith, consist in a dying of the buds on the bearing wood, gumming from the dead buds and spots on the twigs, and a dropping of the leaves and young fruit. Badly affected trees become defoliated except at the very top, lose their crop, and are seriously injured or killed by several years of continued "blight." The disease is a decidedly serious one. The cause, as has been frequently stated, is a "shot-hole" fungus, and, so far as we know, is the same species which affects the apricot and almond. The peach trouble is due entirely to this parasite, and is not the effect of "sour sap," or the conditions which produce that trouble.

This disease has well been called by Pierce "winter blight," inasmuch as the affected spots on the bearing twigs develop between seasons, after the growth of the year stops in the fall, and some time before the new growth starts in the spring. All through the summer and fall the new growth of the season is clean and healthy, but when growth starts next spring the same twigs are spotted with dead, gumming "shot-hole" spots, many of the

buds are dead, and most of the new leaves and fruit fall off.

The observation of this fact lead many intelligent growers, as well as those of scientific pretensions, to the conclusion that an early winter or late fall spraying promised best for the control of this trouble. Professor Smith made this suggestion in the Rural Press of July 8, 1905, though he would by no means claim exclusive rights to the idea. Experience seemed to show that the ordinary peach spraying just before growth starts in

time. This infection, that is the first development of the twig spots, seems to have occurred early in January during the past two or three years.

Acting on this idea, several growers of the Suisun valley district carried out an early spraying treatment. The work was done by Messrs. Brown, Pierce and Joseph Chadbourne, in their respective orchards. The trees were mostly Muirs, which are particularly affected by "shot-hole" fungus in that locality, although other varieties showed similar results. From this special work taken in conjunction with other spraying done in the valley, it is possible to get practically continuous observations on the effect of treatment from early in December up to the time of blooming.

Mr. Brown began work on December 6th, and sprayed his trees with a heavy bordeaux mixture (10 lb. blue-stone, 12 lb. lime, 50 gallons water). Other spraying in the vicinity was done on December 15th, and from then on through the winter. In all the cases recorded but one application was made to the trees.

The results were very striking, showing in general that one thorough spraying early in December with the heavy bordeaux mixture absolutely prevented the "shot-hole" fungus disease. After December results were not so good, and gradually deteriorated up to February, from which time on sprayed trees were no better than unsprayed in respect to this disease. One orchard sprayed mostly in December, but finished out late in January, showed a decided difference in the two portions. Spraying in December was perfectly successful; in January partially so, and in February and March without effect on this disease. The blight is so bad in unsprayed or late-sprayed orchards, with the crop and foliage almost entirely gone, and all the growth on those sprayed in December perfect, particularly the lower, inner, blight-susceptible fruiting twigs, that one seldom sees so striking a contrast in the treatment of any plant diseases. Abundant comparison is available between trees of the same variety, age, and condition.

Professor Smith took pains to note in this connection the effect of this early spraying on curl leaf, inasmuch as any peach treatment must take this disease into consideration. So far as could be judged, the effects were equally good, and the disease controlled as well as by the usual later spraying. The fine condition of a block of December sprayed Susquehannas was especially noticed, while unsprayed trees of this and even less curl-susceptible varieties were badly affected by curl leaf wherever the "shot-hole" fungus had left any leaves on the tree.

To summarize: Unsprayed trees were very badly affected by shot-hole and curl leaf. Trees sprayed in December were free from any disease. Trees sprayed late in January were somewhat affected by shot-hole, but free from curl leaf. Trees sprayed in February and early March were free from curl, but no better than the unsprayed in regard to shot-hole. Control of curl leaf as well as blight by December spraying would be decidedly desirable.

the spring, so effective in curl leaf control, had no effect on "shot-hole" fungus. In all cases trees thoroughly sprayed with bordeaux or lime, salt and sulphur showed the disease as badly as the unsprayed, with masses of gum breaking out directly through the spray on the surface of the twigs. The conclusion is unavoidable that spraying in February or March is too late for the control of the "shot-hole" disease, and that the infection of the twigs and buds has already taken place at that

Trees sprayed in December were free from any disease.

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THE WEEK

The general industrial life and activity of California found a good exponent in the quarterly meeting of the Sacramento Development Association, which we had the pleasure of attending in Chico at the close of last week. There was a notable assembly of prominent and progressive men from different parts of the valley, and they were full of evidence of the spirit which the valley is now manifesting in the seizure of its opportunities. Chico herself is a good embodiment of the same spirit, for no rural center in the State is now progressing more rapidly and connecting up better with adjacent localities where great industrial things are being done. Large factories within the city limits; special railroads to bring forest and other products from the foothills; trolley lines connecting adjacent towns and traversing large bodies of rich land awaiting higher uses; a large beet sugar factory a few miles away on the Sacramento river border; hotels running over, and shops full of business—all these things are to be seen in Chico and they all make the town representative of the newer life which is now pervading the Sacramento valley. Similar conditions appear also in other valleys of the State, but we select this one because we have just seen it and because it is clearly due to the possession of a progressive spirit and a disposition to work hard to draw attention to opportunities in the seizing of which lies profit to investors and life to the community. This is what California generally needs just at this time.

California is fast following the suggestion of Eastern friends to forget the earthquake. Mr. Arthur R. Briggs, the well-known Californian who is devoting his energies to development as manager of the State Board of Trade, recently made an eastern trip to ascertain, at leading Eastern centers, what could best be done to restore interest and confidence in California investments and what measures could best antidote the sensational reports of disaster which yellow publications continue to indulge in. The advice he received was substantially this: "Forget the earthquake, the East has already forgotten it and does not discount the future of California." Of course, this does not mean to individually forget the trial, nor to withhold sympathy, but to publicly stop reaping and cease from studied efforts to deny sensational exaggerations, because denial continually keeps them alive. In this sense, then, "forget the earthquake" is good advice; and activity in the enterprising things of life will produce results which will soonest displace disaster impressions from the public mind.

After all, queer things are happening nearly everywhere on the earth's crust and one might as well become accustomed to them. The St. Louis Globe Democrat has an account which may help some Californians to realize that they have about as good a foundation for confidence as others. The account is that at Kiowa, Kansas, following the most severe storm the section has known for years, the earth parted for a distance of seven or eight miles, beginning at the farm of James Meride, entering Z. Hooper's farm at the southeast corner, passing over the A. F. McGibben place in a southerly direction, entering and passing out of the F. A. Rossi ranch on the southwest corner, losing itself on the J. D. Hiatt farm. The widest opening of the crack is to be found on the Hooper place. At that place it is three feet wide and as deep as the ranchers have been able to penetrate.

Various theories have been advanced as to the probable cause of the parting of the earth. Some assert they felt a slight earthquake shock during the storm. The break in the ground extends over two hills that were parted as though they had been split by an ax. This story may be no better and no worse than alarmists delight in spreading about California locations. All such things should be respectfully noted as natural phenomena and then forgotten so far as becoming unsettled and emotionally rattled is concerned.

The prune situation is still illy defined. Growers are naturally indignant at circulation of reports of cheap prunes and reports also of contract sales at low rates for the evident intent of bearing the local market. At a recent meeting of San Jose Grange, a report was read stating that in spite of the 3½c. basis established at a previous meeting of the prune growers, many packers had contracted with Eastern firms to sell on a 2¼c., 2½c. and 3c. basis, and that some of these packers had not yet purchased a single prune from the growers; that this year conditions over the county and elsewhere pointed to an unusual demand, the dried apricots and apples being scarce, and the prune crop in both Serbia and France being light; and that the 3½c. basis decided upon early in the season had been used by the packers only as an inducement to Eastern firms to accept more readily their offers to sell on a lower basis. Such action on the part of some in the trade for the purpose of buying for less is certainly aggravating. We know no way to stop them unless trustworthy statistics of the actual condition of the crop can be pointed to. There is plenty of evidence that the plans of cheap buyers are brought to naught by crop reports the accuracy of which can be demonstrated. Unless these can be secured by government agencies, they must be had by wide organization of producers. If they are not to be had nothing remains but a game of bluff in which bull movements are put forward to meet bear movements. These are not satisfactory, for the producer may really deceive himself and lose by asking more than conditions warrant. The whole business is in very unsatisfactory shape.

Last week we tried faithfully to give an inquirer the information he asked for about frog farming. The account shows that even this agile product is hedged about with difficulties; if it were not it would be an exception to the rule that all crops are beset with dangers. It is only fair to add that if the frog farmer should succeed in fighting off the natural enemies of his livestock, he might be embarrassed by success itself. The story comes from Reading, Pa., that on the farm of Alvin Shoemaker, near Seipstown, there is a pond in which big frogs fairly swarm. For years the Shoemaker farm has been noted as a frog resort, and the other day a hunter bagged 67, not one of which weighed less than a pound. Mr. Shoemaker always welcomes the hunters, as he declares the frogs have become a pest. He does not favor the new law for protecting frogs, as they have become a pest on his farm. He wants the frogs killed off, as their croaking scares his cattle when he drives them to water. Last year the frogs raided his strawberry patch and devoured the entire crop. The year before they got into his summer house and ate a half-dozen of his best flannel shirts, which lay there in a wash basket. Intending frog farmers should bear these things in mind. Mr. Shoemaker must be not only a very successful but a very cleanly farmer to have half a dozen shirts in one week's wash.

It is gratifying that the Texas fever quarantine line keeps moving southward in California and all county supervisors should promote efforts to set their counties free from restrictions to the movement of cattle to northern ranges and markets. Under a new quarantine proclamation issued by State Veterinarian Dr. Charles Keane, Merced county is released from the quarantine area and the cattle of that county are free to move from county to county. The United States Department of Agriculture has also issued a special order releasing Merced county from Federal quarantine restrictions,

because all evidences of the Texas fever tick have been eradicated. The portions of Madera county on which the Chowchilla and Bliss ranches extend from Merced county are also removed from the quarantine district. The counties still in the quarantine district are San Luis Obispo, Kings, Fresno, part of Madera, Tulare, Kern, Santa Barbara, Ventura, San Bernardino, Riverside, Orange and San Diego. In many of these the quarantine areas are quite small, and an inspection will soon be made by Dr. Keane and Dr. W. M. McKellar of the Bureau of Animal Industry at Washington, for the purpose of removing them from State and Federal quarantine at the end of the present year, if the conditions are favorable. This is the reason why we suggest that county supervisors push this cleansing process forthwith.

The short supply of horses is still an oppressive fact. The report now comes from Tacoma that horses are so scarce in the Northwest that the Government has had to buy 50 outright for the use of the army encampment being organized at American lake. The Government is advertising to hire more horses at the extraordinarily high price of \$1.50 per day each. It is expected that some horses will be brought from eastern Washington in response to this offer. Every available horse in western Washington is being used by the contractors on street improvements, buildings and railroad work. Only 10 years ago range horses in eastern Washington were so valueless that the owners freely gave them away or sold them at \$1 or \$2 per head. The development of Alaska, the Philippine War and the larger demand in the State of Washington has subsequently reduced the range horses to a very small number. It seems that the inducement to grow a good horse could hardly be greater, and this is a matter which many can undertake without much extra outlay of time or money.

We sometimes have muddy and dusty roads in California, but nothing quite so bad as Argentina can boast, judging by the news which the consular reports bring of the vehicles specially contrived to meet local conditions. The wagons used are said to be 50 ft. long in some cases and from 12 to 15 ft. wide. The hind wheels will be from 12 to 14 ft. high and the driver's seat 20 ft. or more above the ground. The horses used at times number as many as three score to a wagon. The principal idea of such a large wagon is to have something that will not be engulfed by the mud or dust of the bottomless roads of the pampas, and it also has its economical advantage in a country where men are scarce and horses plentiful. But we should suppose that a special breed of long-legged horses would be desirable in connection with such vehicles as are described.

President John Swett of the California Viticultural Club, after consultation with leading members, has postponed the annual meeting of the club, which was to be held in Stockton in August, until some future time, of which due notice will be given.

QUERIES AND REPLIES

PERSIMMONS OR QUINCES?

To the Editor.—I want to plant some fruit trees in front of my house, but don't want large growing trees. Can you tell me which will be the better, quinces or persimmons? As far as I know both do well here, but I don't know if the persimmon can stand as much water as the quinces or not, and if they grow big or are only small size when full grown. My plan is to plant them one rod each way, leaving open space enough to plant some small shrubs or some ornamental plants here and there between them, to make the place in front of the house look nice and still get some returns from it. My place is too small to allow a piece of ground to be unproductive.—SMALL FARMER, Placer county.

If you desire ornamental foliage and fruit on a rather low growing tree the Japanese persimmons will please you better than quinces, although the market might be better for quinces, because they are usually so much better understood and in general demand in villages for

jelly making, while the persimmon is, as a rule, but little known and does not sell well except to the Asiatic element of our population. Unless you have, however, a very moral neighborhood it will keep you busy protecting either the quinces or persimmons on street trees during the ripening period.

IS IT A PLACE FOR FIGS?

To the Editor.—What is the matter with my fig trees? I had 300 of them frozen last winter and I cut them off close to the ground. About half of them have started again nicely, the rest of them are still alive but do not throw out any shoots. What do you think of the Calmyrna fig for this place? It is five miles east of Lathrop. Is this a good time to prune your almond trees?—GROWER, Lathrop.

Your handling of the frozen trees was just right. Frosted wood should be removed as soon as you can see serious injury. The dormant trees fail to grow for lack of buds ready to start. Some of them may start later; some will give it up. If you have good buds you can work in a bud or bark graft and get a quick start if the roots are strong and you wax the bud or graft well. Fig bark does not usually take a bud by simply tying as common fruit trees do and with the greatest care you will only get a part of them to grow, but you can try it if you have time and interest enough to spare. We should think hard about planting figs where there is winter killing. Some parts of the interior valley are not good for figs.

COPPER SULPHATE FOR ALGAE.

To the Editor.—Will you kindly tell me whether copper sulphate dissolved in water that is first used in a bathing pool and later for irrigation, would be harmful or not to the vegetation it would come in contact with? Our pool contains 80,000 gallons of water from springs and very soon collects a quantity of algae. I read somewhere that a handful of copper sulphate, in a pool holding 80,000 gallons, thrown in weekly, would keep algae away. My gardeners think that that proportion, or say 3 lb. at a time, would not be injurious, but I would like to be sure about it before trying it, as the whole grounds might suffer.—SUBURBAN, San Mateo county.

The use of copper sulphate in the way you describe would certainly not make the water injurious to plants. Copper sulphate can be used to remove algae from reservoirs without rendering the water dangerous for drinking purposes or killing the fish and it has been successfully employed on reservoirs in Marin county and perhaps elsewhere in the State. Your proposition to use 3 lb. of sulphate to 80,000 gallons of water makes a very much stronger treatment than is necessary to kill the algae. One pound to that amount of water is ample, and it is not necessary to treat as often as you propose. Note the effect of the application and do not repeat it until the water begins to show need of it. A good way to apply it is to put the copper sulphate in a small burlap sack, tie this to the end of a pole and let a man walk back and forth, or around the reservoir, dragging the bag through the water near the surface until the sulphate is dissolved. The copper will dissolve more quickly if put in a wire bag made of common fly screen.

MOVING OLD EVERGREENS.

To the Editor.—Will you kindly inform me if olive, lemon, orange and grape fruit trees can be successfully transplanted after they are four or five years old, and if they can, the proper time of year to do it?—AMATEUR, Santa Barbara.

The trees which you mention can be successfully transplanted, even when they attain considerable size, by taking up with as large a ball as can be conveniently handled, and cutting back and thinning the top to reduce the draft upon the remaining roots. If this is done during the spring and summer—not while the tree is most actively growing, but just as it has apparently finished one period of its growth—it will start very satisfactorily if planted well and watered thoroughly. All exposed bark on the cut-back tree should be carefully whitewashed to prevent sun-burn.

OAKS IN VINEYARD.

To the Editor.—What is the effect of large oak trees

in a field planted with Tokay grape vines? Will their shade be beneficial or prejudicial? Will their presence in any way prevent the grapes from being frosted? Will they affect either the nutriment or moisture in the soil? As between two pieces of land, adjacent to each other, each 16 acres in extent, one has about 10 oak trees, four being quite large, about 4 in. in diameter; the other is cleared. Both have about same drainage. Which would you consider the better for grape culture? I am thinking of buying a piece of the Shippee tract near Stockton and would like your views. Also which is better to plant, Tokays or Emperors?—INVESTOR, St. Louis.

The presence of large oaks in vineyards will reduce one-half the value of the vines growing in the shade, due to the fact that they lack sunshine and are also robbed of moisture by the roots of the oaks. Whether the landscape effect and beauty of the trees will compensate you for the reduction in the way of productive land, you must decide for yourself. Our impression is that the tract of which you speak is so near to Stockton and likely to be so much in demand for suburban residences that it would be not only esthetically gratifying, but absolutely profitable to maintain the oaks, even at the expense of a certain number of vines. But if the question comes entirely upon the productive capacity of an equal area, with or without oak trees, the oak trees must go.

The Tokay and Emperor grapes are not strictly in competition; both are valuable and both are being planted quite largely at the present time.

KILLING JOHNSON GRASS IN DITCHES.

To the Editor.—We find in several spots in the irrigating ditches some Johnson grass has made its appearance. Naturally these ditches are worked two or three times a year and we find there is a disposition for this grass to spread. It is never allowed, however, to go to seed. Will you kindly inform us what method you would recommend in the eradication of this dangerous grass. I have heard recommended by some parties a strong salt brine poured around the roots of each independent plant. Some others advocate kerosene oil. As we desire to make an effort this season to destroy these plants, we would be glad to have the benefit of your knowledge of the treatment of this dread plant.—IRRIGATOR, Los Angeles.

Although the application of brine and coal oil, etc., to individual plants of Johnson grass has often been advocated, we have never heard of the successful demonstration of the measure. The best way to reduce the plant is to cultivate it constantly with a weed cutter, or horizontal knife, which will cut off the plant two or three inches below the surface of the ground. If this is continued and no shoots allowed to come to the surface and get a green color the plant may be smothered out. This method would probably only be practicable where it has extended its area from the ditch. We do not know of any way to kill the plant out in the ditch. Will some reader who has mastered this problem kindly give the method?

ROSE SCALE AND VINE MILDEW.

To the Editor.—I mail you sample of a climbing white rose. Part of the lower branches on my house are covered with a white covering (seemingly a scale). The bush is five years old and has reached the third story windows, with its three branches extending from one near the ground. It is thrifty, except this branch, and blossoms freely. A grape vine growing 25 ft. away is recently covered on some branches with the same stuff, but it curls the leaf of the grape vine. The main part of the grape vine is very thrifty. What can I do to get rid of it and save the vines?—RESIDENT, San Francisco.

Your rose tree is infested with the common white rose scale, *Diaspis rosae*. If only one part of the bush is infested, as much as possible should be cut away and the balance scrubbed with strong soap-suds, in which a little coal oil has been stirred. As the bush stands near the house, spraying with insecticides would not be possible, therefore you have to resort to cutting away, and hand cleaning of the balance. The grape vine is differently infested; the white substance upon it is a mildew. The best treatment is powdering with fine

sulphur, which will be volatilized by the sun heat, the vapor proving destructive to the fungus.

EUCALYPTUS AND ALKALI.

To the Editor.—I wish to plant about 300 acres in eucalyptus trees for wood or timber and if they are a success will plant more. I have about 60,000 young trees in the nursery now which I intend planting in the spring, but have never had any experience along that line. I intended planting them in the alkali district. A good many people say they will not grow there. The land has a kind of white-ash top of 12 to 15 in. deep, then comes a rather coarse sand down to water, which is from 6 to 7 ft. below the surface. The soil seems to be rather poor and does not show much alkali. There is nothing on the land but salt grass and a kind of a dry alkali weed, one or two black locust trees and some willow posts which grew into trees. I can get plenty of water to irrigate with. Here is the proposition: There are thousands and thousands of acres here of the same kind of land and if I can get my trees to live for one year there will be a good many more planted next year by other people, but none seem to be willing to start. I am going to plant mine and wish you to help me all you can by giving me such information as you have gained by observation or by practical experiments, or else your candid opinion, for you have heard it discussed more than I. If there is anything to be done to get them started I will surely do it. Will Egyptian corn, beans, sugar cane or onions grow on alkali ground?—READER, Fresno.

Eucalyptus trees do not like much alkali and whether you will succeed with them or not depends entirely on how much you have to deal with. You can get the trees to start by running a furrow along the line where you wish them to stand and then running water in the furrow, which will dissolve and carry down the excess of alkali on the surface. In this way the land can be freshened sufficiently to enable the trees to start, but their behavior will depend entirely upon the strength of alkali which they encounter. If the water remains at a depth of six to seven feet and is in a soil of a free sandy character you ought not to have difficulty in growing eucalyptus as long as you will furnish them with fresh water to grow with. As soon as you stop this and water rises from below, bringing alkali near to the surface, you may expect the trees to fail if the alkali is strong enough. You will probably find that the trees succeed in some places and fail in others.

None of the other plants which you mention will endure much alkali and the only way for you to get trustworthy information as to whether they will succeed on the particular piece of land which you have in mind is to try them.

VETCH HAY.

To the Editor.—Is hay made from vetches valuable as a dry feed for sheep and cattle, and at what time of the year should it be cut? Do you consider it a valuable accessory to the land? I have been raising vetches some, but find them hard to cure sufficiently to be put into the barn.—FARMER, Fort Bragg, Mendocino county.

Hay made of vetches and of pea vines is good for stock, but the curing of such hay is, of course, more or less difficult, according to the local climate. No particular date can be given as to what time the stuff should be cut for hay. The condition of the plant is the thing to observe. If you can depend upon good drying weather the plants should be cut soon after blooming and while the pod is still thin, in order that nourishment may be well distributed throughout the whole plant, and then turned frequently and dried well before putting in barn or stack. Near the coast the operation will be, of course, difficult. You will have to experiment with it and learn the best practice from your own experience. The growth of these plants has a restorative effect upon the soil fertility.

POLLENIZING WINTER BARTLETTS.

To the Editor.—I am setting out eight acres of winter Bartletts, is it necessary to put some other variety every sixth row to fertilize them?—PLANTER, Hawkes Bay, New Zealand.

We cannot answer. We doubt if this variety has been sufficiently grown to definitely determine its self-fertility or otherwise. Who has made observations on this point?

THE BOTANIST.

DISTRIBUTION OF ALFILARIA.

(Third Paper.)

By J. J. Thornber, Botanist of the Arizona Experiment Station: An Extract from Bulletin 52.

The fact that alfilaria already grows successfully over a considerable portion of Arizona, under quite varied conditions with respect to soil, altitude, precipitation and temperature, and also that it continues to spread farther, leads one to believe that it will become as prevalent here in the course of a reasonable length of time as it was in California nearly or quite a century ago. The wonder is that it has not already planted itself securely in every favorable portion of our territory. This condition, which is almost certain to come, even without efforts on the part of man, can be brought about in a remarkably short time if stockmen and others interested in the ranges will give a little attention to its systematic introduction in their respective grazing regions. This can be done either through the agency of bands of sheep, where obtainable, or by collecting and planting quantities of seeds in the more favorable situations.

Distribution by Sheep.—Introduction can be brought about quickest and with the greatest degree of success in a new locality, if a drove of sheep that have been grazed in an alfilaria country are herded over it. Where possible, they should be allowed to graze alternately, first on the one and then on the other area. Some stockmen even maintain that it is only necessary to drive such a herd of sheep through a country once or twice in order to seed it sufficiently. The seeds that collect between their toes and that are constantly falling from their wool are not only well distributed but also planted to the right depth by the incessant tramping, with the result that the country becomes almost immediately a "filaree country," to use the rancher's expression. As ordinarily introduced by a herd of sheep, alfilaria derives an additional advantage in that the native plants are greatly reduced as a result of close grazing, which at times approaches annihilation. Thus it virtually comes into possession of the ground from the start, which accounts, in a measure, for the apparent readiness with which it supplants the native species. The natural avenue for this plant to reach new fields is through the agency of grazing animals, especially sheep, as is clearly indicated by the character of the seeds. This is verified by the unanimous statements of experienced stockmen in various parts of the territory, who say that its introduction and spread in their respective localities are coincident with the driving in of herds of sheep; in fact, it is difficult to see how this type of seed could enjoy a wide dispersal otherwise. When left to itself alfilaria tends to form definite patches, the borders of which are pushed out only a few feet from year to year. It is interesting to note, also, that these incipient patches occur commonly along stock paths, trails and roads, which is quite suggestive of their origin.

In addition to what has already been said concerning the dissemination of alfilaria seed by sheep, it must not be overlooked that other animals also have aided in the matter. Cattle grazing in an alfilaria country carry the seeds from place to place in their tails, and, to some extent, in their droppings, though it is not known, in the latter case, whether the seeds will germinate or not. The writer found 28 alfilaria seeds on a young jack rabbit killed 12 miles from any considerable patch of the plants, and half that number in the bushy tail of a dead coyote. The latter observation recalls the statement of a correspondent who wrote that wherever a sheep died on the trail along which a herd was driven in the early seventies, alfilaria sprang up. Also, gophers collect alfilaria seeds, carrying them considerable distances to their mounds; and, finally, ants were observed storing the seeds 20 to 40 yards from where they grew.

At first thought it would appear that a drove of sheep, however excellent an agency for alfilaria dispersal, could be employed for that purpose only in the same general region in which the plant already grows, leaving far-removed communities to depend entirely upon the slower and more laborious seed-sowing methods. The writer is of the opinion, however, that it will be entirely practicable, after the shearing season is over, to apply a thin layer of seeds to the woolly coats of a herd of sheep that have not been grazing in alfilaria country, and let them take care of the distribution and planting of the seed. There is every reason to believe that the experiment would be entirely satisfactory, and that the seeds could not be handled in a more economical way. The seeds need be attached only to the lower half or two-thirds of the body, and the coating should be quite thin, otherwise the excess might be eaten off and thus lost.

By Sowing Seed.—Where introduction is attempted on any considerable scale by planting, the seed should be collected in quantities of several bushels and sown as soon after as convenient. Experiments made last year at the station, although incomplete, show that where the seeds are stored in sacks in buildings during the summer months, only a small percentage germinate in the fall or winter months, even under the most favorable conditions; whereas, if they find their way into the ground in the usual manner, that is, at the time of maturation, they are exposed to the weather during the hot summer months, with the result, as yet unexplained, that growth obtains immediately with the first rains of October or November; hence the reason for sowing as soon after collecting as convenient, even though a considerable percentage is destroyed by animals or otherwise becomes dissipated before the advent of another growing season. The sowing should be done in the more favorable areas of the vicinity; namely, at elevations between 2,500 and 4,000 ft., in alluvial soils of low mountain and foothill canyons, valleys, swales and mesa depressions; also among shrubs and over gopher mounds, southern exposures being selected wherever possible. It needs hardly be said that favorable climatic periods, such as have obtained during the past 18 months, greatly facilitate the growth and increase of the plant. The seed should be covered to the depth of a half-inch or so, which can be done in the larger plantings with a straight-tooth drag, a disc harrow or other similar implement. When once started the patch will need no protection, other than to prevent its being annihilated by hungry range animals, since the more it is grazed within reasonable bounds the greater will be its opportunity to spread. From past experience, introduction by seed sowing is likely to prove a slow and tedious process. The distribution at best never can be general, and even when a patch is once well started its spread will not be rapid without the intervention of sheep or other similar grazing animals.

Alfilaria secures no small protection against animals and the extreme variations of moisture and temperature during its seeding, rosette and flowering stages when growing among shrubs, and hence the suggestion for sowing the seeds in these situations. Under normal conditions it tends to grow first among shrubs in any locality. The presence over the mesas of the native annual growth is due in a considerable measure, to the protection afforded by the shrubs; and when, for any reason, these disappear, the region becomes, indeed, bare. Under the diffused light of shrubs, temperature and moisture conditions are more nearly uniform from week to week; accordingly, seedlings appear there first and withstand longest the heat and drought of the desert. Also, about shrubs the loose soil becomes gradually heaped up by the long continued activity of the winds, which increases, in proportion, the mineral content and the water-holding capacity of the spot, to the advantage of the plant.

The Collection of Alfilaria Seed.—Alfilaria seed is sold on the California market at the prohibitive price of \$1 per lb. In a good alfilaria region, like the one about Oracle, two men would be able to collect 40 or 50 bushels of reasonably clean seed in four day's time. If a team and wagon are included for a week, two days of which are allowed for driving a distance of 40 miles to and from the alfilaria country, the total expense, including provisions, will still be within \$40, or approximately 80 c. to \$1 a bushel. Since the average rancher is well supplied with both teams and help, the expense of collecting the seed will amount to practically nothing. Last year, during the latter part of May, the writer gathered from the above locality ten sacks of seed in as many hours, without even so much as a hand rake to shorten the labor. At that time, and for several weeks later, it would not have been difficult to collect 200 or 300 bushels of nearly clean seed in the vicinity. As noted heretofore, it is quite characteristic of the pure seed to collect, through the agency of wind, and the hygroscopic movements of the awns, in the small angular rivulet-worn beds and arroyos in tangled masses ranging from a quart to a half-bushel in size. An excelsior garden weeder, that is, one of the claw or finger type, which may be had from any seedsman for 10c., would be an excellent tool to rake the tangled seed masses from among the rocks and crevices. Where the plant forms a heavy, continuous covering the dried stems may be cleared away with a hand rake, thus exposing a layer of seeds a half-inch or more in depth.

Summary.—In conclusion it is to be noted that alfilaria was introduced into Arizona by herds of sheep at least 35 years ago, and that now it occurs over a large portion of the territory, and is being gradually spread farther; also that ecologically it is well adapted to southwestern conditions. The chemical analyses appear to support the unanimous statements of stockmen that it is an excellent forage for all kinds of stock,

especially sheep, in addition to being a valuable hay plant. Up to this time sheep have been largely instrumental in spreading it over our grazing areas and in carrying it to far removed districts, which taken in connection with the character of the seeds leads one to believe that they will continue to be the most efficient agency for its dispersal. The plant may also be introduced by sowing seeds in the more favorable situations. As heretofore described the seeds may be gathered in almost any quantity in an ordinarily good alfilaria country during the latter part of May and the first half of June, at a maximum expense of 80c. to \$1 per bushel. Thus alfilaria combines several of the essential features which go to make up a good forage plant, viz., (1) minute adaptability to environment, so as to prove successful in competition with other plants, (2) production of a liberal amount of nutritious forage, (3) rapid spread over new country with minimum expense, and (4) maturation of viable seeds which may be collected in large quantity economically. In the light of the above the writer feels amply justified in encouraging its further introduction and spread in Arizona and other portions of the southwest, as a valuable spring forage plant.

THE VINEYARD.

LATE SULPHURING OF VINES.

To the Editor.—If all vineyards were properly sulphured during the spring and early summer there would seldom be any need of late sulphuring in California, except in regions frequently visited by sea fogs. Many vineyards, however, are often not sulphured at all or only imperfectly treated, so that, when weather conditions favorable to the development of mildew (*Oidium*) occur, the disease may become serious late in the season. Unfortunately the disease does not confine itself to the neglected vineyard, but may spread to neighboring vineyards which have been properly treated.

This makes it necessary to watch for the appearance of mildew at all seasons of the year while the vines are in leaf. The greatest damage is done when the mildew appears at or about the blossoming time.

During the months of July and August the air is usually too hot and dry for the mildew to increase or to do much damage. There are many exceptions to this, however. In irrigated vineyards, in vineyards where a rich soil has caused an exuberant growth of foliage, wherever, in fact, the moisture conditions are favorable to the growth of the fungus, much damage may be done to the grapes even in mid-summer.

When the grapes have attained full size and have commenced to ripen, if they are still uninjured, they are practically safe from the disease. Table grapes may still be discolored by the fungus, but little or no damage will be done to wine grapes.

It is not safe, however, even at this season, to allow the mildew to infest the vineyard. While the current crop is comparatively safe the fungus may still do a great deal of harm to the vine. An attack of mildew in September or October will seriously impair the crop of the following year. At this season it attacks principally the interior of the vine—that is to say, the bases of the canes and the leaves which are most shaded. This causes imperfect ripening of the wood and improper development of the buds. This results in poor growth and small crop the following year. Canes which are black or stained by a late attack of mildew are not healthy and in severe cases may fail to bud out at all in the spring. When such canes do bud out the shoots often fail to blossom or to set their fruit.

It should be a rule, therefore, in every vineyard to keep the mildew out at every period of the growing season.

Late sulphurings require from two to four times as much sulphur as early treatments, and are more laborious to apply. The amount of sulphur used in most California vineyards is, however, much larger than is necessary. The reason it is not always effective is that it is improperly applied. Some tests of various methods lately made by the Agricultural Experiment Station are interesting in this respect.

These tests were made in a vineyard of Tokay vines planted 9 by 9 ft. Young vines with a spread of 2 or 3 ft. required, when a proper sulphur distributor was used, about 5 lb. of sulphur to the acre. With the ordinary perforated tin shaker commonly used about 7 lb. were needed, while when the sulphur was simply thrown on by hand over 12 lb. were necessary to do the work properly. With large vines the contrast was even more striking. With the best machine tested one acre of vines can be sulphured in 56 minutes with about 8½ lb. of sulphur. With the shaker it took a little longer and

nearly 30 lb. of sulphur were needed, while the hand-sowing method took 69 minutes and required 43 lb. of sulphur.

Using these figures as a basis for calculation three sulphurings in April, May and June, with the best sulphur machine, would require 4 plus 7 plus 9 lb., or 20 lb. per acre; while with the shaker the amounts would be 7 plus 18 plus 30, or 55 lb., and if thrown on by hand 12 plus 28 plus 40, or 80 lb., would be used. If, therefore, we reckon the price of sulphur at \$2.50 per 100 lb. the cost of the amount wasted by using the ordinary device of a perforated tin shaker would be \$12.75 for 10 acres, and if the sulphur were simply thrown on by hand there would be a loss of \$20 on every 10 acres. The latter figure is nearly twice the cost of a good sulphur machine.

This does not represent the whole benefit of the use of a sulphur machine. With a properly constructed machine the sulphur can be put on every part of the vine with equal ease. With a shaker it is almost impossible to get the sulphur onto the top of tall vines and very difficult to get it into the middle of the vine or on the under-side of the leaves.

Our experiments this year have demonstrated that sulphur properly applied at the right time will thoroughly control the vine mildew and every case investigated where sulphur was said to be ineffective showed that the sulphur had not been put on properly.

FREDERICK T. BIOLETTI.

University of California, Berkeley.

HORTICULTURE.

PRUNING THE LEMON.

By Mr. L. R. Nichols at the Corona Farmers' Club.

In the early days of the colony, the lemon growers hardly knew what to do with the trees. A very few said they would take care of themselves—that nature knew what was best. I saw one of these orchards that nature had taken care of for several years, and it was quite a sight; long shoots in all directions that would have made fine fishing poles, and so long in many places that it was almost impossible to get through with a wagon.

This orchard did fairly well for awhile in the way of bearing lemons, but in the end had to be cut way back to get it into shape; but the greater number of growers thought that the trees should be pruned in some way, and that a pair of hedge shears was the proper tool to do it with; so they got the shears and clipped a little off the top and sides, leaving the trees as large as possible each time they thought it proper to prune, until each tree was about the shape of a ball, balloon or whatever form the pruner thought proper.

Now this continual clipping simply made the trees a dense jungle, so thick that not a ray of sunshine could enter, nor air hardly penetrate, and then the trouble commenced. The trees became so wide that you could hardly reach as far as the center to trim, and the pickers could not get to the middle to cut the fruit, and then it became apparent to most every grower that if the inside of the tree was to continue to bear that more air and light must enter.

Then the real thinning out and pruning commenced. It was a sad sight to see the great loads of trimmings that were hauled from the groves and burned. This was a dead loss, grown at an immense cost on high-priced land and with more costly water.

Let us make up our minds that we will not have these great, costly prunings. Not a leaf nor twig need be carried from the orchard if the pruning is done at the proper time. It will cost no more to go over the trees three or four times in the year making light trimmings each time, and I believe by so doing we would have more even bearing trees—not a great picking at one time, and almost none at another. At any rate, I think it worth trying.

In pruning the lemon I think it is well to strive for a rather low, wide-spreading tree, so that most of the fruit can be reached by the pickers from the ground. I prefer an open center, for it seems to me that by keeping the center well open the sap is forced to the outer parts of the tree, forming more fruit wood to bear a greater quantity of fruit.

Do not open the trees too much, for if the sun strikes the large limbs they are liable to sun-scald. Cut out parallel limbs that are close together. We are growing too much wood by half for the amount of lemons taken from the trees.

We have too much top for the roots. If possible give the roots the advantage over the top by keeping the tree continually trimmed back, and then should our water be cut off for a few extra days the tops would not suffer as they do when they lead the roots.

When the limbs are properly thinned out we can see fairly well from side to side.

Have the lower branches high enough from the ground so that the pickers can get under them in a stooping position and with the outer parts drooping a few inches from the ground. If we branch the trees too high the top has to be correspondingly high to have sufficient surface to carry a good quantity of fruit, and high trees mean quantities of fruit exposed to winds that make culls on the tall slender branches. This teaches us that a low, rugged tree where the fruit can move but little is best.

For convenience in trimming, I find it pays to have two men to the tree. Have a rather open place on the back or north side, close to the trunk, where a small step-ladder about 4 ft. high can be used. On this one person can prune the center part of the tree while the other reaches what is left on the outside. In this way all of the top of a wide tree can be reached. Many of our trees are so wide that it is almost impossible for the pruner to reach from the outside.

The proper time to prune is now, any time when the tree needs it, but I should say for a heavy pruning some time in summer, when most of the fruit was off, would be the best time.

Some growers think by making a heavy cutting of the trees late in summer that bloom is forced later on that will produce summer lemons, but it appears to me that these heavy prunings are a shock to the trees and do them no good. If we would go over our trees several times a year cutting off the long growth that comes on the sides, we would not have to do much of the heavy pruning later on. After these long shoots harden a little they blossom on the ends, forming fruit too far from the stiff limbs. This slender growth with fruit on the end gradually settles, throwing out side branches, and after awhile your trees are too thick, and then comes the heavy cutting again, when, had the shoot when young been cut back, new fruit-wood probably would have been forced out on the stronger branches and the heavy cutting later on avoided. For this reason I think it would pay to go over the trees more frequently.

When prunings are made at frequent intervals they are so small that they can be cut into short lengths and left on the ground, helping to lighten and enrich the soil, for in this way every leaf and twig is made use of, and it is surprising how soon the trimmings disappear, hindering very little the cultivating of the orchard.

HORTICULTURAL WORK IN SOUTHERN CALIFORNIA.

After months of careful study of the conditions under which experiments in citrus culture and plant pathology are to be made in Southern California under the direction of the State University's agricultural department the regents have authorized the announcement of their plans for the prosecution of these important works. The State Legislature appropriated \$30,000 for the founding of experiment stations and a pathological laboratory in the south.

The regents have decided, according to an announcement made by President Wheeler this morning, to have the citrus experiment work done at Riverside, a famous orange center, and the laboratory built at Whittier.

The plans for these two branches of work include the following details:

1. (a) The tract of land for the experiment station provided for by the Huntington Park Association in Riverside will be prepared for irrigation on a contour system of distribution and buildings provided for station purposes.

(b) The land will then be planted with collections of trees and plants most suitable for the lines of research and experiment most pertinent and important to pomological science and practice, chiefly in the department of citrus culture, including the selection of the best types of different citrus fruits and the employment of plant breeding therein; the relations of irrigation, cultivation and fertilization to the best results in fruit production and sale and other work germane thereto.

(c) Without neglecting other horticultural work it is designed to render this station exceptionally suited to research and experiment with the citrus family of plants, attractive to original investigation in that line and in that respect unique in this country.

(d) It is expected that the first year of the station will be chiefly occupied in outfitting and equipping, collecting and planting, although some problems in cultivation, growth of cover crops, and irrigation will be attacked from the beginning, and so far as possible all operations rendered instructive and significant.

2. (a) The land at Whittier for the pathological laboratory will be put into shape for the erection of a

building of moderate cost, which can be quickly made ready for use so that the outfit now in use in rented rooms can be given better installment and investigators furnished with better facilities.

(b) The investigations, laboratory tests and field work with the bartriosis of the English walnut, which were begun in advance of the provision for a laboratory because of the urgency of the trouble, will be continued and extended during the coming year.

(c) Work with the lemon rot, caused by a fungus, the nature of which has been determined, will be continued in the laboratory, the orchards and the packing house. Very significant results have been secured in preliminary studies and experiments.

(d) General attention will be paid to other plant diseases, a number of which have figured in the appeals of Southern California growers for investigation, prescription of remedies and fuller knowledge of the relation of soil and culture to the thrift of the plant.

(e) Provision will also be made for the study of insects and other agencies destructive to plants as required by the law.

Governor Pardee, President Wheeler and Professor Wickson have been appointed a committee in charge of the work. The committee has received gifts from Riverside and Whittier of lands sufficient for the work in view.

THE MARKETS

Wheat.

Little can be made out of the wheat market here owing to the extreme quiet that prevails all through it. Some new wheat is coming in, but hardly enough as yet to give any indication of the final settling of the market one way or the other. Spot stocks in the city are cleaned out as a general rule and very little is to be had here. There is plenty, however, stored at Port Costa, but as a general thing it is controlled by the milling interests there. Those interested expect a very fair crop this year for, though the acreage is cut down somewhat, the yield is large enough to hold totals up pretty well. The quality is also said to be good. In the northwest the outlook for a crop is hardly so good as it was a year ago, several of the districts having suffered from the hot winds. Buyers from this State are out of the northern market on account of the sailors' strike and the uncertainty of effecting deliveries by water. European calls have so far made themselves felt very little here and this must be counted on before much can be said about the prices that are to prevail. The needs of exporters are so far very slight and they are exciting no influence to speak of in the situation. Not much is known yet of the prospects of the entire yield of wheat of this country, but so far advices seem to point to a plentiful harvest and the labor stringency of the southwest will prove as great as ever. Taking the country over the crop of winter wheat is placed at 435,000,000 bushels and that of spring wheat at 285,000,000 bushels, making a total yield of 720,000,000 bushels. Supplies carried over in second hands are estimated at 55,000,000 bushels, and it is figured that 46,000,000 bushels are still in the hands of farmers, making a total supply for the year of 821,000,000 bushels. The estimated consumption for the year is 450,000,000 bushels, leaving available for export during the year, and supplies on hand July 1, 1907, 296,000,000. The aggregate world's crop is placed at 80,000,000 bushels less than last year.

Flour.

The flour situation has failed to gain much if any during the week and quiet still rules very much as for a month past. The new wheat crop being now in sight buyers are holding off with an idea of obtaining lower prices in time, there being no scarcity of flour for immediate needs. Few of the mills are doing much as orders are caught up with as a general thing and new orders are slow to come in. No increase of flour for export to the Orient is reported from northern points and the situation in the Far East appears to have changed but little. Local trade in San Francisco is fair, as the city's population is increasing and the number of restaurants and hotels opening is adding daily to the consumption of flour products. A moderate amount of flour is going past here to points in Central and South America and indications are that that market will hold good until the new wheat crop comes into these countries. It is probable that in time San Francisco and the State in general will have to import flour from outside points as was the case last year.

Barley.

The price on barley in the local market weakened steadily of late until a few days ago, when it stiffened somewhat and the price went up a dollar a ton. Since then the market has become easier. The continued

prospects of good yields of barley are responsible for this weakness and prices rule very indefinitely. The use of barley for horse feed is on the increase here, it is believed, and in the aggregate a considerable per cent of the stock in the city is devoted to that purpose. It is expected that a fine grade of barley will be produced this year and this added to the amount grown causes the dealers very little concern whether they stock up now or later. The scarcity of barley stocks in the northwest has not been relieved to any great extent, and it is rather difficult to get into that section at present.

Oats.

This grain is now coming in in abundance and all anxiety regarding the size of the yield is past. Red oats so far are particularly plentiful and the quality is very good. The oats have filled out in good shape and weigh very heavy. The market is weak under the free arrivals and the amount coming in is embarrassing to dealers who as a rule have no place for storage.

Mill Stuffs.

The millstuff demand in no way is proving a tax on the supply, though there is not enough of the latter to cause stagnation. In fact, few of the dealers are showing interest and the conditions of the market bid fair to hold as at present for some time yet to come.

Hay.

The new hay arrivals have unsettled the market a bit, but in a short time it is expected to firm up readily enough. Last week's receipts were somewhat greater than either of the two weeks preceding, the figures standing at 4,535 tons to 3,354 and 3,681 in the order of time. The demand is holding strong and frequently the dealers have some trouble getting enough from day to day. The bulk of the hay coming in comes by water. The railroads are chronically short of cars at present, and often only 10 or a dozen carloads come in when in ordinary years 40 or 50 would be the usual number. Much hay was damaged this year by rain and the overflowing of rivers, but it is the belief of the dealers that most of it will be used and will in no case materially affect the very large yield of the year. The strong condition of the local market is considered by insiders as a false condition due to the shortage of cars and the lack of adequate storage facilities.

Wool.

There is no wool market to speak of at present in San Francisco. Prices have fallen a little even from the low figures of a week ago and stagnation prevails absolutely. One well known dealer summed up the situation by saying, "What can we do? No warehouses, no insurance, no market." Just what prospects there are for a picking up of interest here in wool is hard to say, but there are a few indications that with the passing of a short time conditions will improve considerably. No outside news of any moment is to be had and the idea seems to be that there is little or nothing doing with which local dealers are in touch.

Hops.

Reports from the hop fields give a rosy prospect for an abundant yield and the picking is now under way in most of the big fields. Predictions, in view of the large crop, would lead to the expectation of low prices prevailing for the season, but the export figures are yet to be given out and this will really decide the prices.

Butter, Cheese and Eggs.

Dealers unanimously reported a dull market in butter, with no particular demand for the fairly large supply offered. Prices fell off a cent as a result of prevailing conditions. All sales were small and nobody displayed anxiety to stock up. Butter is of a good quality now as regards the creamery article and a very fair lot of dairy goods is on sale. Prospects are that eggs will come nowhere near the high figures of last year and as a result little interest is shown in any except the strictly fresh. As a general thing a few cases at this time of the year are taken from storage, yet so far no one has had any reason to consider this step. In fact, some dealers are having some little trouble moving the offerings they have on hand. A small lot of Eastern cheese recently offered was at once taken. Another small quantity is now in sight and prospects are that it will go at once. At present the Eastern article is none too plentiful, but California cheese is easily found. No particular changes on the price of cheese have occurred and the market as a whole is in good condition.

Poultry.

The poultry market continues inactive and unsatisfactory and has yet to demonstrate any great amount of life. Restaurants and hotels are taking small quantities at times now, but the amount disposed of in that way has so far given no impulse to the general market. Offerings of fries reveal a good condition of the young birds, but of the hens little can be said. The railroads

bring in a car once in a while, but it all comes from this State, none from farther east.

Vegetables.

A good steady demand exists for early potatoes and all offerings are easily and quickly gotten rid of. The potatoes shown are of very good quality and large in size as a general thing. The damage done by floods up the river will result in a shortening of the early supply, but the indications are for a plentiful yield of the later varieties. Dried onions are offered in fair amounts and they look good. But little activity was, however, manifested in onions during the week and dealers report the market as rather lifeless. A plentiful supply of summer squash is at hand, cucumbers are quiet because of steady arrivals, while green corn has picked up a bit from the week before. String beans are not too plentiful, while few green peas are shown anywhere.

Fresh Fruits.

At present much interest is being taken in melons and the cantaloupes and watermelons are getting lots of attention. That the arrivals are in very good condition is noted and one dealer reported that only his lack of crates kept his present business from doubling. Fresno melons are well represented here and are being moved rapidly. Peaches are welcomed but are not in any great quantities on the market. What are shown, however, are of good quality. Apricots are practically out at present, but a very good price is obtained for the few that are shown. Cherries in small lots are in good condition and bring excellent prices. Apples at present are rising in the general estimation and four tier fruit can be disposed of very readily. Cool weather continuing, however, has put the ordinary shipments of fresh fruits considerably behind a good year's average and it is doubtful whether it will catch up much in the time remaining. Queries regarding grapes bring out the fact that no record breaking crop is on the vines and that a lot of table grapes will be taken up by the wine men whose stocks were destroyed in April. It is believed the quality will be very good and except for a hot wave excellent grapes are already assured.

Beans.

Sixty thousand sacks of Limas are in dealers' hands in the south and at least half of them will be carried over the coming in of the new crop in October. Eight hundred thousand sacks are in sight on the vines and crop conditions are very good. Small white beans also promise very well and the present appearance of the vines is good. Black eye beans are reported very scarce at present though the crop outlook is good.

Citrus Fruits.

The orange men took readily a carload of Valencias that came in last week and report a good condition of the fruit. More can be readily handled it is thought, and so far the market in oranges is healthy. The cool weather has killed local calls for lemons, but the shipping demand holds prices well up. Any kind of grape fruit is in demand and can be sold without delay, in fact, the demand has outrun the supply to some extent during the week.

Nuts.

Little can be learned of nuts as few dealers are interested at present or have any stocks on hand. Cool weather is sending up retail demand a little but hardly enough to create a great demand. Everything now depends on the coming crops, concerning which conflicting reports are coming in.

POULTRY YARD.

A CLAIM FOR THE ENCLOSED PLAN FOR CHICKENS.

Captain E. Price Mitchell, whose valuable book, "A Practical Poultry Plant," has been sold by this paper to many readers, has written, at the request of the California Promotion Committee, the following results of his experience:

An ample income for the average family can be realized from five acres within 12 months from the start; and the demand is so great that other States find it profitable to ship in both birds and eggs. Of course, there are many who fail in this business, but most of these failures are due to ignorance of the prevailing conditions here, and beginning with poor stock.

Commercial vs. Fancy Plants.—Fancy stock is not necessary, but birds from good laying strain are absolutely necessary. Both eggs for hatching and birds should be bought from the man who can prove that he is making a living from commercial poultry, and not from the fancier who has strings of prize birds for sale. A bird may stand high in the show room and yet be a poor layer. The man who runs his plant on practical and successful lines always keeps a record of his eggs from day to day, and will be quite willing to show his record to a prospective customer, so before buying it often pays to make a visit to the poultry plant and see

what you are likely to get for your money. Many people when entering the poultry business as a sole means of livelihood are apt to figure on selling the majority of their eggs and birds at "fancy" prices and the balance at "market" prices. In my own case I reversed this policy and aimed first to supply the market and then to gradually work into a fancy business. After a five years' trial I find that I cannot keep four breeds of fancy birds and also give the other end the attention it requires. I have to give too much time to the fancy end of the business at the risk of neglecting the commercial end, which, after all, is, in my case, the end that I can absolutely rely on the biggest part of the income. I find that even with advertising and keeping the best stock that money can buy, it does not yield commensurate returns unless one exhibits and takes prizes at the shows. To exhibit means that the commercial end must often be neglected by one's absence at the shows. Fancy breeders are all right in their place, but there is room for 50 commercial plants for each fancy plant, and besides the average hardworking and thoughtful man can successfully manage a commercial plant, whereas the fancier is more often born than made, for he requires special qualifications that are as much a matter of endowment as mathematical ability; for instance, most people can figure up to a certain point, but only one in many can successfully tackle higher mathematics. I would advise the keeping of one breed only on the commercial plant; commence with the best stock you can afford to buy and then pick out each year the finest birds and separate them for breeding purposes and in a few years the result will be a fine flock of uniformly good birds.

The White Leghorn.—Personally, I prefer the White Leghorn for this State, as the climate here is more like their old homes on the northern shores of the Mediterranean. They are also less prone to broodiness than the heavy breeds. It is a simple thing to separate the broodies of a small flock, but quite a different matter when the flock consists of a thousand birds. Even the so-called non-setters like the Leghorns go broody at times, and if left in the nest all night the fever gets well started and laying stops for two or three weeks, but if the bird is put the same night into a coop with a slatted bottom, she will be laying again within a week. A flock of 1,000 White Leghorns from a good laying strain will net from \$1,200 to \$1,500 a year if properly fed and cared for, and with incubator, brooder and chicken houses will occupy four acres. Each bird should average about 11 dozen eggs per year, and the average price of eggs, about 25c. per doz. The food will come to about \$1.40 per year. This includes shell, charcoal, etc.

The Inclosed Plan.—I find the intensive method of keeping poultry preferable in many ways to the colony plan. By the former method a great deal less land is required, and the birds are always under one's eye, so that a case of sickness is seen at once and the bird is burned before the disease has time to spread. Then, again, the houses, being so close together, can be cleaned daily, and the birds kept free from vermin, otherwise they become infested and the egg yield drops off at an alarming rate.

I have been visited by several poultrymen lately who very plainly gave me the impression of doubting my words when I told them that I am netting nearly \$400 an acre from my four acres of poultry, that I lose by disease never more than 20 grown birds a year, that I raise 95% of my brooder chickens, and that I hatch but 1,500 eggs a year and from them raise 1,000 birds. I attribute my success to my plant being an intensive one, that can be worked by one man and that I can in 15 minutes walk around it and see every bird on the place and look inside of every house. By experience I find I get the healthiest, quickest grown chicks from mating two-year-old hens to yearling cocks; hatching at the right season plays a most important part in my system. Leghorns, hatched before March, after laying a few eggs, go into molt in August like old hens. Those hatched in March and April begin laying well in September and keep it up until the following August, when they molt. Those hatched after April, generally take from two to three months longer before commencing to lay than the March and April birds. With me it takes about 70 eggs to pay for the year's food for each bird; after that all is profit, so one can easily see how important it is to begin the profit eggs as soon as possible and keep them up as long as possible. A great many birds lay under 100 eggs a year, which leaves but a profit of 50c. or under; by careful culling and keeping only the best stock I get \$1.50 profit per hen. I therefore consider that 1,000 birds kept under the conditions described in my book give me as much profit and a great deal more pleasure than 3,000 birds kept on a large acreage by the rough and ready methods of the colony system.

THE RANGE

SINGED CACTI AS FORAGE.

During the periods of prolonged drought, to which the southwestern United States is liable, range cattle frequently browse upon various species of cacti common to the region.

The Arizona Experiment Station has reported the results of studies regarding the utility of this class of forage plants, particularly after the spines have been removed by burning by means of a prickly pear burner—that is, a gasoline torch similar in principle to that which plumbers use. The spines of about 300 plants of the species of cacti commonly found in the neighborhood of the station, including prickly pears, chollas, etc., were singed, the spines being burned off at intervals for about 10 days.

The first 50 plants that were singed were literally devoured by the stock, the prickly pears being eaten nearly to the level of the ground, while only the trunks and woody branches of the chollas remained. As the work was continued from day to day, it was evident that the stock (although under usual circumstances they will eat more or less of the cactus with the spines) were feeding entirely upon the singed plants, and that they readily distinguished them from the unsinged ones. This singeing and close browsing of the cactaceous plants, if continued, would surely result in their final destruction, which would add more distress to what already exists, so that in general not more than one-half of the plant should be singed, leaving the remaining half to restore the growth singed and utilized by cattle.

Conservative estimates indicate that from 7,000 to 11,000 lb. of cactus forage can be prepared daily in this way at a cost of \$2.40, which represents eight gallons of gasoline at 30c. per gal. The amount of water in this forage, as determined in the experiment station chemical laboratory, is approximately 75 to 80%, leaving 20 to 25%, or 1,600 to 2,500 lb. of solid matter for the day's work.

Cacti have been analyzed at the Arizona and California Experiment Stations. Carbohydrates constitute the principal nutritive material in the dry matter of the cacti. The amount of protein present, as in the case with most green fodders, is small. The ash content was found to be high, "suggesting an explanation of the purgative effect of this forage upon cattle."

In the above estimate no account has been taken of the possible expense of one extra man to operate the burner, since ordinarily this work can be done with the paid help already at hand. The relative value of this class of forage is as yet in question. The expense and trouble of burning, however, will be amply justified, if range stock can be successfully carried over periods of extreme shortage. The large amount of water in this forage is of no small value to thirsty, starving cattle, doubtless enabling them to feed much farther from their watering places than they could otherwise do.

J. J. Thornber, who carried on the Arizona investigations, states that in using a gasoline torch for singeing cacti, the tank should be suspended from the shoulder in such a way that the end which supplies the gasoline to the burner is always down. As a matter of economy it will be found desirable to maintain a good pressure of air in the tank, and to avoid using the burner in a brisk or even a moderate breeze, since one-third more gasoline is then required.

In connection with an extended study of prickly pear and other cacti as food for stock, carried on by D. Griffiths, of the Bureau of Plant Industry of the U. S. Department of Agriculture, data regarding different methods of singeing cacti, the use of the singed material as a feeding stuff, and other questions were considered.

The most prevalent practice in southeastern Colorado, according to Dr. Griffiths, consists in singeing the spines over a brush fire.

This operation is practicable where there is considerable brush or wood conveniently situated, but it has many disadvantages. The plants are collected and hauled to some convenient place where a fire is built. A brisk fire will remove the spines from one side of the joints almost instantly. It is then necessary to turn the plants over and burn them again on the other side. Some careful feeders often leave the plant on the fire until much of the outside has turned black from the heat, in order to insure the removal of the short as well as the long spines. Others exercise less care, and simply allow the flames to pass over the plant, burning off only the distal half or more of the long spines and leaving practically all of the short ones for the cattle to contend with. It often happens that the fuel used is greasewood (*Sarcobatus vermiculatus*) or shad scale (*Atriplex canescens*), the young shoots of which are of greater nutritive value than the pear itself. On the arroyos and washes dead cottonwood timber is used, while in many localities juniper furnishes the fuel.

This is the most primitive method of feeding and one which has been practised in Texas since before the Civil War, and is still very extensively employed not only in Texas, but also in old Mexico, where singeing the thorns with brush is about the only method employed in feeding prickly pear and other species of cacti.

The use of the gasoline torch for singeing cacti, it is stated, originated in Texas, and is commonly practiced on the range. It is economical from the standpoint of the labor involved, as well as from the quality of the feed.

The process consists in passing a hot-blast flame over the surface of the plant, which can be very quickly done at small expense. The spines themselves are dry and inflammable. In many species one-half or two-thirds of them will burn off by touching a match to them at the lower part of the trunk. The ease with which they are removed depends upon the condition of the atmosphere, the age of the joints, and the number of the spines. A large number of spines is often an advantage when singeing is to be practised, because the spines burn better when they are abundant. The instrument used for this purpose is a modified plumber's torch. Any other convenient torch which gives a good flame can be employed, the efficiency depending upon the lightness of the machine and the ease with which the innermost parts of the cactus plants can be reached by the flame.

Cattle brought up in (prickly) pear pastures do not have to be taught to eat pear. They take to the feed very naturally. After a day or two of feeding the sound of the pear burners or the sight of smoke when pear is burned with brush, brings the whole herd to the spot immediately, and they follow the operator closely all day long, grazing the pear to the ground—old woody stems and all—if the supply that the operator can furnish is short.

Pear, when burned, scours cattle much worse than when it is simply scorched enough to take the thorns off. * * * Burning with a pear burner tends to kill out the pear if close pasturing is practised afterward.

In practice pear is very seldom fed alone. Even during the severest drought cattle are able to pick up some old grass and get a little browse from the abundance of brush that exists throughout the pear region. It is seldom that the Texas rancher feeds it without some cotton-seed meal, although the cactus of southwestern Colorado has usually been fed alone.

PASPALUM DILITATUM.

This hardy grass has proved very desirable to the University experiments with drought-resistant grasses, and seed was distributed some years ago from the University Experiment Station for wider trial. It has not, however, caught on in California practice though its time may be coming.

Mr. B. Harrison, of Burringbar, New South Wales, Australia, writes very emphatically of its value in that country, as follows:

I have had some years of experience with its cultivation and harvesting, and consequently appreciate its great merits. *Paspalum Dilitatum* is the favorite grass, and is now almost exclusively grown by the stock raisers and dairy farmers on the northern rivers of New South Wales, Australia, and to whom it has proved a mine of wealth, and has not only made dairy farming 20% more profitable than on the best dairy lands of New Zealand, but made a world famous name for the north coast of New South Wales. Not only does this celebrated grass grow well in all classes of soil abundantly, but it is also noteworthy for increasing the value of property, and it is also impossible to calculate the extent to which it has increased land values on our northern rivers, where any description of land laid down with this pasture is worth £10 (\$50) per acre, some of which is valued at £32 per acre, and much land that was unsettled and considered absolutely worthless a few years ago, is now occupied and is of considerable value. This famous grass grows rapidly, yields an immense quantity of sweet, nutritious fodder, which is eagerly relished by all stock, and where the frosts are not too severe keeps green throughout the year, and even when the other varieties of grass are scorched up in many places with the heat of summer it retains its verdure. It has yielded as high as 22 tons of green fodder per acre on cultivated ground when four months old, and several successive cuttings of 13 tons within the year. It is the backbone or mainstay of our farmers' dairying industry, which has assumed such immense proportions, and has proved a great factor in bringing about an era of prosperity on the North coast, unprecedented in the annals of dairying. To prove this assertion I may state that the North Coast Co-operative Butter Co., which is owned and controlled by our farmers and which has been established ten years, for the month of January last paid away to its suppliers for cream and pork \$225,500, or at the rate

of \$2,500,000 per annum. Nearly all the cows from which the milk for this factory is obtained are almost exclusively grazed on *paspalum*, and very few of them are either handled or housed during the winter months. The cows fetch from \$40 to \$145, and springing heifers at about two years old realize from \$40 to 50 per head. Mr. Brandon, the well-known manager of this creamery, says of *paspalum* grass, "I do not know what this district would have done without it, especially during the very dry weather we experienced some time back. With regard to the quality of butter manufactured from it, it is all that could be desired."

Mr. C. F. Julius, Secretary Dairymen's Union, Bucca Creek, New South Wales, writing in the April number of the New South Wales Government Gazette, says: "This remarkable plant is quickly coming to the forefront as a grass peculiarly adapted to our uncertain climate. Being a deep rooter, its properties as a drought resister alone proclaim it invaluable; and while throughout the warmer seasons of the year it surpasses all other grasses in the rapidity and abundance of its growth, the severest of New South Wales frosts, although retarding its growth, fail to reduce its ever-green state. It has proved most efficacious in the subjugation and prevention of all noxious growth and by its propagation many lands hitherto deemed worthless in their rocky, hilly, or swampy situations, have been triumphantly reclaimed."

The April Government Gazette says: "Throughout the length and breadth of the northern dairy districts *paspalum* is regarded as the king of pasture grasses, and at present it has no doubt every claim to such a position."

Mr. H. Munsey, of Dundas, New South Wales, says: "*Paspalum* is the grass that has revolutionized the dairying industry on the North coast. Scores of instances can be quoted showing that the capacity of farms has been doubled and trebled, and it forms a dense mass of succulent forage. Having spent over a month going through farms where this grass has been sown, I can safely recommend its planting on a large scale. I have seen farms where 100 head of dairy cattle have been kept all the year round on less than 100 acres of land giving splendid returns in milk and butter. This grass, if inclosed for a short period in the autumn, will provide a good supply of feed for the winter."

Mr. James King, President of the Tweed River Dairymen's Union, says: "To write of the merits of *paspalum* would require a newspaper."

This grass generally grows about 5 or 6 ft. high, although it frequently attains 9 or 10 ft., and the seed is generally surface sown after any growth has been burnt off or fired, at the rate of about 10 or 15 lb. to the acre, and within a few months, if there is a fair rainfall is several feet high. On cultivated land which has been worked very fine the seed should be surface sown also, in the spring and summer months, and when the pasture is well established on moderately rich soil it should carry one bullock per acre. For pig feed this grass is also eminently suitable, and a few acres should carry from 50 to 100 head, if assisted with a small quantity of skim milk or other feed. It is highly spoken of by all who have used it for this purpose.

THE FIELD

SUGAR BEETS FOR ALCOHOL.

Apropos of the denaturized alcohol law, which will go into effect January 1, 1907, the American Sugar Industry and Beet Sugar Gazette makes the following interesting observations:

For the beet farmers of this country, especially, the new law will be of the greatest interest, because the measure will make it possible to raise beets profitably, even where no beet sugar factories are available. Commercial alcohol, for use in the United States, will be made from corn and potatoes, or from sugar beets. It is estimated that farmers will find a market for millions of bushels of corn and potatoes each year at the distilleries. In Germany, a consular report says, cows are fed on potatoes after the tubers have been used for making alcohol.

The immediate effect of the passage of the new law will be to furnish to consumers a safe, easily portable fluid fuel of intense heating strength at a price lower, comparatively, than gasoline. Distillers can produce alcohol at from eighteen to twenty cents a gallon. This it is estimated should mean a price at less than twenty-five cents a gallon at retail. Alcohol has nearly twice the heating power of gasoline, now selling at about eighteen cents a gallon.

Denaturized alcohol has been in use in Germany and France for years. The former country, with one-fifth less population than the United States, uses five times as much alcohol. One firm in Berlin, according to a recent consular report, sold more than 60,000 alcohol

lamps in a year. In France, last year, nearly 3,500,000 tons of sugar beets were used in the making of alcohol.

One gallon of 94 per cent alcohol is equivalent to two gallons of gasoline for fuel, light or power, hence it would be as cheap at 26 cents a gallon as gasoline at 13 cents. But alcohol will not cost 26 cents to produce. It is made and sold in Cuba for 12 to 15 cents a gallon. It will be sold in the United States, within a few years, as low as gasoline is now selling for, if not lower. It will, therefore, either drive out gasoline entirely or cut its price in half.

But even if gasoline sold for half price, alcohol would still be preferable, for it is far less dangerous and also less objectionable as to odor. It will not explode, it will mix with water, so that in case of fire, the fire can be extinguished with water, whereas gasoline and kerosene float on water and continue to blaze, hence pouring water on a gasoline or kerosene fire only aggravates the danger. Insurance rates, therefore, will be less when alcohol supersedes gasoline.

Gasoline engines now in use can burn alcohol with slight changes, if any are needed, and, therefore, can run after this year at half their present cost. The alcohol can be used either in creating electricity for lighting or by direct burning with Welsbach burners. It is said that direct burning of the alcohol produces a steady light of thirty candle-power—so brilliant that a ground glass globe becomes necessary to protect the eyes.

ALFALFA FOR HOGS.

Professor W. J. Spillman, of the Agricultural Department, Washington, was in attendance at a State Farmers' convention at Pullman, Washington, some days ago, and in his talk to the farmers he took occasion to give some interesting figures on the possibilities of alfalfa.

He said that in the central states, on ordinary land one acre of alfalfa is made to feed ten head of hogs, which are placed ready for market with the addition of ten bushels of corn, worth thirty-five cents a bushel. He said this feed will make a hog weigh 200 pounds at eight months old, and the average price is five cents per pound, or \$10 for such a hog. Figuring the corn worth \$3.50, this means \$6.50 for the alfalfa the hog ate, and with ten such hogs on an acre, it means \$65 an acre for a single crop of alfalfa on ordinary land. On the best land fifteen hogs, worth \$97.50 an acre, are produced. He declared that on irrigated land 20 hogs can be raised on one acre.

THE APIARY

A CHINESE BEEKEEPER IN MONTEREY COUNTY.

A writer for Gleanings in Bee Culture writes a sketch of what he calls "The only Chinese bee specialist in California, and probably the only one in the world," as follows: Hearing of Sam Ling, the bee-rancher, a Chinaman who produces honey by tons; he who could increase his bees in winter and get the first honey-flow as early as May; of the Celestial who, rumor said, was producing large queens from every queen-cell started; of the Oriental who has drones the year round for emergencies; who never loses a swarm of bees with his own invention, a swarm-catcher; and whose perfect, straight comb-honey sections were produced without foundation starters; made the writer determined to seek out this Asiatic apiarist and learn for himself the truth or fiction of Dame Rumor.

Early in January after a long ride by buckboard over hills and through vales, yet following the shores of the Pacific for fully twenty miles, we found it necessary, in reaching our destination, to push on by trail. So a mustang (a Mexican horse) was procured, and we pushed on boldly from the ocean, back into the Coast Range Mountains, some eleven miles to where our foreign bee-rancher was supposed to be located. Suddenly we came upon a clearing in the mountain vastness, and, to our surprise, found before us, not an ordinary California bee ranch, but an up-to-date apiary. Yes, here, hundreds of miles from a factory, we saw well-made, well-painted dovetailed hives, all leveled and in shape for business, for Sam Ling attends to his business—the production of comb honey.

Instead of a "pig-tailed Celestial" we met a man who greeted us in fair English, and made us welcome to his home made with his own hands from timber growing near by.

Our time being limited to one day we made our business known to Mr. Ling, and soon had him in his apiary, where the first thing noticed was quite a commotion in front of two or three hives in different parts of the apiary. All other swarms were remarkably quiet, for it was a cool day, and as late as two o'clock.

"What is the meaning of the excitement there?" I asked of Ling.

"Some queen fly to-day," he said.

"What are queens out for to-day?" I asked. "There is no honey coming in, and no swarms are coming on, surely, thus early."

"Yes," said Ling, "I make more bees (swarms) every day now."

"But you can't do that now, Mr. Ling; you have no drones at this season of the year. Your queens will be no good."

"Oh! you no sabe him" (Ling talks a mixture of Spanish, English and Portuguese). "I make him drones one month ago; keep him in those big hives over there."

Interested beyond our imagination I proceeded to question him about the business. He is not up-to-date in bee terms, and it was very hard to get a good understanding of his procedure. As nearly as I can understand, and from an examination of his drones, they are the product of fertile workers. He makes several swarms queenless, and then waits for fertile workers to appear, when he puts the frames of brood, bees, and all over a strong colony, with a queen and drone excluder between the stories. In this way, with an entrance in the rear of the upper story, he lets fly his drones at such times as he needs them and can keep them in, when he so desires. The workers have access to both stories, and fly from their regular entrance. Having drones he is ready to make swarms, which he does in the old way by taking three frames of brood and bees from strong swarms.

When I ventured to say that his drones were not well sexed and not natural ones, he shrugged his shoulders and said, "Well, I do him that way every year. You go try him. You don't hab believe me; can do it yourself."

"But your queens and cells will be small," I said, "from mere nuclei."

"Oh, no! I make him just so big as I want him," said Ling.

Here again I engaged him with interrogations of how he did and what he meant by making large queens. He proceeded as follows, but said that I 'must not tell somebody.' He takes any small queen-cell; and just before it is capped over he cuts from the opening with a sharp razor as small a piece or strip as he can. The bees then, he says, will build on to this opening, or extend it the fraction of an inch. When they again start to cap it over he uses the razor again, and even a third time. In this way he gets large cells, and correspondingly large and better queens. Again he said, "Don't hab believe me, you can do it. I do it every year all time."

He, like all Celestials, intends to return to his native land; and his hopes now are to 'heap rich in four more years, and then make one bee book for my own country.'

He says, "I no like any more book, for I make him from my own head."

He has manuscripts piled a foot high in his Chinese hieroglyphics to prove his determination.

It was late, and a cloudy hour when I proposed to photograph him as well as his bees. His swarm-catcher, which I failed to see, and from lack of time did not get a full idea of, is made of burlap and wood strips, and he says it is a success. Ling uses no foundation starters in his one-pound section supers, but uses full sheets of foundation in his brood chambers, and of his own make, I have been informed. He uses bait combs in his outside rows of sections, thereby getting his sections all filled at the same time, so he says. He remarked that his customers preferred comb honey not made on foundation sheets or even starters.

One thing sure, his honey is sought for, and his success as an apiarist is attested by his snug bank account and good credit at home.

I have given your readers the facts as I got them. Some of his ideas are new to me, but may have been tried and exploded by the older ones of the fraternity.

Ling has had no experience with foul brood, but believes an ounce of precaution is worth a pound of cure, so he has buried in a near-by mud-hole a sack containing rock salt and sulphur.

"Some bees there all the time in warm time," he says. "You see, you no let him start you no hab him—all same smallpox."

Ling is a typical mountaineer, as the many pelts of the mountain cats and antlers of deer he had attest. He escorted me down the mountain canyon after the sun had hid its rays from view.

Sam Ling is a native of the Flowery Kingdom. When but 13 years old he shipped before the mast and landed in England. His eagerness to learn, a peculiarity of his race, led him into many pursuits before he settled down in the Coast Range Mountains of California as a bee-rancher. He is a possessor of a home and two

apiaries. He has no longer to seek for customers. They seek him, and by mail correspondence he sends his comb honey to parts as far distant as Chicago. The summer resort of Pacific Grove takes the bulk of his crop, being twenty miles distant. He is educated in his own language, and intends, when his fortune is made, to return to China, and publish a book in his own language on bees and honey. He has discarded his queue and blouse, and tries in all ways to be thoroughly American.

ARBORICULTURE.

HIGHWAY TREES FOR SOUTHERN CALIFORNIA.

By Mr. C. E. Bemis, Horticultural Inspector, Covina, Los Angeles county.

At this time when so much interest is felt by our citizens upon the subject of avenue tree planting, suggestions upon the topic would seem to be timely, and I will give some of the impressions made upon me in my twenty years residence.

Some general rules for street tree planting are necessary to success. First, deciduous rather than evergreen trees are much preferable in this climate, and especially in the citrus districts where avenue trees furnish the only opportunity for variation from the monotony of the orchards.

For Avenue Effect.—Another fundamental idea more generally agreed upon is that in planting long, straight trees and avenues, both sides should be planted to the same variety of trees.

In selecting varieties for planting some general qualifications should never be lost sight of, such as resistance to drouth, cleanliness (the latter including freedom from insect pests), rapidity of growth, strength and lasting vigor, density of foliage, etc.

Choosing Trees.—I will name a list of six varieties of deciduous and three varieties of evergreen shade trees in the order of their merit as they appeal to me:

Elm, Spanish Chestnut, Catalpa Speciosa, Black Locust, Russian Mulberry, Eastern Black Walnut, and in evergreens, Pepper, Pittosporum Undulatum, Live Oak. The corkbark is as good as any of the elms. I have not seen the Spanish chestnut except as single specimens, but judging from these noble specimens, I can easily understand why Mr. W. S. Lyon (than whom we have no better authority on ornamental planting) gives this tree 56 out of a possible 60 points of excellence in his comparative tables.

Mr. Lyon makes no mention of the nuts yielded by this tree, but I have known the nuts from a single tree to sell for upward of \$20 in a single season.

Catalpa Speciosa needs some shaping while young but is a beautiful tree with magnificent blooms and fragrance, and is of very rapid growth, equaling in this respect the Russian mulberry, which latter tree except for the dropping of its immense crop of fruit upon sidewalks, could be moved away up toward the head of this list, as it has everything else to recommend it and makes the most beautiful shaped tree in the list.

The black locust, while disqualified in the east by the attacks of borers and by its tendency to sucker up from its roots, seems to be all right in arid climates on dry lands, as in Colorado and California. It has beautiful, though somewhat scant foliage and lovely, fragrant bloom.

The eastern black walnut is a fine sidewalk tree, but is not a rapid grower.

In the evergreen list California has nothing else to compare with the pepper tree for the countryside, but we are almost barred from its use in cities where cement walks and curbs are to be laid by the buttressing of its roots. At one time the ravages of black scale nearly removed this tree from the desirable list, but at present they are kept almost entirely cleaned of this pest by the scutellista flies.

Pittosporum Undulatum as a single specimen is a thing of beauty, but whether it can be grown in continuous rows with uniformity of size and shape I have never seen demonstrated.

The live oak will, I believe, prove to be one of the most satisfactory evergreens for sidewalks, but must be planted without injury to tap root to be properly grown.

This list of trees is practically immune from insect attack and disease, unless we import from the east the gypsy moth, a pest upon deciduous trees so destructive in the east that the Massachusetts Legislature has appropriated \$200,000 for its destruction for the present season in that state alone.

The planting of the sterculias, camphors, China trees and umbrella trees in considerable numbers should not be tolerated in fruit districts owing to attacks of the various Aspidiot scales.

THE DAIRY.

THE PREVENTION OF BOVINE TUBERCULOSIS.

By Emil Weschke, Ph. G., M. D., Professor of Materia Medica, College of Physicians and Surgeons, at a recent meeting of the State Veterinary Society.

That the ravages of tuberculosis in cattle decrease their number, cause poorer stock producing diseased milk, and meat, and lessen the fertility of the cow, is certainly sufficiently known to have enlisted the careful consideration of the veterinarian, and to urge him forward to find a prophylactic remedy and a cure. But when we further find that tubercular cattle are a direct means of conveying the disease to the human family then it becomes the absolute duty of the cattle-owner, the veterinary and the physician to combat the disease with all the means in their combined power.

It stands to the credit of the veterinary profession that it, more than medical men, has seriously considered this subject from a preventive standpoint, but even yet more thought should be given it, and that most seriously. The very fact that the bacillus of the disease is identical in the bovine and man, that it is conveyed from cow's milk and beef to the human organism, which it infects, and produces the same pathological phenomena, should arouse our every energy to hinder its perniciousness or to destroy it absolutely. Steps should be taken by the veterinary and medical societies to meet jointly for a discussion, and progressive men among whom can be found many far better versed in the etiology and prophylaxis of disease jointly attacking man and beast (as for instance tuberculosis, glanders and others), than the average physician. How few medical men pay sufficient attention to the subject of rabies, anthrax? Every medical college should have a chair of comparative anatomy, physiology and pathology, and the knowledge thus gained would cause early affiliation of both professions and a united effort to stamp out disease.

Danger from Milk.—The greatest danger of tuberculosis lies in the ease of its transmission in milk to children, not only establishing thereby the disease but often leading to their early death.

Pure, fresh cow's milk is the best substitute for mother's milk. When boiled it loses in nutritive value and has its protective germ cells, and when not boiled it may contain pathogenic germs, among them chiefly those of tuberculosis, but it retains then those substances absolutely

necessary to the child, such as albumen, iron and lime, which products are either destroyed or precipitated by boiling. Hence, if we can produce milk free from bacteria and otherwise containing the natural constituents in right proportion, we can furnish an ideal food for the infant.

Cleanliness in the dairy and in transportation will eliminate the danger of incidental or contaminating germs, such as those of diphtheria, scarlatina and typhoid, but it alone is not sufficient to prevent the transmission of the bacillus of tuberculosis. Experiments noted by Von Behring, where highest cleanliness was exercised about the cows, the dairy, the attendants, the transportation media and methods, and where the milk came from healthy cows, showed it to contain but 100 germs in a c. c. of milk, and this was kept fresh from 11 to 75 and 93 days. Just think of such a test, and the assertion has furthermore been made that the milk from one cow's teat may be quite free from ordinary germs, such as staphylococci and streptococci, while that produced from another quarter is loaded with bacteria.

But with extremest care and under the best hygienic conditions we cannot produce a proper milk from a tubercular cow, and we therefore ask the question, how can we prevent bovine tuberculosis? Therein lies the solution of the problem of safe milk and meat, and to a great extent the prevention of human tuberculosis.

Isolation of affected stock or its destruction would do much to solve the problem, and here the use of tuberculin would be of certain value to reveal the diseased cattle. These could still be used for breeding purposes, and their meat, to a certain extent, when thoroughly cooked, as food.

Whole Destruction Impracticable.—Could the State afford it, and in my opinion it should afford it, all pronouncedly tuberculous stock should be destroyed at once, just as we should compel isolation of the human consumptives, and prevent mothers from nursing their children, which nature itself forbids through exhaustion of the individual. Even in the breeding of cattle danger by contact exists. Excrement deposited in the field, the barnyard, the stable, proves infectious. But to exercise all these precautionary measures demanding eternal vigilance or radical procedures would tax any community far above its ordinary capacity, and it is therefore that Von Behring's Bovovaccine becomes worthy

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of our attention. In speaking of it, since its introduction bears necessarily a certain commercial aspect, I simply do so because the whole subject is of such vast importance to the whole human race as to deserve utmost attention for anything bearing upon it. And furthermore, the name of this illustrious man, who has given to the world the godsend of diphtheria antitoxin, merits our respect and his words our attention.

Bovovaccine.—Bovovaccine is a dry powder representing live tubercle bacilli in a modified form and derived from a cultivated quantity obtained from human source of virulent type. It is titrated with a normal salt solution and injected directly into the jugular vein of the young calf without having to establish the existence of tuberculosis beforehand by tuberculin or other test. It does not possess the power to create the disease itself, but to render the blood of the animals and the whole organism, of course, immune to the encroachment of disease. It is hence not a virus, a disease-propagative factor, but a vaccine, as the term has been used by and adopted after Pasteur. In the hands of a regular veterinarian its use is simple and safe. It is applicable to calves not younger than two months and not much older than four, unless in older calves a previous tuberculosis test pronounces the animal free from the disease. Even in infected cattle it has done good, though bovovaccination in these is not to be undertaken with any such assurance of success as in younger stock and is not yet advocated by the discoverer.

The Behringwerk at Marburg, Germany, contemplates the preparation of Bovovaccine with salt so as to require but the addition of distilled water for the mixture. Each animal submits to two injections, the first one being with one immunizing unit, and the second one with one of five times the strength, which is injected not sooner than 12 weeks later. Care should, of course, be exercised to not spill the vaccine and to avoid injury to the hands by the needle, but the ordinary precautions obtaining in similar inoculations will also here prove sufficient. Perfect antiseptic precautions are insisted upon, and the field of operation is preferably cleansed with a 2% solution of Iridol. The calves do not experience any untoward results, and in over 10,000 immunizations no accident traceable to Bovovaccine has occurred. This establishes the apparent harmlessness of the method, and as far as I have had recourse to the records, and have been personally informed by local scientific investigators who have used Bovovaccine,

no detriment to the calves has been experienced. All these immunizations should, of course, be done only at the hands of a competent veterinarian.

Time of Using.—The question naturally occurs to us, how long since Von Behring instituted his experiments and in what condition are the cows then operated on when calves. Laboratory work was begun long ago, but four years have elapsed since the method was introduced commercially and not a single failure, as far as unbiased records or observations show, has resulted. But is this time sufficient to show permanent immunity? Should we not await the lapse of the cow's natural life till we believe in Bovovaccine? In diphtheria we use antitoxin at the very earliest period, and we use it again if the symptoms are not bettered. We do not say that the patient has not been rendered immune for life and yet we do not wait to administer it even though we have not waited three score and ten years before the first inoculated patient has died to prove the result of the method. Even with Von Behring's antitoxin it took seven years before the medical world recognized it, and then the endorsing word came not from his own countrymen but from France. And even for Bovovaccine the strongest words of favor come from that country to-day, since Professor Vallee of Alfort, for his government, has spoken of his successes with the product.

Some inoculations were made by Von Behring's assistants in definitely infected calves, and an early post-mortem proved encapsulation of certain foci, showing a process of healing to have started, but it should be distinctly understood that Bovovaccine is not a curative but a preventative of bovine tuberculosis.

Assured success has been achieved in several German states which have since made the method compulsory. Belgium, Italy and France have likewise indorsed the product. In France, as stated, the

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tests were extensive, complete and conclusive, and a resume of them here is in place. Allow me to present it:

Successful Results of Antituberculous Vaccination.—Under the official direction of the Minister of Agriculture an examination was made December 2 and 3, 1905, at Melun, France, of 40 calves, 20 of which one year previously had been subjected to inoculations with Behring's tubercular vaccine (La Presse Medicale, December 6, 1905). Each of these had received two injections (with 12 weeks' interval between them) in the jugular vein, of four milligrammes for the first injection, the second being 20 milligrammes, of a culture made from dried human tubercle bacilli, which had been kept (without reinforcement) for several years in the laboratory of Professor Vallee, who, in order to make the vaccine more homogeneous and manageable, added to it a solution (emulsion) of carbonated sodium chloride. This, however, it was claimed, had no effect upon the virulence of the product. One of the vaccinated animals had died from accident during the year, but without presenting any signs of tuberculosis at the autopsy. The remainder were in perfect health at the termination of the year, and did not manifest any clinical signs of tuberculosis after having been exposed to diverse causes of infection. Three months after the last infection had been made the tests began. Some were placed in a stable in which tuberculosis cattle were kept; others received an intravenous injection of a virulent culture, and this was given hyperdermically to others. The control animals, which were subjected to the same treatment, all became infected, and many died, others showed extensive and deep tuberculosis lesions. In contrast to this, all of the vaccinated animals appeared to be immune, and the injection of tuberculin in four animals vaccinated simultaneously, and in six vaccinated by injection into the vein, did not give any reaction. Clinically, therefore, all of the vaccinated heifers were found to be protected. The entire group was killed and subjected to careful autopsy. Although all of the control animals showed well defined lesions of caseation and generalized tuberculosis, not one of the vaccinated animals (inoculated either subcutaneously or by the vein) had pulmonary tuberculosis. One animal vaccinated under the skin had local tuberculosis with liquefaction of a prescapular ganglion. But there was no extension of the disease to the other organs, the toxine being prevented from diffusing by the immunity conferred by the vaccination. One other animal which had been vaccinated by intravenous injection showed slight lesions of the mediastinal ganglia. These lesions coexisted with signs of right-sided chronic pneumonia, and would have probably escaped observation in an abattoir. The pulmonary condition was attributed to a former attack of infectious pneumonia; it was not tuberculosis. The contrast between the conditions found in the vaccinated and the control animals is regarded as affording indisputable proof of the value of this vaccine. Moreover, the conditions of the tests were more severe than would be likely to be met with in ordinary practice. It is, therefore, hoped that the vaccination of the bovine race against tuberculosis may now be regarded as at length established on a scientific basis.

Domestic Reports.—What probably interests the American profession more than foreign are domestic reports, which are coming in very satisfactorily. In New York Dr. Morris of Binghamton, has been active, and in Massachusetts inoculation of the calves of two State institutions has taken place, while in Maryland Dr. Buckley has been actively at work with flattering success and has been the first one to perform autopsies

on previously tubercularly infected cattle, and who found that the bovovaccinated calves were free from tuberculosis, while the non-protected control animals were sickening and dying of the disease.

In our own State the State Veterinarian, Dr. Keane, has performed bovovaccinations, and as far as I have been informed the calves have done well.

Dr. Archibald of Oakland, who is deeply interested in the subject, has operated with very good success so far. The State is to be congratulated that men of their professional standing have taken up the work at an early date, and they will soon be in a position after inoculation with virulent material and consequent autopsy to speak authoritatively on Bovovaccine.

This method of cattle immunization against tuberculosis has certainly passed the experimental stage, and I hope that you gentlemen will succeed in proving that we have found an initial means to combat the great white plague. I thank you.

HOME CIRCLE.

SONG.

Salt whistling wind for the home-turned sail,
The siren song for the sea,

The nightingale for the lotus vale—
But the voice of my love for me!

The lighthouse flame for the angry deep,
The star for the twilight tree,
The flashing dream through the mists of sleep—

But the eyes of my love for me!

The buried pearl for the ocean-bed,
The egg for the tree-swung nest,
Rare gems and gold for the crowned head—

But the heart of my love is best!

Oh heart of my love! Oh voice, oh eyes!
All gifts of the world to me
Are as ropes of sand, since I've found life's prize

And its star and its song in thee!

—Margaret Ridgely Schott, in Lippincott's.

LOVE'S BLUNDER.

Miss Brereton had gone out for a ride before breakfast. It was a beautiful morning, but she did not enjoy her morning gallop with the same zest that she usually did. Something was troubling her. She walked her pretty brown mare all the way home from the park and dismounting ran quickly to her room. She dressed in a hurry without glancing into the mirror, but before she went downstairs she deliberately took up a hand-glass and scrutinized herself anxiously. After a minute she laid down the glass with a sigh. She had seen enough. She was thirty-five and the mirror plainly said so.

For a little while she stood musing, her serene brow puckered into a labyrinth of wrinkles, and then she went down to breakfast.

A young man threw down a newspaper and rose eagerly at her entrance. He came forward with a look of reverent welcome in his well-opened blue eyes and held out his right hand—his left, swathed in bandages, hung in a black silk sling.

"Good morning!" he said; "I score for the first time—you're actually late!"

"I know," she answered apologetically; "I hope you aren't quite starving? Where's the doctor?" she asked.

"Glued to his microscope," he replied with a laugh—"at least, he was when I came down. Bennett has warned him twice."

"In that case it's no good worrying him," she remarked resignedly; "I'd better send his breakfast out."

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Are making the leading Hay Presses. Baling most of the hay raised. Their presses are guaranteed to excel in capacity, durability and light draft all other presses in the world. Write for illustrated Catalogue. Established in 1860.

Kynaston Merrick rose and rang the bell, gazing at her thoughtfully as he did so.

"Do you know," he said as he sat down again, "you look awfully like my mother in that blue gown."

He made the remark with unconscious simplicity; in his own mind he thought it was the greatest and most glorious compliment he could pay to any woman. He did not see that this woman winced, and that the color rushed hotly to her cheeks.

"Do I?", she answered lightly, and reached for the toast-plate; but her heart sank with a strange, dull jerk as she spoke—a habit it had acquired of late.

A gunshot wound, presenting unusual features, had brought Lieutenant Kynaston Merrick home from the Philippines, and had eventually landed him as a patient at the home of the clever, good-natured city specialist.

Dr. Brereton had brought the young soldier in a hansom one night, and had handed him over to his sister, whose skill he preferred for pet cases to that of a professional nurse.

At first there had seemed no chance for the arm; and then as the result of perpetual watching, a daring operation was essayed, and there followed recovery and rejoicing.

"How abominably flat I shall feel tomorrow!" he went on ruefully, as he attacked an egg with a healthy, youthful appetite; "and for lots of tomorrows, I'm afraid. You and the doctor have spoilt me for duty-visits, Miss Brereton. I shall be quite glad to get back at work again."

Margaret Brereton bent to pick up a crumb from the carpet. "Ten years ago I should have let it lie," she thought vexedly. "Anxiety about crumbs is an infallible sign of age," "We shall miss you too," she said aloud, but her tone didn't imply (as it might have done) what the blank would really be.

The boy noticed it and sighed.

"I'm afraid I've been an awful nuisance," he said wistfully.

Miss Brereton smiled. "On the contrary you've been a very great pleasure," she answered lightly; "more than that, you've been a triumph. You've proved

one of Richard's pet theories and decorated his cap with yet another feather."

"And to you?"

"To me you've been a most inspiring companion, and—well—as you implied just now—quite—a son."

He saw by her tone that something had hurt her, but he wasn't conceited enough to guess what that something might be.

From the first moment of their meeting he had put this woman with the beautiful, calm eyes and the strong sympathetic face on a pedestal by herself—the pedestal of passionate respect and reverence. She was the type of character that in the years to come he would tell his wife about almost in a whisper. She understood him without being the least bit inquisitive, and she always seemed to make him talk about himself without appearing to do so.

"I shall never forget our chats," he said earnestly, "especially that one on Sunday night about choosing the right woman. It sank deeper than you'll ever know."

Miss Brereton flushed slightly. "I never meant to preach," she said apologetically, "only I've seen so many lives wrecked and I couldn't bear to think you might plunge into a mistake through ignorance of our sex. It was only meant to warn you to sift the false from the true, and to teach you to recognize what is shallow and artificial when you see it. You told me there was no one you specially cared for, you know, or I should never have been so bold."

He looked across at her with an almost sad expression in his goodly boyish face.

"Doesn't it strike you as strange for a man of twenty-two never to have had a love affair of any sort—never to have cared for one girl more than another?"

"It strikes me as remarkably sensible," she said decisively. "It means that when the right girl does come, she will get something worth having."

His expression changed a little—he dropped his eyes and began to fidget nervously with the tablecloth.

"I have absolutely never known," he said slowly, "till yesterday, what it felt like to love any woman—except my mother."

Margaret Brereton's heart gave a wild bound, and then seemed to stand still—her cheeks paled slowly, and under the table her hands clasped and unclasped one another.

"Till yesterday?" she repeated, hardly knowing what she said.

Kynaston Merrick was fumbling in his coat pocket with his sound hand. He did not notice her agitation—he was evidently agitated himself. "You won't laugh at me," he went on, "because you never do, or I shouldn't tell you. If it was possible—but I suppose it isn't—I should say I had fallen in love with a photograph." He extracted something as he spoke, and held it out to her.

Miss Brereton's self-possession came back in a moment, and with it the heart-ache that had grown habitual to her of late.

"And you've really never seen the original?" she asked, stretching out her hand to take it from him. "How old-fashioned and romantic of you!"

"Never!" he replied, "and I don't suppose I ever shall. She's probably married with a family of children—or—or something."

She took the picture from him and gazed at it long and earnestly. Her face didn't change—only a very close observer might have noticed that her lips quivered slightly.

It represented just the head and shoulders of a young girl—hardly out of her teens—with wide, eager eyes, not unlike Kynaston's own, and masses of dark hair and frank, smiling lips. She was in evening dress, but only a little bit of dimpled neck and a fold or two of drapery were visible. It was a picture of herself, taken when she was eighteen.

Margaret Brereton turned the picture over. "You found this in the house," she said in a curiously quiet voice.

"Yes, in the drawing-room. I was looking through a lot of albums and things to amuse myself yesterday, and I came across it. Is she—is she any relation of yours? I fancied there was a likeness."

Miss Brereton nodded. "A very distant one," she said carelessly.

"But isn't it a perfect face?" he went on with boyish enthusiasm; "I've never met any girl a bit like her; yet I've known heaps of pretty ones. She's just the idea I've always carried in my brain of what my wife should look like—gentle, and enthusiastic, and young. I shouldn't care to marry a woman who was much over 20. I should lose the feeling of protection, if I did—you know what I mean."

Yes, Miss Brereton did know, but she did not reply at once—she was trying to fight down a wild, passionate envy of the laughing girlish face she held in her hand.

All at once she looked up and caught the young man's eager eyes full upon her.

"Where is she now?" he asked softly, as if he dreaded what the answer might be.

For a moment a mist obscured the room—the photograph—everything—from Miss Brereton's gaze; and then she extended her hand and gave him back his treasure.

"I am so sorry," she said, and her lips were very dry; "she's dead—this girl—she's been dead for years."

The light died out of his face. He bowed his head sorrowfully over the portrait for a moment, and then with a trembling hand he put it back, as if he could not bear to look at it any more just then.

"I thought so," he murmured almost to himself—"I did not dare to hope. She looks too sweet, and pure, and good to be anything but ideal. Was she married?"

"No."

"Then she's as much mine as any other man's," he said defiantly; "do you mind telling me her name?"

"The same as mine—Margaret."

"And the same as my mother's—I'm glad of that—very glad. I may keep the photo, mayn't I?"

She nodded acquiescence. "And perhaps some day," she said gently, "you will find some one like her—or even more ideal. Heaven grant you may! I won't tell you her history, just now—later on I may write and tell you."

"There's nothing in it to disappoint or disillusion me?" he asked quickly.

"I trust not—I hope not," she answered softly—and there was a long silence which somehow neither cared to break.

Footsteps sounded in the passage, and Dr. Brereton came in. He was tall and iron gray, and smiling—a little like his sister, but older.

"Good morning—good morning!" he began cheerily. "Is it to-day you must go, Merrick? Upon my word I don't know how we are going to spare you. You've quite roused the old fogies up. There's Margaret positively looking girlish since your arrival. I think we shall have to adopt you, if you'll cut the army. How should we suit you as parents, eh?"

"I don't think anything would suit me better, sir," said the young man, and he looked longingly at Margaret as he spoke.

And Margaret, because she was a brave woman and a good one, smiled.

—McCall's Magazine.

DOMESTIC HINTS.

Creole Dish.

Two cupfuls of well-cooked and seasoned rice, two cupfuls of canned tomatoes, half a pound of raw ham minced and browned in butter; mix all together, add a dash of cayenne pepper, turn into well buttered pan and bake.

Banana Fritters.

Two eggs, half a cupful of milk, two cupfuls of flour, one and a half teaspoonfuls of sugar, one teaspoonful of baking powder, and three bananas. Separate the eggs. Beat the yolks, butter and sugar together until light. Pour in the milk. Beat the whites of the eggs stiff; add them and the flour alternately, a portion at a time. When all is used stir in the baking powder, and lastly the bananas, cut into half inch blocks. Drop by teaspoonfuls into deep fat hot enough to smoke slightly. Cook three or four minutes until a delicate brown, turning once. Drain on paper and serve hot.

Spoon Corn Bread.

Put a quart of milk, or half milk and half water, in a double boiler. Add four large kitchen spoonfuls of white cornmeal, and stir and cook five minutes. Remove from the fire and let it cool, stirring it once or twice as it cools. Then add two or three eggs beaten with two tablespoonfuls of wheat flour, one tablespoonful of butter and a scant teaspoonful of salt. Mix well, then pour into a greased baking dish, and bake 35 minutes. Serve immediately in dish in which it is baked, with a folded napkin wrapped around the dish.

HINTS TO HOUSEKEEPERS.

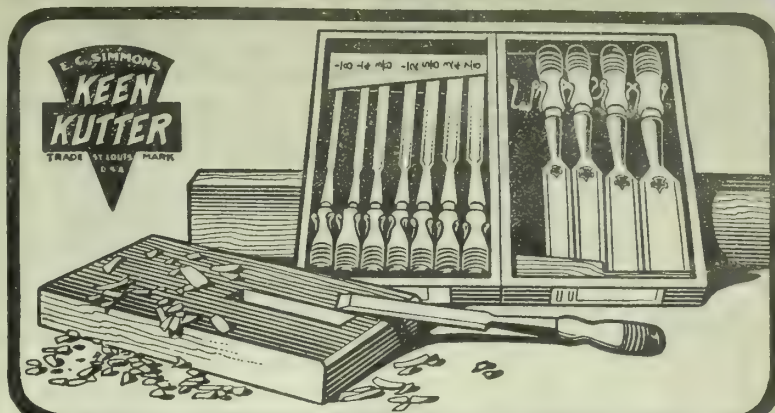
A little milk in the dishwater will make the china shine.

When making buttonholes in material which frays, stitch twice around on the machine before cutting the hole. This will give a firm foundation and you will find that you will have no trouble from fraying.

Every time you lose your temper you injure your health.

The tooth brush should be thoroughly cleansed in clear water every day and washed in ammonia or borax water once each week.

Remember, that it is impossible to heat impure air. Let in the pure cold air for a short time and then see how much warmer as well as sweeter the room will be.



SUCCESSFUL TOOLS

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FRUIT PRESERVATION

FRUIT CURING AND ITS PROCESS.

Cured fruit in the State of California has undergone many stages of more or less perfect processing, within the last 25 years, which at the present time have reached a marvelous state of perfection.

Many readers of the Rural Press can remember the old "back achy" process of dipping prunes, which necessitated filling the wire basket with the ripe fruit, dipping it in a kettle of dirty, boiling water, then dipping it again in the rinsing trough, then spreading it upon a board ready for the drying ground. It was impossible under this process for one man to dip more than two tons of prunes per day. Under the new process adopted by the largest producers in the State, this is entirely done away with. Yet the result attained by succeeding processes has never produced entire satisfaction.

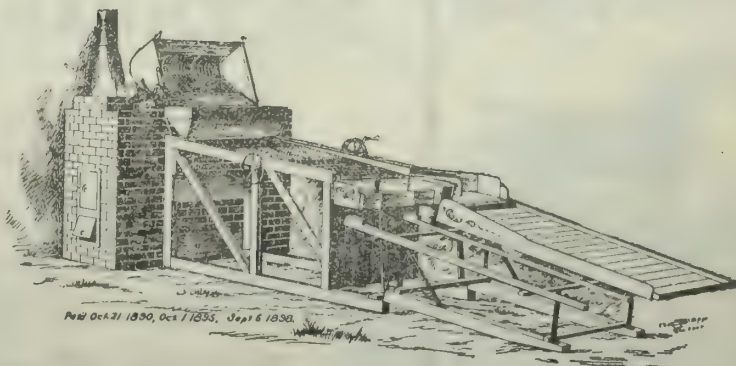
The fruit would not dry evenly, frog bellies were common, so much so that the entire product of an orchard would be affected. The immense waste caused by over-drying or under-drying, which

must have existed, is hard to estimate, and the necessity of sorting the sizes at the time of dipping became another matter of delay and expense. Some producers would grade the green fruit before dipping, by this means certain desirable results were attained. While the double handling was expensive and slow the fruit itself was more even and uniform when cured, but the expense of making it so was so great that the profit was reduced to that derived from inferior fruit produced by the old method.

"Necessity is truly the mother of invention" in the prune industry. The improved fruit processor is truly a wonder. Frog bellies are now practically unknown—it has passed. It produces an even grade of fruit, free from culls, with the small sizes drying in their trays, the more perfect fruit separated to their trays, while the over-ripe fruit is dropped to its tray. Uniformity and superior quality is maintained at less expense than under any process our shrewd American inventors have been able to contrive. Prunes are no longer subjected to the strong lye water, which cuts the skin to pieces, and allows the lye to soak into the fruit itself, but they are treated

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by a weak solution made to remove the bloom. They are then passed to the perforator, which automatically pricks the tough skin of the fruit, rendering the old frog belly difficulty impossible. It is then automatically passed from one screen to another until all dirt has been removed, and the fruit has been separated into separate sizes, ready for drying.

Peculiar advantages are derived from this method—they are incalculable. The fruit is easily handled. It is properly prepared without any of the injurious qualities derived from the old process. It is reduced to separate grades of uniformly processed fruit. The sun does the rest, and the dry product taken from the tray is certainly a delicious morsel. Every prune being equal to its neighbor. Thus it is that the smaller varieties which dry first can be returned to the fruit house, or covered in the field, allowing the larger fruit, which takes a longer time to dry, an opportunity of curing to the same degree of perfection as the smaller varieties, and the over-ripe fruit, which is somewhat inclined to be mushy, receives the best attention through this method.

It is not jammed into trays in a promiscuous manner and jammed out of shape by mixing with other fruit. The tough and green fruit which under the old process cured with a reddish tinge, cures now with as black and glossy a skin as any of the perfect fruit.

The largest associations use them as well as many of the individual growers, and they are pronounced by all the best machine ever invented for the purpose.

AGRICULTURAL REVIEW

Butte.

Chico Enterprise, July 16: D. H. Feathers of Truckee has raised rhubarb that measures from the top of the ground to the tip of the leaves 68 in. The stalk proper is 4 in. long and is solid, not being the least pithy. He has several stalks of this kind in his garden and all of them are now over five feet. He has been experimenting in growing rhubarb for the past several years and believes that next year he will grow rhubarb that will measure over seven feet. A stalk weighs nearly five pounds.

Glenn.

WILL NOT WAIT FOR GOVERNMENT IRRIGATION.—Orland Register, July 17: John F. Stoll of Sacramento, who owns a tract of land on the edge of the foothills west of Orland, is making arrangements to install a large pumping plant on his land for irrigating purposes. He will put in a 7-in. Crow lifting pump,

which will be run by a 26-h. p. Imperial engine with crude oil generator. This is merely an experiment to see if water enough can be obtained to feed a 7-in. pump. He has a machine which will bore 500 ft. and will sink his well that deep if necessary to get the right amount of water. This pump will draw 234 gal. per min., or 14,040 gal. per hour. If the first well is successful, he will bore another and run two pumps by a double stroke.

Kings.

A HANFORD ORCHARD.—Lodi Sentinel, July 17: A Hanford orchardist gives the following data regarding the growth and value of apricots in the south. From 130 apricot trees he has taken 2 3/4 tons of dried fruit, which brought 13 3/4 c. per lb., making a return of \$667.50, which is \$5.12 1/2 to the tree. There are 108 trees to the acre, so this return represents \$554.50 per acre from that fruit this year. Mr. White paid \$200 per acre for the land last fall. He has 420 Muir peach trees, which means 3 8-9 acres, from which he says he will get \$2500 worth of fruit this year.

Merced.

CATTLE QUARANTINE OFF IN MERCED.—Stanislaus News, July 20: State Veterinarian Dr. Charles Keane has issued a new quarantine proclamation for California counties against the Texas fever, a deadly cattle disease. Under the new quarantine, which has been signed by Governor Pardee, and which goes into effect immediately, Merced county is released from the quarantine area, and the cattle of that county are now relieved from all restrictions. The counties still in the quarantine district are: San Luis Obispo, Kings, Fresno, part of Madera, Tulare, Kern, Santa Barbara, Ventura, San Bernardino, Riverside, Orange and San Diego. In many of these the quarantine areas are quite small and an inspection will soon be made by State Veterinarian Keane and Dr. W. M. McKellar, of the Bureau of Animal Industry at Washington for the purpose of removing them from the State and Federal quarantine at the end of the present year, if the conditions are favorable.

Santa Clara.

APRICOTS ABOUT GONE.—San Jose Mercury, July 16: This week will see the finish of apricots at the Ainsley cannery, as there are practically no late Moor parks. This will make about 15 working days, about half the usual run. Mr. Ainsley says that the Blenheim and Hemskirk apricots were the largest this year ever experienced and were very choice. He is to have peaches shipped from Marysville, as the cold spring has developed a poor peach around here—not enough sugar. About July 20 work will begin on peaches.

PARASITE DESTROYS THE CODLING MOTHS.—San Jose Herald, July 17: Although no reports have been re-

ceived from local apple growers concerning the result of the work of the codling moth parasites which were distributed in this valley a year ago, Horticultural Commissioner Ellwood Cooper announces that he is satisfied that the parasite imported from Spain for his department to save the apple crop of the State from the ravages of the codling moth has proved to be a success. The parasite, if properly cultured in all the States of the Union, will effect a saving of about \$100,000,000 a year to the orchardists of the United States. Commissioner Cooper has traveled through the Pajaro Valley and received communications from the orchardists of Sonoma county, in which two localities the parasites were placed last season. This is the second season that California has experimented with the parasite. "There is no doubt," says Commissioner Cooper, "that we have now the remedy for the ravages of the codling moth in both apple and pear orchards. Where the apples and pears were failing a year ago orchardists of the State now report conditions changed. In two or three years the codling moth will not likely be considered a menace to apple or pear growing in California. The orchardists in the Pajaro valley have concluded that a remedy for the moth has at last been provided, and instead of digging up orchards are putting in young trees. Where the parasite that destroys the codling moth is placed the orchardists have suspended spraying with whale oil and other preventives. Such substances as are included in sprays are not suited to the delicate palate of the parasite. You can quote me as saying that the remedy for codling moth has surely been found. We have not sent out many colonies of parasites, but the number will soon be greatly increased so that every part of the State may be benefited as early as possible."

San Joaquin.

GOOD PRUNE PRICES.—Lodi Sentinel, July 17: A car of prunes shipped from Lodi on June 28, sold in Boston on July 13 for \$1556. There were 925 crates. Following are the prices: Tragedy—M. Koyanagi Co., \$1.80, \$1.55; Abundance—\$1.25, \$1.20; Tragedy—W. H. Crump & Son, \$1.85, \$1.62; Tatsutsuke & Higashiyama—\$1.90, \$1.75; Tragedy—A. Thornton, \$1.85; C. H. Buck, \$1.75; Buck & Cory, \$1.85, \$1.70; Burbank—\$1.30, \$1.40. Gross, \$1556. Market strong.

TWO HUNDRED DOLLARS AN ACRE FOR TOKAYS.—Lodi Sentinel, July 19: M. W. Shidy sold the crop of Tokays on his 20-acre vineyard to a Japanese firm of Vacaville. The price paid was \$200 an acre. The crop was sold on the vines and will be harvested and picked at the expense of the buyer.

San Bernardino.

SUGAR FACTORY READY FOR WORK.—Chino Champion: On the morn-

ing of July 26 the conversion of 10,000 acres of beets into sugar begins at the Chino factory of the American Beet Sugar Co. Harvesting will begin about a week earlier in some of the outside fields; in local fields about August 1. Tests of beets show a satisfactory percentage of sugar. About 300 extra hands will be employed this season. One hundred and fifty thousand sacks have been received, about four carloads. They come from Minneapolis and hold 100 lb. sugar, net. Each is double—a fine white inner one and a thick brown outer one—for strength and cleanliness. The season is expected to last about four months.

Sacramento.

A NEW APPLE.—Sacramento Union, July 20: The chamber of commerce has on display a box of apples grown by G. H. Slawson in his orchard four miles south of this city, on the lower Stockton road. Mr. Slawson has been unable, after making several inquiries, to identify the variety, but from their appearance it is safe to say they are hybrids, the result of crossing several species. The apples are of a fine quality for eating and cooking.

Sonoma.

CHILDREN IN CANNERIES.—Healdsburg Tribune, July 18: Superintendent of Schools Minnie Coulter has sent out a circular to the canneries through the county, with extracts from a letter written by Labor Commissioner Stafford to the Santa Rosa canneries setting forth the provisions of the child labor law. The

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GOOD PRICES FOR WINE GRAPES.

—Santa Rosa Republican: The price of wine grapes for the season seems to be definitely fixed at \$30, and growers are holding on to their crops until that figure is offered. Throughout Sonoma, Napa, Fresno, Santa Clara and Santa Cruz counties, where the principal wine grapes are grown, the yield promises to be large and much wine will be made this fall. It is known that 30,000,000 gal. of wine were consumed in the San Francisco fire. This being taken from the market makes the demand more keen. It would not surprise home growers if the price reaches more than \$30 before the season has finished.

Sutter.

SOME SPLENDID WHEAT.—Sutter Independent, July 19: Charles Bruce received by mail the first of the week three samples of the famous blue stem wheat that was grown on the Jim Johnson ranch in Adams county, Wash. The wheat is still in the head, which on the average is six inches long and the kernels show up plump and of good size, notwithstanding they were picked while still in the green state.

Yuba.

EXPRESSING VEGETABLES.—Sacramento Union, July 18: Two carloads of expressage are being shipped from Marysville daily at present. Most of it is vegetables and fruits. One carload goes to Sacramento and the other to San Francisco.

CANNERIES OPENED.—Marysville Democrat: The Marysville cannery commenced this season's run yesterday with plums, as it will be several days before peaches will be in condition for canning. It is stated the run this year for the Marysville and Yuba City plants will be a long one, the destruction of the canneries in San Francisco making it necessary that a quarter more fruit be put up. The new cannery of the J. K. Armsby Co. is ready for business. It is estimated that three hundred women and girls will find employment. The new warehouse of the Cannery Association, built for handling dried fruits, will add a new department.

FARMERS ORGANIZING TO CARE FOR ROADS.—Marysville Democrat, July 19: The Lower Colfax Road Club was organized in Grass Valley Saturday during a meeting of the farmers from that section. The club will immediately begin repairs on several pieces of highway between Grass Valley and the old Taylor crossing at Bear river. In all about nine miles of road will be cared for by the farmers comprising the club, who will be allowed \$20 per mile by Supervisor Miller from the road fund. They will be held accountable for the condition of the public thoroughfare within their jurisdiction. The club starts out with a membership of fourteen.


CLEAN PICKING IN HOP FIELDS.—Marysville Democrat, July 19: The hop growers of Sacramento and Yolo held a meeting Saturday in Sacramento. Flood Flint stated that the condition of the business demands concerted action. When hop prices are high there is little difficulty in selling any grade of hops. But when, as at present, prices are low, buyers are exacting in their demands. It is a fact that Sacramento hops are discredited among Eastern buyers. This is due

to the fact that the hops are picked "dirty." From 18 to 25% of the product is lost. Leaves and stems are picked indiscriminately by the pickers, who are paid by weight. Saturday's conference heard these statements, and it was finally decided that a price should be set for this year's pickers with a bonus for clean picking. The price of 80c. was regarded as liberal, and a bonus of 15% will be paid for clean work—that is for green hops with no more than 6% foul. The yield of hops hereabouts will be very heavy this year.

WASHINGTON.

DESTROY GRAIN TO KILL PEST.—Stanislaus News, July 20: The Hessian fly, one of the worst pests that is known to wheat, has made its appearance in Southern Washington, along the Columbia river. Entomologist Melanger of the State Agricultural College has startled the farmers by recommending that the entire wheat crop of this year be burned, with the object of exterminating the pest. He says that the Hessian fly annually causes a loss of at least \$10,000,000 to the wheat growers of the Middle States. Its advent here is a matter of grave apprehension to Washington farmers. He is of the opinion that prompt measures will result in stamping out the insect life. It is now living as small brown maggots resembling flaxseed in the lower joints of the stalk. Melanger says that if the infested fields are closely mowed and then burned completely over, after drying for several days, these insects could be exterminated. He declares it necessary to undertake such treatment immediately, before the Hessian fly emerges from the maggot form. He believes it better to utilize one crop than to allow the Hessian fly to destroy a large part of the crop for future years. The State has no provision by law for exterminating such pests, and the wheat growers are requested to organize and act together.

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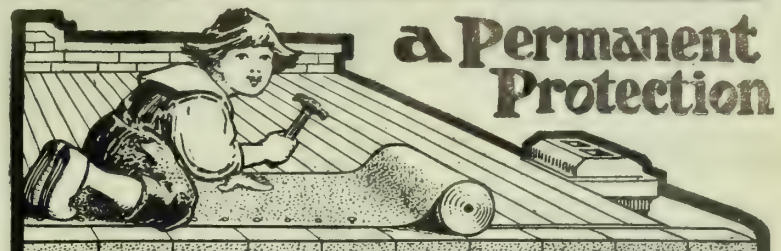
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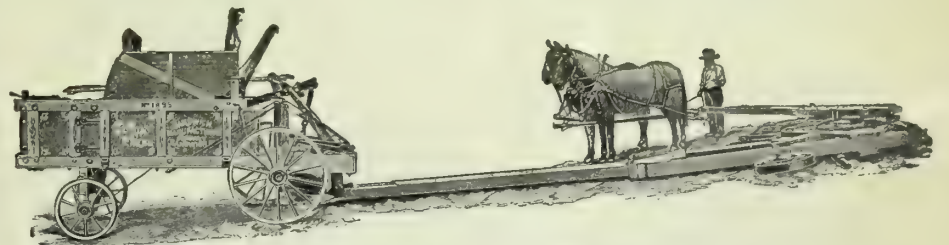


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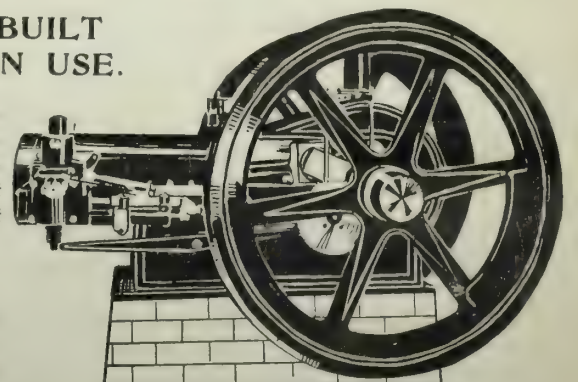
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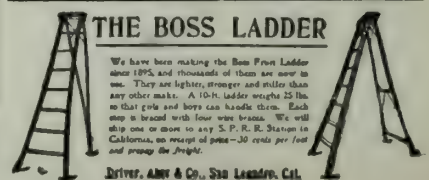
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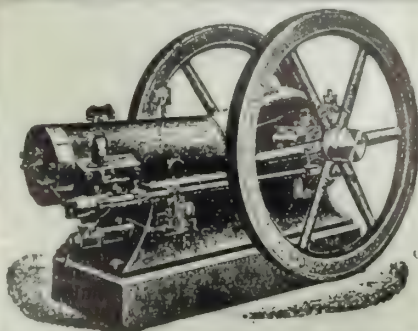
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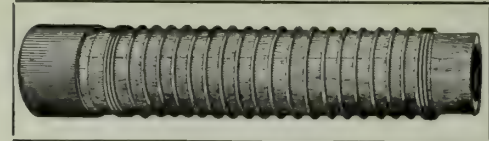
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Vol. LXXII. No. 5.

SAN FRANCISCO, SATURDAY, AUGUST 4, 1906.

THIRTY-SIXTH YEAR

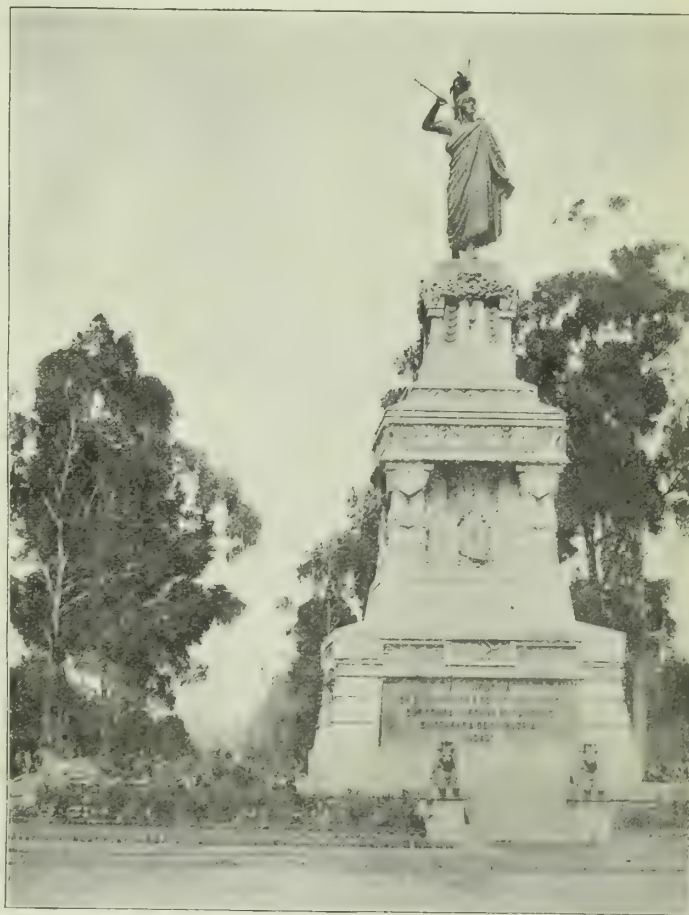
MEXICAN SIGHTS AND MEMORIES.

We turn again this week to suggestions of the picturesque natural beauty and the engrossing historical charms of our sister republic of the south, finding both text and illustration in the appreciative sketches by Mr. T. A. Rickard, being published in current issues of the Mining and Scientific Press:

Mexico City is the Paris of the American continent. The air is clear and balmy with the feel of the tropics, the early mornings prompt a canter on horseback in the park at Chapultepec, the story of the city gives it the dignity of history and the glow of romance, the actualities of to-day are touched with the silken hand of luxury; life is rich, gay, and progressive. The brutality of mere materialism and the squalid splendor of newly-made wealth are not evident, the invasion of Anglo-American energy and capital has prompted many sanitary reforms and municipal improvements, but the practical man from the north is insignificant in numbers, so that while he may be partly responsible for the cleanliness of the streets, he is unable to spoil the distinction of a community, the members of which go to Paris as to the Lourdes of a fashion saint, bringing home a taste in clothes and horses that enhances the attractiveness of the daily promenade and gives grace to the Spaniard and distinction to the Mexican. Time was when the City of Mexico was far from salubrious, when her streets were badly paved and her hotels among the worst of their kind; but all that has been changed. Of comfortable hostelries there are plenty; the restaurants afford a great variety of good cuisine, and the clubs—the Jockey, the British, the American, and several others—give sojourners the hospitality worthy of a metropolis.

There are many fine buildings in the city. The cathedral and the museum are well known to travelers. From the observatory on top of the latter building there is a splendid view of the city and its environs, especially eastward, where the towers of the cathedral and the domes of the churches of the Profeso and Santa Teresa rise finely above the multitudinous buildings, cut into squares by straight streets, beyond which are the dark foothills, dominated in the distance by the broken crest of Ixtaccihuatl and the big cone of Popocatepetl. To the southeast, one can see Iztapalapan—now Istapalapa—where, on the eighth of November, in 1519, Hernando Cortez met Montezuma, and the pioneer of European invasion exchanged courtesies with the poor king whom he so utterly destroyed within less than a year.

At that time Iztapalapan was a place of 12,000 houses, and it was under the rule of Cuitlahua, the brother of Montezuma. Through the town passed one of the three great causeways that led across the lake to the City of Mexico itself, and it was over this causeway that the Spanish adventurers made their way. Today Iztapalapa is a small village, and where once spread the waters of the lake, there is marshy ground. The causeway is obliterated by a modern street, that of Acequia, which took advantage of the secure footing thus afforded. It starts from the portals of the Plaza de la Constitucion, as does also, in the opposite direction, northward, the San Andreas street, which merges in the road to Atzeapotzalco; this was the line of the causeway to Tlacopan or Tacuba along which the Spaniards retreated on the occasion of the noche triste, that black night of July 1, 1520, that saw them all but annihilated by the fury of the Aztec populace. At Popotla the survivors halted under a tree which survives to this day. It is now guarded by an iron railing, but despite even this protection I read in the daily paper, during my visit, of the arrest of a vandal who wanted a piece of the bark to add to his collection of curios. If ever there was a time in the Spanish conquest when Cortez and his fellow pirates were heroes indeed, it was just after their sad halt at Popotla. Of the number that had entered the city only a third (250) of the Spaniards survived, and of their native auxiliaries one-fifth (1000). They had lost most of their horses, all their artillery, all their muskets, so that there remained only their swords and their courage. But Cortez faced the music like a man and was confident even in the hour of deepest gloom. Scarcely one week later, on the plain of Otumba, this handful of men met a multitude of natives, estimated all the way up to 200,000, and beat them off the field, mainly by reason of the desperate resolve of a few of the cavaliers who followed the immediate lead of Cortez and penetrated the



The Statue to the Last Aztec Emperor.

thick of the combat in order to kill the chieftains on the opposite side. It may have been comparable to the attack of a center-rush of a senior football team into the midst of a kindergarten, but it was magnificent by reason of the disparity of numbers and the proof of a superiority of race that was not all physical.

It is a fact, both significant and pathetic, that while there are today several statues to the last Aztec king—Guatimotzin or Cuitlahuac—more particularly the fine monument in the Paseo de Reforma, and while nearly every city in Mexico has a bust of Hidalgo, the priest who started the final revolution against Spanish rule, there is no statue to Cortez in the whole length and breadth of Mexico.

One is quite apt to look upon the crater of a great volcano as a vast depository of sulphur. A company was once formed to exploit deposits of brimstone in the crater of Popocatepetl and obtained some notoriety. Not long ago Senors Jose G. Aguilera and Ezequiel Ordenez descended into the crater and found a deposit of sulphur not more than 15 cm. thick and so distributed as to be of no industrial value. Although exceptionally pure, the sulphur was in the form of small particles mixed with volcanic dust around cold fumaroles; these emitted steam with traces of sulphuric acid, the decomposition of which led to the precipitation of the sulphur. It was the result of deposition for a period of 20 or 30 years. There is a story—and it is Prescott who tells it—of an ascent of Popocatepetl, made by some of the men with Cortez, to secure sulphur; but these explorers did not go to the bottom of the crater, which is 800 ft. below the summit; they went only as far as a fumarole on the lip of the crater. After all, the quantity of sulphur which they needed—and they took—to make gunpowder, was insignificant.



Popocatepetl as Seen from the Foothills.

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THE WEEK

Harvest is a little late this year but is moving ahead satisfactorily and good average yields are being secured. Particularly with barley is the record good. Fruit shipments are freer and some days considerably ahead of corresponding days of last year, although the aggregate to date is considerably behind. Fruit prices at the east are running high this year.

A large movement of fresh tomatoes is interesting. Stockton sent a carload the other day; said to be the first full car from that district. It contained 780 crates of 30 lb. each, firmly nailed in position so that they could not shift. The railroad has agreed to deliver the car at Chicago inside of eight days, and it is believed that the vegetables will be in fine condition. The shipment was supplied by 43 growers in San Joaquin county, and a good price was paid for the tomatoes. We like to see these things going. The amount which California can produce of these is incalculable.

The San Francisco disaster is naturally working hardship to producers by interference with the usual course of crops. Probably only the grain growers have thought how much it means in the reduction of warehouse capacity, not directly by destruction of warehouses, but by usurping interior warehouses usually available for grain. An interesting report comes from Stockton to the effect that there is not sufficient warehouse space in the San Joaquin valley and Stockton to store one-half of the grain that is usually taken care of there. The disaster in San Francisco caused several large firms to engage most of the warehouses in Stockton to store their goods being brought out from the East, and probably not over one-third of the usual space used for grain will be available this season. The crop is a large one, and it will be necessary for many of the large growers to provide shelter for their wheat and barley.

The bag trouble is also pressing because those who have stock can ask what they like. There has been complaint in our columns and elsewhere that the State's prison bag factory did not act as it was expected to. Some comfort may be derived from the assurance by Governor Pardee that the bags were all sold in the manner provided by law, early in the year. Some 1,208 persons filed applications and deposits, furnishing the usual affidavits that they desired the bags as actual consumers. At the beginning of the year there were on hand a little over 1,100,000 bags, and the monthly output of bags runs from 300,000 to 380,000. All of the bags were sold, except 500, which were sold during the month of May for some special thing arising out of the San Francisco catastrophe. Concerning the sale of bags, the Governor said:

"Whether some of the bags purchased nominally on account of consumers for which affidavits were furnished, did actually pass into the hands of speculators, I do not know; but of course, we are aware that such things have happened in time past. Sometimes farmers order a larger number of bags than they can use, and sell the surplus. The total number of bags sold this year was 4,134,800, and this divided by 1208, the total number of purchasers, gives an average of about 3,400 to each. The affidavits, I understand, call for from 300 to 5,000 bags each. Five thousand is the limit, the

law forbidding the sale of a larger number than that to any one person."

All these things should be carefully looked into in the grower's interest, and a permanent association of growers could easily do such work and exert influence enough to correct wrongs if they are seen to exist. It is not enough to believe there is wrong; it must be demonstrated. An individual cannot undertake this, but a good, energetic association can do it and should do it.

We have had several notes of late on labor. The situation in California is likely to be very burdensome to agriculture if a fuller supply is not secured from somewhere. The San Francisco Chronicle notes the great need of help by fruit growers, especially for the prune and grape crops, and mentions some great employing interests which are contending with the farmers for what supply there is. It says that the demand throughout the State at present is abnormal, and promises to exceed the supply for many months. The railroads are clamoring for laborers to be used in prospective work and that already under way. The Western Pacific needs 7,000 men, the Southern Pacific 2,000 men, the United Railroads of San Francisco, 2000 men, the outside electric lines building in the Santa Clara, San Joaquin and Sacramento valleys and Southern California want over two thousand men. What chance there is to get men for these undertakings and for harvesting has to be considered in connection with the demand in San Francisco, where rehabilitation is going on with the following schedule: Minimum wage for railroad work and warehouse work is \$2.25. Bricklayers are receiving \$7 and \$8 for an eight-hour day, with a minimum wage of \$6. Cement workers get \$5, hodcarriers \$4, plasterers \$6, stonecutters \$4.75, carpenters \$5, cabinetmakers \$3.50, millmen \$3.50, lathers \$6, shinglers \$4, painters \$4, fresco painters \$5, paper-hangers \$4, plumbers \$5, machinists \$3.75, tanners \$4, sheet-metal workers \$4, glaziers \$4 and stationary engineers \$4. There is a tendency for the employers to pay additional wages to the men to reserve their services. Probably the best way to improve the labor supply is to give these figures the widest possible publicity. Labor like other commodities flows to the best markets, and the farmers may get some relief from the movement which the high rates at San Francisco will induce.

The reforms in the meat packing industry which it is hoped will place the product above suspicion, are starting in briskly. Last week Secretary Wilson made public the regulations under the new law governing the inspection of meat products for interstate and foreign trade. They are stringent throughout and are in line with the best authorities on the subject of sanitation, preservation, dyes, chemicals and condemnation of diseased carcasses. The general regulations provide that the scope of the inspection shall cover all slaughtering, packing, meat canning, salting, rendering or similar establishments whose meats or meat food products, in whole or in part, enter into interstate or foreign commerce, unless exempted from inspection by the Secretary of Agriculture. Under the law the only establishments which may be exempted by the Secretary are retail butchers and retail dealers supplying their customers in interstate or foreign trade, but even these exempted classes are required to submit to the Secretary an application for exemption.

This increased work for purity and soundness of food will call for the appointment of a small army of inspectors, and it is some comfort to know that these will be chosen upon the ground of fitness alone. So swift and satisfactory has been the development of civil service work in this country that within a month after the passage of the law there had been held special examinations in all parts of the country and something like 3,000 applicants had a try at them. The result is that fully qualified men will be nominated by appointment by the Secretary of Agriculture, and he cannot appoint

except from lists named by the Civil Service Commission. It is a mighty fine thing to rule politics out of such expert service.

The new State Forester, Mr. G. B. Lull, is starting his administration briskly by arranging for the prosecution of four men who have disobeyed the forest laws by leaving fires burning in forests. Two of these men allowed a fire to get beyond their control in Calaveras county, and two others committed a like offense in San Bernardino county. The new State Forester is well known in California, having been one of the practical and trained men secured by the State for the investigation of California forest conditions under a co-operative contract with the Government, which led, among other things, to the passage of the present forest laws. For some time he has lived in Los Angeles, making plans for tree-planting and fire-prevention in Southern California, and during the Portland Exposition had charge of the Government's forestry exhibit there. His technical training was secured at the Cornell University forestry school, and he has done practical forest work in many parts of the United States.

It is quite a pretty idea that western overland railways shall run through alfalfa ribbons. The report is in circulation that the Union Pacific may plant alfalfa to exterminate weeds along its right of way from Ogden to Omaha—a distance of 1,000 miles. The railroad company has had a deal of trouble with weeds growing between the ties and climbing over the rails. Numerous schemes have been tried to exterminate the weeds, and a steady war has been waged against the pest, but without success. Demonstrations proved that alfalfa's ability to flourish without irrigation, and showed also that weeds cannot live in alfalfa when the crop is planted closely. If the experiments now being conducted by the company are successful, alfalfa will be planted on both sides of the track. To keep this hay cut the railroad company will permit farmers living along the tracks the right to cut the alfalfa for their own use. We publish this yarn for the information of California gophers.

QUERIES AND REPLIES

COTTONY CUSHION AND BERMUDA.

To the Editor.—I send you a sample cut from an orange tree (Mandarin). Can you tell me what it is, and what I can do to exterminate the pest that has taken possession of the tree? I have several other orange trees of different varieties, all of which are quite free from disease. I also send specimen of a plant found on lawn this morning. Will constant cutting kill it?—SUBSCRIBER, Clayton.

Your orange tree is infested with the cottony cushion scale. The proper recourse is to get a colony of vedalia cardinalis from Mr. Ellwood Cooper, Horticultural Commissioner, Sacramento. These destroying insects will soon clean your trees of the scale. Your other trouble is Bermuda grass, and it cannot be exterminated by cutting; in fact, about all you can do is to cut it and make a lawn of it, because it is not likely that you will be able to dispose of it otherwise. At the same time it should be prevented from spreading through your garden or other adjacent cultivated land.

TESTS FOR ALKALI.

To the Editor.—I have your answer to my questions about those Eucalyptus trees growing in alkali soil, and now write to know if a man can, by analyzing the soil, determine the amount of alkali, and get a fair idea whether anything can be raised on same or not. If so, where can I have it done and about how much would the expense be?—PLANTER, Fresno.

It is not possible to determine the amount of alkali in a soil sample without a laboratory and adequate chemical training, nor would it be of any particular use to determine the alkali for you from a few samples from a large tract, unless you are quite sure that the distribution of alkali is uniform, which is not generally the case. You can get from the University a publication

on alkali and the tolerance of plants for alkali, in which you will see statements of the amount of alkali which eucalyptus trees will bear, as compared with other trees. You will also see some reference to the character of weeds and other plants which grow on alkali soil and in that way sometimes one can tell whether a certain piece of land is worth trying for eucalyptus, or not. We are inclined to think, however, that if the water level is as low as you stated in your previous letter and the soil is open and not underlaid by hard-pan, and you have plenty of fresh water to use in irrigation, you will be able to carry down the alkali from the surface sufficiently to get a good stand of trees and to continue their growth so long as you are able, by cultivation and by use of fresh water, to keep the alkali from concentrating too near the surface. There is probably no way to determine this matter so easily as to plant the trees and allow them to tell you their own story. Of course, where there seems to be reason to think the alkali is too strong, only a small planting should be undertaken, so that one will not lose much by failure.

DEAD WOOD ON ENGLISH WALNUTS.

To the Editor.—I am enclosing two photos of walnut trees which were taken in our orchard. Some of the trees have died back a great deal this year; in fact, they have not come out at all on last year's growths. Can you tell me the reason of this? Is it because they have been sun burned? Would it be wise to cut off this dead wood at this time of the year, or ought it to be left until the winter?—GROWER, Saticoy.

It is not likely that your walnut branches have been killed by sunburn. There was probably some root trouble involved in it. Whatever was the cause, the treatment consists in cutting back the dead wood near to the place where new growth has started, but not so near in the walnut as in common fruit trees, because the walnut is more disposed to dry out and kill the shoots. Cut an inch or so from the place where the lateral starts, and then cover the wound with thick paint or grafting wax to prevent drying out. There is no advantage in allowing dead wood to remain on the tree. It should be disposed of as sure as its failure can be seen, because the tendency is for the dying back to continue down the branch.

MILLET FOR CHICKENS.

To the Editor.—Will you kindly let me know the name of the enclosed plant, and if it is of any value for chicken feed? The plant is two feet high and there are 19 or 20 seed stems on it. It is growing on the dry mesa land without irrigation. It came up from a packet of flower seeds.—ENQUIRER, San Luis Obispo.

The plant is a millet; probably one of the Japanese varieties, and the seed is excellent for fowls, being especially used for the feeding of small chickens. As it grows so well with you it would seem to be desirable to try a larger piece of it that you may judge yourself of its value for poultry purposes.

A TENNESSEAN WISHES TO KNOW ABOUT ALMONDS.

To the Editor.—Where can I get the seed to plant an almond grove of several acres in extent? Do you plant them in the spring of the year or in the autumn? Do you plant the thin shell or the thick shell and graft on them? How far apart should the trees stand? What are the essential elements in the soil and topography; what is the lowest degree of cold that the almond tree will stand? How many years will an almond tree bear paying crops? Will the almond bear transplanting without injuring its bearing qualities? How many years from the seed before the trees will bear nuts? Are there any serious diseases or other troubles that infest the trees?—INQUIRER, Nashville.

Almond trees are grown just as peaches, apricots, etc., by planting seeds during the fall and winter, and budding in the nursery row in July or August. The hard-shell almond is generally used as a stock on which to bud the soft-shell varieties. The trees are planted at about 30 ft. distance. It is not the lowest winter tem-

perature which interferes with the fruiting of the almond; it is the occurrence of late frosts after the tree has bloomed, and as the almond is very quick to start during the warm spells in the winter, it is practically useless to undertake the production of the nut where spring frosts are sharp. One has to be very careful in picking out such situations in California and we imagine it would be altogether out of the question to succeed with this fruit in your part of the country. Trees in a good situation should be profitable for twenty years or more, and they come into bearing as young as the peach. The trees are badly injured by red spider and by some fungous diseases, but are, on the whole, less likely to insect injury than most other fruit trees.

SPIDERS AND SMALL FRUITS.

To the Editor: I set out some currants and raspberries this spring. They leafed out nicely and were then attacked by a spider, which wove a web all through the new growth, and the plants are dying fast. What can I do?—READER, Laws, Inyo county.

It is possible that your small fruits are being injured by the red spider, but this is an insect hardly visible with the naked eye, and which makes a very inconspicuous web indeed. Your letter seems to indicate that the web is more noticeable, such as we see made by a larger spider. If that is true it is new to find such spiders causing any injury to the plants. Whenever you write for information of this kind specimens of the insects which you suspect, or parts of the injured plant, should be sent in order that we may see with what enemy you have to deal. If you have red spiders the best treatment is free use of cold water, using a garden hose and applying with some pressure.

AGRICULTURE IN THE SCHOOLS.

To the Editor: I am looking up the teaching of agriculture in the common schools of the States. Will you kindly write me what is being done in your State and note to what extent your agricultural college is instrumental in this work? According to the State Superintendents of Public Instruction, agriculture on the whole is taking well, but a good many of these superintendents seem to think that the teachers of the common schools are wholly unfitted to teach the subject, and the question seems to be how to qualify them for it. I believe that in many states interest in this line is centered entirely around the agricultural college, the other educators of the State not having yet become interested.—READER, Logan, Utah.

There is a very wide interest in the undertaking of teaching agriculture in the common schools in this State. Agricultural courses are being provided in our state normal schools in order to give forthcoming teachers some fitness for this new work. One of the graduates of last year of the agricultural college has just accepted a position in the Los Angeles Normal School, and teachers in three of the other normal schools of the State have taken work at Berkeley. Thus the agricultural college is becoming directly instrumental in fitting teachers for this work by systematic courses, and in the summer session, which is now in progress and largely attended by teachers of the State, special work is being done in this line. There is no doubt that the first thing to do in the proper handling of the subject in the public schools is to educate the teachers.

COTTONWOOD DISEASE.

To the Editor: Enclosed please find leaves from our large cottonwood trees. The trees came out in fine foliage and then died back, so that today they are nearly denuded. Will you kindly see if there is some disease involved which you can identify and make any suggestion of treatment?—READER, Fresno.

The fungus causing the destruction of leaves on your cottonwoods is *Marsoni populi*, but we are not able to make any satisfactory suggestion of treatment. The fungus would, of course, be checked by the bordeaux mixture, but the enormous expense of spraying tall cottonwoods discourages us from suggesting such a recourse.

CORN SMUT.

To the Editor: I am sending you a box of afflicted corn, concerning which I would like any information

you can give me. Wherever the soil is very rich and the growth luxuriant the smut, or whatever it is, is most abundant.—GROWER, Meridian.

The corn which you send is stricken with the corn smut (*Ustilago maidis*). It is an old fungous enemy of corn, appearing wherever it is grown, and, as you note, usually affecting the most luxuriant growth. There is no remedy known; treatment of seed corn with bluestone, if it is done to prevent smut in wheat, does not prove to be effective. Smutty ears should be taken off and buried or burned as soon as the trouble is noted, and before the diseased ear reaches its last stages, becoming a mass of dry, black, powder-like spores. Smutted corn should not be fed to stock; injurious effects have been produced by it.

WHAT TO DO WITH IRRIGATED LAND.

To the Editor.—We expect to bring 500 acres under irrigation by pumping in one of the larger valleys near Los Angeles and would like your opinion as to what we had better grow upon it, leaving fruit trees out of the question.—DEVELOPER, Los Angeles.

What you can profitably do with 500 acres of land depends so much upon what crop can be profitably sold that your choice should be made from that point of view. In a general way it would seem that the growth of alfalfa for hay or the growth of alfalfa with dairy, poultry, or some other live stock branch, would be a desirable undertaking. If the soil is well suited for it, the growth of small fruits or garden vegetables, possibly by tenants of small acreages, would yield you a rental on the land that might be more profitable than anything you could grow on such a large area, which would require a considerable labor supply. This is, of course, a very broad subject to undertake to cover in this comment, and if there should occur to you any particular questions which you would like to ask we will try to answer them so far as our knowledge goes.

MR. BURBANK'S TIMBER WALNUT.

To the Editor: I expect to plant 20 acres in black walnuts for lumber, and wishing to make no mistakes, I ask if you have any publications upon the above topic. Is the California black walnut (Burbank's improvement) a more rapid grower than the common type? Would that variety do well in the Willamette Valley? Will it stand heavy frosts? And where could one get reliable seed?—PLANTER, Silverton, Oregon.

The rapid growing walnut of Mr. Burbank is a cross between the California black walnut and the English walnut. The lumber is not like eastern black walnut, but may be very desirable. There is every reason to believe that it will succeed in your valley. We are not aware that there is any seed in the market at the present time.

PRESERVING FRUITS FOR EXHIBITION.

To the Editor: I am informed that you published an account containing formulae for the preservation of fruits for exhibition purposes. Our local Chamber of Commerce is planning to secure an exhibition of fruits produced in this county for exhibition purposes in their headquarters. If you will kindly give such information it will be greatly appreciated.—ENQUIRER, Napa.

Although we have made a number of publications about the preservation of fruits for exhibition purposes we cannot commend any of them in the face of the experimental work which has been done by California Boards of Trade and Chambers of Commerce during the last two years. You should certainly get advice from Mr. J. A. Filcher, secretary of the State Board of Agriculture, Sacramento, California. Mr. Filcher has charge of the coming State Fair and will not only be glad to assist you in the preservation of fruit, but probably delighted to have you make an exhibit at the coming fair. We doubt if you could do better than to make a trip to Sacramento to see for yourself what results have been obtained with the large amount of fruit processed for the Portland Fair and receive instructions as to methods.

HORTICULTURE.

WALNUT GROWING.

By Mr. M. McDonald, of the Oregon Nursery Co., at the recent meeting of Pacific Coast Nurserymen.

From Persia the walnut was introduced into Greece, Italy, Spain, the Madeira Islands, France and England. From these European countries the walnut has been introduced into America, and from present information we find they have come to us in two distinct types: The first type planted on the Pacific Coast seems to have come through Spain, being introduced into Mexico and the South American republic by Catholic friars. This type has for centuries been grown in the warmer countries, producing a soft-shell nut and a tender tree, and including such varieties as Los Angeles, Santa Barbara, Ford's Improved, Santa Rosa and others of this class grown in sections of California, where there is little frost. Unfortunately for the Pacific Coast, it was from this type that the first trees were planted, and as a consequence, walnut culture in Oregon and Washington was for many years supposed to be a failure, for large trees of these tender, early-blooming kinds failed to produce nuts only in very rare cases.

The second type, and the one to which we particularly wish to draw your attention, comes through France and England, and includes the Franquette, Mayette, Chaberte, Parisienne, Praeparturien, etc., which are hardy late-blooming kinds with the semi-soft shells, and mostly of very fine flavor. This is the type from which we must draw our supply if walnut growing is to be made a commercial success on the North Pacific coast.

Varieties of Walnuts.—Having decided the type of nut to produce, we must next decide the variety best suited for our section, soil and climate, and at the same time fill all the requirements of the market. Colonel Henry E. Dosch, speaking before the Oregon State Horticultural Society, at the Salem convention, a few evenings ago, said: "As to variety, I have experimented, and have on my ground ten or twelve varieties, the old English walnut, German walnuts, French and other varieties, and I have brought it right down to three that are best adapted to Oregon; of course, I am speaking of our soil, climate and conditions here.

"The first of these is the Franquette, the most profitable walnut that grows; it is a sure bearer, and not susceptible to the early frosts because it starts out a little late, and they give you a magnificent, large nut.

"The next one I select is the Mayette, one of the finest walnuts. It has a thin yellow skin inside the shell, and when this is pulled off, it has a finer flavor. It is more delicate, a little more susceptible to diseases of the walnut, which by the way, have already reached Oregon and touched a few of my trees, but this can be overcome by watching. Then, they are not so prolific as the Franquette.

"The third variety is the Chaberte. This is the variety sought after by confectioners because the shell is easily opened and the kernel comes out whole."

[Mr. McDonald introduced at this point the excellent account of experience which Mrs. Vrooman prepared recently and which appeared in the Pacific Rural Press of July 7, 1906.]

Best Method of Propagating.—The method of propagating the walnut is one that most vitally interests the nurseryman. Were walnut trees as easily budded or grafted as ordinary fruit trees, there would only be one answer to this question; that would be, graft, or bud, in direct line from the original, or first generation trees, thus insuring a perfect strain of the variety to be propagated. On account of the uncertainty of securing a stand by either grafting or budding, some other means must be used to propagate if the number of trees desired to be planted are to be supplied.

Nature usually makes some provision so that a variety can be continued or readily propagated by some means or other, and in the case of walnuts, the trees are found to be bi-sexual, that is the male and female blossoms are always found on the same trees, so that when a tree, or grove, is isolated, the tree grown from the nuts of an original, or first-generation tree will produce nuts almost if not quite, equal to the original, or first generation, suitable for orchard planting, and for commercial purposes. Along this line Colonel Dosch spoke at the Horticultural Convention in Salem as follows:

"Another thing is generation. First generation nuts are produced on original trees, grafted from the original. These nuts, when planted, produce second generation trees, and the nuts from these second-generation trees are a little larger than nuts grown on first-generation trees, but nuts grown from second-generation nuts retrograde very rapidly, producing nuts not half so large as first-generation tree."

From this testimony and the best information that is to be gathered at the present time, it would appear as if the nurserymen must for the present propagate from nuts grown on first-generation trees, or on trees grafted

from original or first generation. That importations of first-generation nuts of the leading varieties imported from France are not to be relied upon will readily be seen by a close inspection of any recent importation from that country, and nurserymen will do well to at once prepare to supply their own seed-stock by setting out grafted trees of first generation of distinct strain of the best varieties. For as the demand for nuts increases, as it is sure to do, the nuts imported will become less reliable from year to year, and more nuts from second, third and other generations will be shipped into this country to supply the increasing demand. The number of grafted trees in France at the present time is limited, and the importation of these inferior nuts for seed-stock will give the nurserymen a bad reputation and at the same time do a great injury to that which bids fair to be one of the most productive sources of revenue, from a horticultural standpoint, on the Pacific Coast.

The question of soil is also important, and it will be well if prospective planters are warned in advance of the failure that will surely follow when walnut trees are planted on soils underlaid with hardpan. From present experience, this is one soil that needs to be avoided when planting a walnut grove. This tree seems to grow and thrive on a great variety of soils, but like all trees, to be profitable it should be set in good, rich, well-drained soil and receive good care and attention.

SELECTION AND CARE OF SCIONS.

If there is one department in the nursery more than any other that requires careful, conscientious work, writes Mr. A. Holaday in the Northwest Horticulturist, it is in the selection and care of scions. I have seen it stated by writers on the subject that they were convinced that a tree would bear fruit sooner if propagated from a bearing tree, but I have never seen that anyone had carried on the experiment long enough to fully prove it. I find that in my orchard of apple trees that fruit may be well colored one year, while the next year it will not be nearly so highly colored.

I have a small orchard of the Baldwin apple trees which are about ten years old, that so far have borne bright red apples. These were propagated from older trees that usually bear apples of a decidedly greenish color. So I am not prepared to prove that it is any better to select scions from a tree that bears highly colored fruit than from one that does not. Of course, it may be possible, through years of selection and propagation towards a certain ideal for the type to become so fixed that it will not vary in color or shape of fruit, but the nurseryman who requires thousands of scions every year cannot gather them from distinct kinds, for he would never be able to find enough, nor would he be honest in advertising that he was propagating from distinct varieties, as he would not know that the type had become fixed.

I have always tried to select scions from bearing trees so that I might be more sure of the variety being true to name, then, if there is anything in the early fruiting theory, the grower will be the gainer.

I have been quite fortunate in being able to select the most of my scions from my orchard but there are times when I have to buy, in which case I endeavor to buy from some reliable grower who has bearing trees.

I think the month of January the best time to cut scions. The cherry should be cut first and the apple can be cut last.

I have had good success by wrapping the scions in damp burlap and storing in a cool cellar. I have kept them until the first of June in this way, although there is no particular advantage in keeping them that long.

SELLING NURSERY STOCK DIRECT.

By Mr. M. J. Henry, Vancouver, B. C., before Pacific Coast Association of Nurserymen.

Our method is simply to use printer's ink instead of paying a commission to one agent for selling to another to deliver and collect. Keep your business before the people, in the papers you consider best for the purpose, and keep at it. Do not be discouraged if you do not receive an order from every reader of a paper in which you advertise, for they may not need anything in your line this year, nor possibly next, but you may rest assured that the intelligent reading public will bear you in mind and eventually trial orders will come. If you send what is asked for, or explain the reasons why, they will come again.

If people can send their orders by mail to department stores, seed houses or jewelry merchants, why should they not make up an order from a nursery catalogue, inclose their money and receive their goods by mail, express or freight, same as from other business houses? By this method the nurseryman is certainly doing a much safer business than through canvassers, for he is not obliged to send out one dollar's worth of stock

until payment is received (unless he is so inclined), therefore not obliged to charge his good cash customers an extra price to cover the losses he will surely sustain if he undertakes to ship out his stuff and collect on delivery or at some later time.

By adding an extra plant or tree of some surplus stock you do yourself no injury and help to please your customers.

You need not expect to please everybody. The person who has done that lies up in the cemetery with an obituary on his tombstone, but you will get your share of the trade. Always remember that a pleased customer is one of your best advertisements.

AGRICULTURAL SCIENCE.

THE ADVANCEMENT OF AGRICULTURAL EDUCATION.

By E. J. Wickson at a recent meeting of Oakland Grange.

It gives me pleasure to comply with your request to address you on the subject which I have chosen for this evening because the order, Patrons of Husbandry, has been, ever since its organization, more than a third of a century ago, most earnest in its advocacy and most effective in its promotion of agricultural education, and much of the great attainment of the present time is due to the systematic and energetic work of the Grange.

It is a very interesting fact that there never was such a wide demand for agricultural education, research and experiment as there is at the present time and never such a general disposition among civilized nations to generously provide for them. The United States as a nation is a leader in this movement, and in the volume of appropriations for these purposes, because not only the general Government but all the States are generous toward them. In our own State until recently the greater emphasis was laid upon research and this seemed fitting in a State where natural conditions are so different from those in other climates and so little understood by people coming chiefly from the humid regions of the world. All this work has laid a broad foundation for present and future achievements in California agriculture. During the last few years, however, there has arisen a sharp demand that the agricultural work of the University be extended and broadened. Provision which has been made for more adequate outfit and equipment, with which the University could extend and improve its instruction in agricultural practice, has commended itself to all classes of our population and at the same time has given California a place among other enterprising States which are doing notable things in the same line.

What the States Are Doing.—The total value of additions to the equipment of the land-grant colleges of the United States during the year ending June 30, 1905, was \$3,501,513. The total number of these institutions is sixty-five, and their average addition to equipment was, therefore, a trifle less than \$54,000. California's addition during that year was \$389,874.77, or about seven times the average. The appropriation for the University farm and for the Southern California experiment station and pathological laboratory enabled California to set the pace in State provision for our class of institutions. This is the first time California has done so much for distinctively agricultural equipment.

Increased Interest in Agricultural Education.—The generosity of the several States toward agricultural education, in adding three and one-half millions to the value of equipment of agricultural colleges, has been brought about by a number of influences affecting the public mind.

First, perhaps, is the general respect which the nation has for its agricultural industry as progressive, confident and capable of great achievement. The farm products of the United States in 1904 reached the grand value of five billions of dollars. Secretary Wilson says the farm products for two years are greater in value than all the gold mined in the world since Columbus discovered America, and the products for 1904 alone are three and one-half times the value of all the coal, iron, gold, silver and other mineral products of the country.

The second reason for the increased interest in agricultural education is found in the recognition of agriculture as an art which can be improved, advanced and made more profitable by the immediate application of new truth about natural materials and growth-processes, as disclosed by scientific research. Almost all practices in all branches of agriculture are being rapidly changed and improved and made surer of desirable results. This is the contribution of the agricultural experiment stations, which are now clearly exerting a strong influence upon farm policy and operation, upon capital seeking loans, investments or trade, and upon the alert public mind which may have no direct interest either in farm operation or investment, but which is

keen to perceive and eager to contemplate whatever is uplifting in its tendencies and effective in advancing national prosperity.

The third agency for popularization of agricultural education is the resultant of the two foregoing forces, viz: hunger of publishers of both popular and technical literature to put into print accounts of all kinds of agricultural science and practice and to exalt them in the eyes of all patrons of the press. This is a thing altogether new in the history of literature.

Increasing Number of Agricultural Pupils.—Naturally, while the public mind is being stirred by such potent influences, its attitude toward the desirability of agricultural education changes rapidly and the application for it, as a thing worth having, increases. It is very fortunate that, as this new demand arises, the agricultural education which is now available is incomparably better in every way than that of a quarter of a century ago; yes, vastly better than it was even a decade ago. For this reason the new thousands of pupils, in the agricultural colleges, are being served and stimulated, helped and satisfied as was never possible before. This is a great delight to the agricultural teacher and encourages him to put forth aggressive effort to still farther increase his roll of pupils, because he feels that he has something which will not only make them better men and women but more successful producers. This is the real reason why the agricultural colleges and schools are now so confident, earnest and active in their propaganda. The general interest in agriculture, as indicated above, makes it easy to secure pupils, in fact they are seeking out the way for themselves. The following shows the rate at which attendance at land-grant colleges is growing:

Pupils in Land-Grant Colleges.

1901.....	42,000
1902.....	46,699
1903.....	52,489
1904.....	56,226
1905.....	53,518

This indicates an average gain in pupils of about 3000 per year for the whole group of sixty-five institutions or an average annual increase of forty-five for each one of them. The University of California is one of a group which has far more than its average share of increase and in this gain the college of agriculture has secured much more than its proportion; in fact this gain of the college of agriculture has been continuous and last year's attendance of regular students was four times as large as in 1900 and eight times as large as in 1895. The actual record is as follows. 1895, 17; 1896, 15; 1897, 21; 1898, 32; 1899, 21; 1900, 31; 1901, 42; 1902, 61; 1903, 91; 1904, 102; 1905, 106; 1906, 123.

Of course the teaching of 123 pupils distinctively enrolled in the college of agriculture constitutes only a part of our work because the University has an elective system which enables students in other colleges of the University to elect our courses as a part of the work toward their degrees.

Concerning this phase of our work President Wheeler in his last published report, 1902-04, says:

"In comparing the progress made by the different departments in the past two years it appears that the department of agriculture has made the most significant development. The number of regular students of agriculture in 1903-04 represents a gain of 75% over 1901-02. For the same period the units of registration in agriculture increased from 1584 to 2519, that is, 65%, the greatest gain of any department. It must be remembered that the number of students from other colleges taking courses in agriculture far exceeds the number in the college of agriculture itself. During the past year the total number of students in agricultural classes, including the short courses, was 415, of whom 278, or 67%, were from other colleges than that of agriculture, that is, students not taking the full agricultural course."

During the last half-year we had 123 distinctively agricultural pupils, but a total enrollment of pupils in agricultural subjects of 735. Counting only once those who register in several classes, the agricultural enrollment during the last half-year comprised 380 different individuals—not counting pupils in short courses.

Our agricultural classrooms and laboratories at Berkeley are crowded almost to suffocation and seats are often placed in adjacent hallways within reach of the voice of the lecturers. Such a demand is inspiring our instructors to all kinds of over-exertion, for the popularity of the work is very pleasing.

Isolation of Agricultural Instruction Not Desirable.—In view of the thronging of pupils to agricultural colleges, and notably to those offering the broadest and most advanced courses, it becomes apparent that it has always been a mistake to insist that to promote instruction in agriculture the agricultural students should be isolated from students in other branches of learning. Such a claim arose from several facts which have been displaced by other facts and from several notions which were either always wrong or have become wrong through

the disappearance of the facts upon which they were based. At first students in agriculture were few; it could hardly be otherwise with an undertaking which was new and, therefore, narrowly understood and widely distrusted. A common explanation of the fewness was that students in agriculture were seriously maligned and ridiculed, which was never true, but the farmer had not yet found himself in the modern scheme of human vocations and was disposed to think that he was low in the scale and his son must, of course, be discounted by his fellow students who were largely from what are called the professional classes. Those who cherished this view did not appreciate the democratic spirit of students, which almost invariably ranks a man for what he is and for whatever warranted aspiration he cherishes. The ridicule of agricultural students which outsiders found in the use of such terms as "cow college men," etc., never existed. The terms are no worse, and no better, than the epithets which all groups of students apply to each other, all of which are sportive and convey no reflection whatever of social or intellectual rank. In the University of California agricultural students have in the past filled, and do at present occupy, the highest places which the students create for their leaders, and are never discounted by their agricultural connection. The University spirit is hostile to class distinctions: it is in fact apt to be ultra democratic.

The alleged social reason for isolation of agricultural students has, therefore, no existence; even if it did exist the way to overcome it would not be through retreat, but through contact and conflict. The farmer would never attain his proper social recognition by separating himself from men of other callings and thus conceding them some superiority, but rather by demonstrating his character and quality by association and competition, nor can his son advance by isolation.

Another notion which is clearly a misconception, is that by isolation and removal from temptation to other pursuits, young men can be bound down to agriculture. It is not true. The American young man must see that the opportunity in agriculture is great or he will quickly leap any boundary which can be set up for his confinement to it. The fact that in some of the leading separate colleges of agriculture and mechanic arts not more than one-fifth of the pupils choose the agricultural course and the other fact that these institutions are extending their curricula by addition of classical, literary and other subjects, proves that the isolation of the subject of agriculture is no more desirable than the isolation of the students of agriculture.

Specialization Rather than Isolation.—Recent experience clearly shows that what is needed in agricultural education is not isolation but opportunity for specialization; and specialization means the extension and improvement of instruction and equipment befitting the nature of agriculture, so that the student may fully occupy his time with the closely related parts of his chosen special subject. This is true, to a greater or less degree, of all undertakings in agricultural instruction which are of University grade; in courses either long or short, and either in the science or technology of agriculture. Opportunity for specialization, in the modern educational use of the word, certainly exists only in institutions which are broadest in instruction and richest in facilities for demonstration, in laboratories and libraries, museum collections, etc., as well as farm outfits, growing crops, animals and the preparation of their products, etc. All these things are so closely knit together both in science and technology that specialization is really a much broader affair than was formerly conceived of; we now look upon it as in a sense inclusive, while but recently its chief merit seemed to be exclusiveness, and its essence lies in proper correlation of subjects rather than in numerical reduction of them. Agricultural education is in fact approaching, more and more nearly, the actual nature of the industry which it both leads and serves. For these reasons agriculture can only be adequately served in a broadly equipped institution like a University and, therefore, some separate colleges of agriculture and mechanic arts are trying to constitute themselves universities as rapidly as their resources enable them to do so. The conclusion must be, then, that the agricultural student, in courses which rise above handicraft, must for the sake of his culture, work where all underlying sciences and related technics are open to him, and, for the sake of his manhood and citizenship, must be developed and dignified by contact with those who are studying for other vocations. This is not merely a theoretical view. The multitude of pupils in our State Universities who are now choosing agricultural subjects shows that I am not undertaking to spin a theory, but to account for an actual fact in the present advancement of agriculture.

Pressing Needs.—Twenty years ago and even less, the greatest need of the land-grant colleges, as a whole, was pupils; now the question is how can the pupils be adequately handled. The pressing needs are teachers

and equipment. Young men and women are being taken right from the commencement stage to fill positions in research and instruction which should be occupied by persons of longer training and wider experience. This condition of affairs will, of course, correct itself, for the supply is coming on from the enlarged numbers now in training; it cannot be cured by any popular interest and generosity. The other need, that of adequate accommodation and equipment, is, as I have already indicated, being liberally provided for and the justice of its claim widely recognized. The situation and outlook are, therefore, on the whole very encouraging. If those entrusted with instruction do their work well and make good use of their facilities there can be no question of future favor, support and continually improved equipment.

The University Farm.—A very clear indication of the attitude of the public mind in this State toward agricultural education is seen in the provision of \$150,000 made by the last legislature for the purchase and equipment of a University Farm. It is the most important single contribution which the State has ever made to the development of agricultural education. It will supplement all that has been accomplished on the scientific side by furnishing splendid opportunity for instruction in farm policy and practice which have not been adequately provided for hitherto. In the future the University students in the agricultural course will be brought face to face with the practical problems of production, and instruction therein will be given concreteness and directness. There will also be the fullest attention paid to the short courses in the various branches of farming which will enable both old and young to devote themselves for a few weeks or months to studies of the best and most profitable ways to handle plants and animals and to satisfy themselves that these advanced ways are best because they embody the latest science involved in each operation and because the quality and market value of the product demonstrate its economic superiority. The instruction on the farm will neither duplicate the instruction or equipment at Berkeley. At Berkeley the work will be chiefly analytical—the taking of things to pieces to learn the character and relations of the parts. At the farm the work will be, in a sense, chiefly synthetical—the connection of the parts, the building up of the highest orders of finished products. It is an important fact that this synthetic process, this selection of the best factors of a result and rejection of all that tends toward inferiority, involves at the same time the highest and the lowest forms of agricultural instruction and the same illustrative and demonstrative outfit is required for both purposes. The short-course man receives didactic lessons and demonstrations which he may imitate; the long-course man takes his lessons in a suggestive way and sees in the demonstrations the application of his previous theoretical training. In both cases the instruction is practical and each takes from it according to his needs. The splendid animal stands forth to one student as the embodiment of the principles of breeding and all the practical value that breeding science signifies; to another student he is mainly a model of form as exhibiting feeding or dairy quality to be rendered practically useful mainly through imitation. The same is true of trees, vines, field crops, buildings and other items of the University Farm equipment. It will all serve for instruction in the highest lines of agricultural technology and for the plainest lessons in the best way to do things under California conditions. In this way the University Farm will serve all classes of students, both young and old, and will afford each, according to his needs, instruction which no other State institution provides. It will not duplicate, nor be a substitute for, high school or college, but will be supplementary to all institutions which undertake to associate agriculture in any form with other educational subjects. There is a grand opportunity in California to equip and use the University Farm along synthetic lines both in the nature of its instruction and in its relations to other institutions of the State.

The Kearney Bequest.—The princely bequest of the late M. Theodore Kearney of Fresno, providing an endowment, which may have value of something like a million dollars, for the establishment and maintenance of agricultural instruction and research in the San Joaquin valley, gives striking emphasis to the biblical declaration that to him who hath shall be given. California by a third of a century of fitting generosity toward agriculture, culminating in the provision of the University Farm, has demonstrated the possession of a public sentiment which leads patriotic citizens to assist the State toward the more speedy attainment of that which is recognized as the most potent agency for the promotion of prosperity and success among our citizens during the coming generations. It is not the having but the conceded right to have, which wins the gifts; in this case it is the spirit which multiplies the gold,

not the mere tendency of the gold to congregate. It is the bright untarnished gold which accumulates in this way, and its future accomplishments will be blessed. It is too soon to undertake any outline of what should be done with this new endowment when it becomes available. That will require careful consideration in connection with the informal wishes of the donor. It is sufficient at the moment to say that ample opportunity exists for its wise and effective use for the promotion of the industry to which the donor enthusiastically gave his most diligent efforts and succeeded so well. There is no present danger of too much money being available for research and instruction in agriculture in such a State as California, where population may be multiplied ten or twenty fold without approaching density and whose capacity and variety of production is hardly yet described. The great San Joaquin valley, where Kearney was a pioneer in undertakings which have commanded the attention of the world in the development of products which have reversed the old courses of the world's commerce, has hardly entered upon the greatness of her future. In that future there will be the fullest scope for the wisest employment of the best agencies for agricultural education and research which his devoted gift can create and maintain.

University Extension Work in Agriculture.—But all this activity at established seats of learning, old and new, is only a portion of their effective work. The University of California, like other institutions, is pursuing extension efforts with notable results. Extension work, with its farmers' institutes, short courses and reading courses, is regarded, by those familiar with it, as one of the greatest awakening agencies which has thus far been invoked for agricultural advancement and enlightenment. It has an inward movement, improving agriculture by direct dissemination of knowledge of great practical importance and by suggestion of how to observe to attain truth from one's own experiences. It has a strong outward movement toward securing for agriculture the manifold advantage of the introduction of the elements of sciences underlying agriculture into the curricula of rural schools. University extension in agriculture is the great promotive propaganda for the development of the industry and for awakening of all interested in it to the feasibility and importance of education not only for the farm but towards the farm. It is a most valuable method of bringing to thousands some knowledge of scientific research and of advanced practice which never would have been available to them in more systematic and protracted courses.

The University at Large in the State.—The activities of the University of California are widely distributed throughout the State and the newer acquisitions of the agricultural department of the University will enable it to administer more intelligently to local needs. Not less significant than those outposts which have been discussed, is the provision made by the last legislature for Southern California by the establishment of a branch experiment station at Riverside and a laboratory of plant diseases at Whittier. These important undertakings are now being planned and equipped for active work. The University of California is, and should be, at home everywhere in the State. It should not be centralized. It should do everything it can for the people in the place where each thing can be best done and thus demonstrate its appreciation of the generous support which it receives from the State.

THE FIELD.

GROWTH AND USES OF MILLETS.

The University of Arizona agricultural experiment station has just published as one of its timely hints for farmers some observations on millets by Mr. V. A. Clark:

During the season of 1905, observations on millets were continued, especially with reference to certain valuable characters of this class of forage plants. The particular points investigated were: Season for planting, comparing early summer and midsummer planting; rapidity and vigor of growth of different kinds; resistance to dryness of air and partial drought; effectiveness of shading the ground with a view to keeping down weeds, specially purslane; and palatability to stock.

German Millet.—Two crops were put in. The earlier one, planted May 13, came up well and made a fair stand; but the plants grew to be only half an inch or less high, perishing then from the excessive dryness of the air and from a shortage of irrigating water.

The second crop, put in August 1, behaved very differently. The air was then more humid and irrigating water abundant. With these conditions and the very warm weather usual at that season of the year, this variety grew rapidly and was ready for harvesting in about six weeks, instead of two months which is its stated period of growth in the East. In fact, it began heading out in less than four weeks from planting. It

was not cut until September 28, however, and was then turning yellow with ripeness. Seed of this variety from three different dealers was planted. Two of these did well, but one lot germinated very poorly, making only here and there a plant over the plat. This experience emphasizes the well-known importance of making a germinating test of seeds before planting.

Hungarian Millet.—This is not especially well adapted to our climate, not making so good a growth here as in the East. On our plats it yielded about two-thirds as much as German millet, in comparison with which it showed a slight and steady falling off in height during the period of growth. The spring planting, made May 13, did not germinate at all. The midsummer planting, made August 1, began heading out in three and a half weeks and when cut September 28 was partly ripe. Seed from two sources was compared, one lot giving a fair stand, but the other on an adjoining plat giving only two-thirds of a stand.

Hog Millet.—This belongs to the broom-corn class of millets. These are more drought resistant than the foxtail millets, to which German millet and similar varieties belong. Our early planting of this variety was made June 24 and the plants received scant irrigation. In spite of this the crop attained a height of 2 to 2½ ft. It was cut August 30, at which time it was nearly ripe. Another plat sowed August 1 gave similar results.

Hog millet, Red Voronezh and Red Orenburg, which were all tried, all looked much alike, except that Red Orenburg is not quite so leafy as hog millet, and all did about equally well. They all headed out at about three weeks from planting, when only three to four in. high.

Japanese Millet.—This is a stiff, coarse plant which looks like common barnyard grass, of which it is only an improved variety. It is quite drought resistant. It is considerably later than the varieties already remarked upon.

Texas Millet.—This grows a little taller than German millet; but it is straight-stemmed and rather sparsely leaved. In these characteristics it somewhat resembles quack grass. It does not have the appearance of being so thick on the ground as German millet, being more erect in its habit of growth. During its earlier stages Texas millet does not grow as fast as some other varieties. At the end of its first month, when foxtail millets were heading out, this was mostly over-topped by purslane in spite of a good stand. The earlier planting, made May 13, and cut August 30, was not worth harvesting. It was only a few inches high, although ripening, and the stand was very scattering. As a consequence the plat was very weedy.

Pearl Millet.—This is a rank, coarse-growing forage whose chief recommendation is that it will stand more heat and drought than most other kinds of forage. It will also make a crop on land too poor for corn; but in Arizona this is not a consideration.

While pearl millet will stand a good deal of drought, like most other drought-resistant crops it requires a good deal of water to make a heavy yield. For example, our first plat of this variety, planted May 13 and cut August 30, received more water at the upper end, due to a scant supply, and, consequently, the stalks nearest the ditch were six to seven feet high and but two feet high a short distance below.

The midsummer planting, made August 1, had sufficient water and the crop made a rapid and even growth. The first heads were just putting out when the plat was harvested, September 28.

The coarseness of pearl millet makes it difficult to harvest with a mowing machine, the coarse stubble also being objectionable.

Effectiveness of Different Millets in Keeping Down Weeds.—The worst weeds to contend with on the station farm at the season of the year when millets are grown is purslane, and in cultivated ground this is omnipresent.

In the incidental matter of keeping down weed growth pearl millet is most effective of the varieties tried. It has a large corn-like leaf and when broadcasted makes quick, dense growth, which completely smothers all foreign plants. German millet and Hungarian millet are also effective. Sowed in the right season, they germinate quickly and grow rapidly. A good stand of German millet keeps out practically all weeds and Hungarian most of them. Japanese millet does not grow as fast as German millet and therefore does not keep down weed growth as well.

Hog millet, Red Voronezh and Red Orenburg millets are not effective in keeping weeds down. These varieties run more to stem and make a relatively small leaf growth, hence a good deal of light penetrates between the plants as they stand in the field, thereby providing conditions for the growth of other plants between. Also, they do not grow rapidly in their early stages and for this reason weeds keep up with or even outgrow them for a time.

Texas millet is the poorest of the varieties tried for keeping down weeds. It does not grow vigorously in

its early stages and hence it is overtopped by them. One month after our midsummer planting was put in the plat looked to be a plat of almost pure purslane. As a matter of fact there was a full stand of millet which came on later and made a good crop. Our earlier planting of this variety was not worth harvesting on account of the great number of weeds. Further, Texas millet runs mostly to stem and does not have a sufficiently branching leaf growth to keep down foreign plants. The fact that Texas millet permits the growth of so many weeds is in our experience an objection to the planting of this variety.

Palatability of the different varieties to live stock.—Tests were made to see whether cattle liked one kind of millet better than another. Small lots of the hay of each kind were set out in a corral side by side and three dairy cows recently up from alfalfa pasture were turned in. The cows showed decided preferences. They liked pearl millet hay best, German millet next, and Hungarian millet about as well. All of the cows ate Japanese millet and the broom-corn millets (hog millet, etc.), but did not relish them. Not one of the cows would touch Texas millet.

The pearl millet fed may have received such preference because it was young and tender, only beginning to head out. The longer pearl millet stands in the field the less tasteful it is to stock. On the other hand, the German millet and hog millet fed had begun ripening when cut, which, of course, counted against their palatability. German and Hungarian millets, at their best, are probably most relished by cattle.

Summary.—All things considered, German millet is the best variety for our climate. Pearl millet will grow in very hot and dry locations; but sorghum does as well or better. The broom-corn millets stand more drought than foxtail millets, but do not yield so heavily and are not so well liked by stock.

THE VINEYARD.

MUNICIPAL WINE MAKING.

Consul J. J. Roche reports from Genoa, on an Italian experiment of public co-operation in business, that, although the laws for the municipal control of public-service utilities were adopted in 1903 by Italy, the first attempt has just been made to put them into practical operation by the following experiment:

On April 29 the little commune of Canneto Pavese, near Pavia in Lombardy, voted almost unanimously by referendum on the question of putting their business of wine making under a common management. Not only was this the first experiment in that function, but it was also an experiment not at all contemplated by the framers of the laws. But Canneto is a community without any diversity of occupations. It has 3,014 inhabitants, practically all engaged in wine making. Signor Giovanni Marchese, who has made an unprejudiced study of the subject says:

The conditions of the wine trade have been growing worse, being monopolized by a few merchants who dictate a lion's terms to the small proprietors, which the latter, not having wine cellars, are forced to accept; and the dealers do not always sell the genuine product, mixing it with lower grades, so that the grape and the wine of Canneto Pavese, of deservedly high value, are losing reputation and price. The vineyardists, in the great majority, have neither the capacity nor the means to rectify the condition. The communal administration of Canneto sees in this a grave danger, the diminution of rentals or incomes and the injury of the economic conditions of the inhabitants, and thinks that what can not be done by individuals should be done collectively. Thus it finds that the intervention of the municipality not only should be evident but is a typical case of needed municipalization, and that is why, interpreting the spirit of the laws it believed itself authorized to initiate the communal wine cellars for the manufacture of wine.

Share of Profits.—Of the net profit, 88% goes to the producers, 10% constitutes a reserve fund for the year's contingent loss, and 2% goes to the commune. Should there be a loss for which there is not sufficient reserve fund, the amount is debitable to the commune, which will allow it on its accounts. The administration of the communal winery is autonomous—independent of the communal council—and the undertaking, instead of being an incumbrance, may, on the contrary, be of possible advantage to the communal funds. Not all the producers are obliged to carry their grapes to the communal winery. But even those who do not make use of it will feel an indirect advantage, because when the market is cleared of the poor dealer who must sell at any cost the prices will be better sustained for the benefit of all, including those who hold off from making sales.

MR. HOOPS ON RESISTANCE AND ANAHEIM DISEASE.

Mr. H. Hoops, of Wrights, Cal., has just published another pamphlet on the "Resistant Vine Question for California and the California Vine or Anaheim Disease." Mr. Hoops has given much attention to observations and conclusions as to the behavior of the Lenoir and some of the Munson hybrids, and his writings are of much interest to those who are on the frontier in these discussions. His pamphlet can be had for \$1 from the author, as above.

THE MARKETS.**Wheat.**

It is impossible to make much out of the wheat market this week. If anything prices are a little firmer owing to the inability to get wheat into this market. The strike on the water front is now of such a nature as absolutely to prevent any wheat coming down from Portland, and growers here appear to be showing no particular anxiety to sell new wheat at present prices. The crop outlook is regarded now as fairly good with a slightly smaller acreage than last year and a slightly smaller yield as a result in the State. From Portland two vessels were loaded lately and at Tacoma one vessel was partly loaded. This is expected to complete wheat shipments from that section until September. Exporters and millers have no particular need of wheat at this juncture. They are entirely out of the market and cannot be induced to buy except at very reasonable figures. Some of the northern millers who export have bought freely for the past six or eight weeks until now they are in a position to operate their mills readily enough when the demand for flour shall stiffen. Damages in Oregon and Washington by hot winds were more severe than was thought two weeks ago and it is estimated that the crop would have been 25% greater had it escaped the intense and prolonged heat. Just how Europe stands for wheat is hardly known, but it is certain the Russian troubles have cut down the grain yield of that important producing section, and further it is reasonably certain that none of the other countries producing wheat have more than an average yield. Dealers are beginning to look for the opening of the demand from China, Japan and South America, but so far no word has come from these.

Flour.

Flour is now ruling firm with a very steady demand. As to prices there has been no change in the situation in San Francisco since last week. Enough can be had for all purposes, but for all that the knowledge is general that pretty extensive importations must be resorted to before the season's end, as was the case last year. From the Columbia river country comes advices that Japanese buyers are in the market taking small lots and that inquiries have come in by cable from China. The stocks of Australian flour still in hand in the Orient is retarding the demand for the flour of this country, but as soon as the Australian goods are disposed of an improvement is expected. All shipments going to Central and South America are on old orders—new orders have slumped considerably of late. Some San Francisco shipments from the north would have been made but for the sailors' strike and the inability of the Southern Pacific to handle any shipments in view of the congestion of the terminals. All bakeries here in San Francisco are working at full capacity and the number of high-class hotels and restaurants springing up insures an increasing local consumption to keep pace with the growth of the population.

Barley.

In spite of the promises of a very abundant yield of barley local prices hold fairly firm and indications point to an advance. This is entirely the result of the scarcity of the grain in the city and the amount that is being used for horsefeed. Reports from some quarters have it that a large amount of barley will prove stained and discolored, making the per cent of first grade barley no larger than ever. The brewers seem not to have entered the market up to this time, but their holding off is regarded as being due entirely to a desire to take advantage of the lower prices that will surely prevail later. Three hundred thousand acres are devoted to barley in the north, but reports from that section are slow getting in. Feed barley is selling for \$23 per ton in Portland and at that figure activity is shown there.

Oats.

Previous conditions prevail in the oat market with small offerings and a very small demand. A few red oats are offering, but as buyers are paying but little attention to these the market is exceedingly dull.

Corn.

No one is prepared to say much about corn in California and the crop gets but little attention nowadays. No movement of eastern corn has begun and until that

time the stocks held throughout the east are used for speculative purposes largely. The crop is expected to be a good one throughout the Mississippi valley.

Millstuffs.

Those familiar with the wheat and flour conditions expect the prices for feedstuffs to remain stationary here for a couple of weeks at which time an advance is looked for. The drying up of pasture feed at this season naturally causes ranchers and dairymen to take interest in mill feeds and purchasing is being done on a small scale accordingly. No shipping is under way and shippers are still out of the market.

Beans.

The indications throughout the southern part of the State are for a good yield and a good quality of beans, in both respects equal to that of last year providing no unforeseen climatic changes come up. Pink beans will be fewer and higher as a result of a much smaller acreage. As a result of the surfeit and correspondingly low prices of 1905 many farmers failed to plant pinks this year. Eastern markets will take fewer California beans this year as the great crop of last year is by no means cleaned out in the coast.

Seeds.

The seed market is largely a waiting market. Crop reports are generally favorable and some buying of futures has already been done. The mustard seed yield will probably be in excess of last year.

Hay.

Dealers are satisfied that the railroad is making every effort to relieve the congested freight situation, but at that most all hay continues to come by water. Few arrivals have come over the Southern Pacific in the past week. The market is continuing in an unsettled, disturbed and unsatisfactory condition throughout. All choice varieties of hay can be readily sold, but no one cares much about the poorer grades, nor are they growing in demand. Prices range about the same all down the list. Straw arrives in moderate quantities which is limited to the moderate demand existing, yet about all that is offered is being taken at the prices asked.

Hops.

Hops are now arousing some little interest and dealers are figuring on the new crop. The California yield will be considerably above that of last year, that of Sonoma county alone showing a gain of eight or ten thousand bales. Contracts are being made in the country at 14c., and it is claimed that some buyers are offering 15c. In Oregon contracts are being closed at 10½c.

Wool.

The San Francisco wool market is still to the bad as a result of lack of storage and the scarcity of dealers able to handle it. A few of these, however, state that there are people here who would buy wool readily enough were conditions favorable to ship it here. Stockton is still the wool center and no one will predict the return of San Francisco's old pre-eminence in that particular within any specified time. There are a few bags of wool here in the hands of small dealers and they are said to move readily enough. Twelve cents is about the average prevailing price.

Butter, Eggs and Cheese.

Good butter has gone up a cent and inside information has it that there will be no further great decline as the best grades are getting rather scarce. With eggs there is no change, stocks vary about town, but on the whole the demand about uses up all sent in. Only strictly fresh meets with much demand. Neither has cheese changed any except for the absence of any great amount of eastern cheese. The California article is moving fairly well and some dealers claim more New York cheese could be placed here, as there is little in sight.

Poultry.

This market is picking up a bit as more offerings are being shown and city conditions cause an improved demand. Young stock is meeting a fair demand and friers sell pretty well. Full grown hens and roosters are of course best for the trade. No one cares much for ducks or geese and few are shown.

Vegetables.

On the whole the vegetable markets are weaker under steady and free arrivals. Potatoes are in good demand, however, and the price stays up well. Up-river damages by floods are not having any great effect on the market as yet. Tomatoes are plentiful now and are not in any great demand. The same holds true with cucumbers, while green corn still is hard to move and dealers don't care much to handle it. Summer squash has changed but little, there being no scarcity in the supply. Carrots and turnips are not shown much at present.

Fresh Fruits.

The fresh fruit dealers are still somewhat adversely affected by the water front strike. Moreover, little in the way of freight can now be gotten into or out of the

city over the railways on account of the congestion the yards. Cherries and raspberries are practically gone from the markets, but strawberries in good condition and in fair quantities are coming in and are reported as selling easily. Peaches are too numerous in the commission merchant's hands and prices as a rule are falling. More and more apples are coming in but they are easily moved. Cantaloupes are plentiful and the demand is not so keen as it has been though watermelons take readily enough. Small quantities of green figs are in and this week saw the first general arrivals of sultana grapes which the dealers welcomed as excellent sellers. Apricots are gone as a general thing. Plums, however, are freely offered and the market has suffered a little on account of plums submitted.

Dried Fruit.

Prominent dealers report no change in the dried fruit situation due to the fact that except for a few apricots which bring very fancy prices there are no stocks to speak of either new or old and except for a few slight deals in futures, quiet prevails all along the line. Small quantities of dried figs have been spared from points in the interior and these are considered good products to handle at this time. Eastern demands for raisins hold good and as a result of conditions in the state prices remain very firm. Prunes can be relied upon to change but little from now to the arrival of the new ones and the favorable crop reports do nothing to lower prices at all. Interest in peaches drops a little with the certainty of an average yield.

Citrus Fruits.

The local situation reveals the practical absence of oranges. Few retailers have them and with the exception of Valencias there are none in town. Lemons are still in active demand but not so much as a result of conditions here as because of the numbers going east. Local demands are rather light. Limes are plentiful but no great call exists for them for local consumption. Grape fruit is not generally met with and still sells very well.

Nuts.

Interest in both walnuts and almonds is now confined almost entirely to the growing crops. Advices from the almond growing sections continue to report short crops but late reports as to walnuts are more favorable. Several localities in Southern California report that the outlook is for a larger yield.

San Francisco, July 30.

SACRAMENTO STATE FAIR.

The State Fair this year promises to be one of the best held in California for years. The management proceeded on the theory that owing to the San Francisco disaster there was greater necessity than usual for a strong showing of the industrial products of the State to demonstrate to the world that the great wealth of resources lying back of that city is unimpaired. Individuals and communities responded to the appeal based on this claim, and as a result the State as an entirety and all its leading products will be represented as it has seldom been before. Mr. Burbank will be there with his creations, the University will contribute from its experimental stations, the United States Government will make a showing from its Chico farm, while the livestock men are coming in from all directions, and the poultry farms will show everything from bantams to a herd of live ostriches. The old custom of selling season tickets to families will be renewed.

The Fair will open August 25 with a big 500-voice concert and singing by the best church choirs in the State will be a feature of each day's pavilion entertainment. Special railroad rates are offered for the Fair season.

MORE MONEY FOR IRRIGATION RECLAMATION.

The Secretary of the Interior has increased the appropriation heretofore made from the land reclamation fund of six of the most important irrigation projects as follows:

Klamath, Oregon, from \$1,000,000 to \$2,000,000.
Hondo, N. M., from \$240,000 to \$360,000.
Minidoka, Idaho, from \$1,300,000 to \$1,550,000.
Truckee, Carson, Nevada, from \$3,000,000 to \$3,700,000.
Payette, Boise, Idaho, from \$1,300,000 to \$1,490,000.
Lower Yellowstone, Montana, from \$1,900,000 to \$2,700,000.

The increases were made because of the advance of price of labor and building material.

There has been already set aside \$4,400,000 for the Klamath project, of which \$2,000,000 is now being expended. The greater part of this will be spent in Oregon, a small portion of the irrigable land being across the line in California. The work is being energetically pushed on the construction of an outlet tunnel from the Klamath. Two lines of railroad are being built from points in California to the irrigated region in the Klamath project.

THE STABLE.

BREEDING MORGAN HORSES.

Early in the last century New England in general and Vermont in particular were famous for their Morgan horses. These horses were small, but well built, compact, and very good roadsters, with powers of endurance little short of remarkable. From Vermont they were distributed over the entire United States and over a considerable portion of Canada, the blood entering into the light harness stock of both countries and having an effect of great value. The principal effect was the endurance and stamina which it gave. With few exceptions it did not produce extreme speed. For this reason the passion for speed in the light horse, at all costs, caused Morgan breeders to neglect conformation and quality, and even that stamina for continuous travel for long distances for which the Morgan was noted. The small size of the Morgans was also a fault when market requirements were considered. The result was that Morgan mares were mated with standard-bred stallions of other strains to get speed and increased size, and the Morgan type was very largely bred out. These standard-bred horses were not of the Morgan type, and in many cases they were not desirable individuals for breeding purposes. Even in Vermont the effects of these crosses are found on every hand. In the southern part of the State it is hard to find horses showing the Morgan type, but farther north they are more common.

Believing that the Morgan characteristics were too valuable to the horse-breeding industry to be lost, the Bureau of Animal Industry of the Department of Agriculture has established a stud in co-operation with the Vermont Experiment Station to revive interest in the Morgan breed. The type selected is that of the old Morgan, with size and quality. With increased size the Morgan horse will answer the requirements of the market for light horses and will be a profitable horse for farmers to raise.

Nine mares and two fillies were bought in June. They are uniform in type, with full-made bodies, fine heads and necks, full hindquarters, good legs and feet, and abundant quality. Seven mares and the two fillies were purchased in Vermont and two mares in Kentucky. Those bought in Vermont are by such sires as General Gates, Bob Morgan, Young Ethan Allen (a full brother in blood of Daniel Lambert), Denning Allen, Rocky Mountain, and Gillig. The Kentucky mares are by Harrison Chief, out of Morgan mares, and are in foal to the saddle stallion Highland Denmark, a horse of splendid conformation and quality and an excellent stock getter. Some of the Vermont mares were in foal at the time of purchase. Those not in foal will be bred to the Morgan stallions General Gates, Frank Allen and Rex. A stallion will not be purchased at present, as sufficient funds are not available. The introduction of Harrison Chief and other saddle blood was thought desirable on account of the great effect that the blood has had on the quality of the harness horses for which Kentucky is famous.

These mares were bought by a board composed of Prof. C. F. Curtiss, Director of the Iowa Experiment Station; Mr. Cassius Peck, of the Vermont Experiment Station, and Mr. George M. Rommel, Animal Husbandman of the Bureau of Animal Industry. In addition to the characteristics mentioned above, the board insisted on pure trotting action and discriminated sharply against pacing or any tendency to mix in gaits. Pacing strains in the pedigrees were also avoided as far as possible.

The mares are temporarily on a farm rented by the Vermont Experiment Station near Burlington and will be moved

to the college farm as soon as it is fitted up. A barn has been remodeled and is very well adapted to the purpose for which it is to be used. Selection of type will be rigidly practiced and undesirable animals culled out from time to time. Mr. W. F. Hammond has been appointed to conduct the work at the experiment station. Mr. Hammond has had a lifelong experience in horse breeding in Vermont and is descended from the Hammonds who developed the Vermont Merino sheep.

THE DAIRY.

DAIRYING IN CALIFORNIA.

California is today probably the land of greatest opportunity for the intelligent dairyman, writes Judge Peter J. Shields, and this is so without regard to his means or the extent to which he intends or is able to invest or engage in that business.

A ready profit awaits the dairyman who breeds and selects better animals with which to work. A splendid field exists in California for the private dairy of high class which aims to serve a select trade. This is a feature of dairying which is much neglected with us, and which can be made to certainly succeed.

Dairying is conducted in California under exceptionally economical conditions. Cattle can be milked all winter long, almost entirely in the open air. The temperature of the weather permits the cows to browse all day upon the green grasses of our mild winter months. They waste none of their energy nor expend any of their food in a struggle with the elements to survive. The dairy farmer does not have to hibernate in California; he loses no time because of weather, but can work twelve months in the year on his farm and with his stock. The small dairyman need use but little of his slender means in constructing costly dairy buildings to protect his cattle from the rigors of winter, or his fodder from the weather. We recall a California herd which produces four hundred and ten pounds of butter per cow per year on grass alone, and which is kept altogether in the open air. This State affords unexampled opportunities for the breeder of pure bred dairy cattle. Our people are turning towards such animals with an interested attention. Young things can be brought to maturity here early and at little cost, and can be readily disposed of or put to immediate and profitable use. California is the home of alfalfa, the State which first grew it in this country, and the State which grows it best. It is the greatest of stock dairy foods, and the ease and abundance with which it can be grown solves the problem of a dairy fodder and a balanced ration, and simplifies and promotes the economy of dairy farming.

Lastly we can say to the eastern dairyman that California is a cattle sanitarium. The diseases which harassed and impoverished him at home will cease to trouble here. Digestive disturbances are prevented by twelve months of green grass; tuberculosis makes poor headway in the open air life of the California cow, while such troubles as rheumatism and garget are disposed of by the same mild climate and the same sanitary sunshine. California is a fair prospect for the eastern dairymen seeking investment; here opportunities abound, and ready profits are certain to follow intelligent efforts.

THE STATE DAIRY BUREAU.

The State Dairy Bureau of California, whose headquarters were in San Francisco, lost its offices completely by the fire. On the morning of the disaster Secretary Saylor repaired to the office, and seeing that the building in which the offices were located was doomed by the progress of the flames, started to remove

the more valuable books and papers. The offices were located on the top floor of the Buckley Building, near the foot of Market street, which was a commodious office building completed less than a year before the fire. The interior of the offices showed evidence that the building must have been severely shaken. Book cases, desks and chairs, were overturned and thrown into a heap. While the secretary was trying to extricate the desired articles from the wreckage the second earthquake occurred. It shook things so thoroughly, that, after taking an armful of books and papers that he had laid aside, he made for the street and shortly afterwards the building was in flames, so that practically the entire office and laboratory equipment was destroyed.

The Bureau has opened temporary offices at 259 Sanchez street, San Francisco, where it will maintain its headquarters until down town offices become available. In the meantime the work of the Bureau will go on. The work of sanitary dairy inspection, in which the Bureau has been engaged during the past year, will be resumed September 1st. The work was suspended in May owing to the fact that the funds for the fiscal year were exhausted.

BEES AND FRUIT.

At a recent meeting of the Nebraska Beekeepers' Association, Mr. E. Kretchner gave his experience as follows:

In my early days, when I was as much of an enthusiastic horticulturist as an apiarist, I conducted many experiments, and made many observations, and found that during the blooming of fruit trees, should the weather be too cool to permit the bees to fly, an imperfect fruit crop was the result. Believing that the cool days might be the cause of imperfect fruit, I investigated a little further in the succeeding years, when the weather was pleasant for the bees to visit the flowers, by covering certain parts of blooming trees with wire cloth or netting to exclude the bees yet permit the free access of all pollen carried by the winds, and in every instance limbs and trees thus covered produced either no fruit or only a few small and imperfect specimens. After repeated experiments it is my candid opinion that without bees our fruit crop would be reduced fully 90 per cent.

THE PARCELS POST AND FARMERS.

"Congress is looking with more favor on a parcels post. Persons who have watched the tendency of postal legislation for several years are now convinced that a parcels post law is not far off. The subject may be taken up in earnest at the next session, but it is more likely to receive consideration at the long session beginning in December, 1907. The House of Representatives would have voted for a parcels post bill at this session if the opportunity had been afforded. The Representatives, as a rule, believe in the proposed legislation, because they realize how advantageous it would be to the people, especially to the farmer."

This is the way that a Washington newspaper correspondent refers to the parcels post in the July issue of Agricultural Advertising. This will be good news, says the Prairie Farmer, to the farmer who is carefully watching the progress of the parcels post sentiment and urging the enactment of the legislation necessary to bring packages as well as letters and papers to his gate. This same writer calls attention to the mistake and states that Congress is seeing the fallacy of sending rural mail carriers to every farm home and yet depriving him of doing but a portion of the service that he is capable of accomplishing if a parcels post law were enacted and the carrier were allowed to deliver parcels as well as letters and papers.

A good illustration of the inadequacy of the present rural mail service is shown in the following statement quoted from an Ohio farmer:

"Suppose I am threshing," this farmer is reported as saying, in a letter, "and we have a break-down—a casting weighing five pounds breaks. Under the existing regulations the rural carrier can not be of any service to me because he is forbidden to carry a package. The result is that we must suspend work while I go to the nearest city in which the broken casting can be duplicated. Possibly two or three days will be wasted. If we had a parcels post I could wire the dealer in the nearest city a duplicate casting could be mailed and the rural carrier would bring it to me on his next trip."

Five bills were introduced into the present Congress providing for the establishment of a parcels post. According to Agricultural Advertising, Representative Henry of Connecticut would provide for the delivery of packages by mail ranging up to 200 pounds in weight. He suggests the following rates of postage:

"Parcels up to eight ounces, one cent; parcels over eight ounces to one pound, two cents; parcels over one pound to 11 pounds, five cents; parcels over 11 pounds to 30 pounds (half bushel), 10 cents; parcels over 30 pounds to 60 pounds (bushel), 15 cents; parcels over 60 pounds to 100 pounds (half barrel), 20 cents; parcels over 100 pounds to 200 pounds (barrel), 25 cents."

It is evident that the enactment of such a law as this would revolutionize the business of the entire postoffice department. So pronounced is the change that it is doubtful if such an extreme measure would be advisable, but a law providing for lighter weights of parcels could be enacted and then as fast as the method of delivery becomes adapted to increased service, increases in weights could be made.

The first thing is to secure the enactment of a parcels post law suitable to conditions as they are and will be. This law will come sooner or later. Much depends, however, upon the activity of the farmer in presenting his wants to his representative and senator at Washington.

STATE FAIR

AT SACRAMENTO

Aug. 25th to Sept. 1st (Inclusive)

This time a State Fair that comprehends all the State—the North, South, East, and West all to be represented.

THE BIGGEST AND BEST FOR YEARS

Magnificent display of industrial products; unequaled show of live stock. Poultry unexcelled, including herd of live ostriches.

SPLENDID PROGRAM OF RACES

All days big days, but the first day the biggest.

Opens with chorus of 500 voices with brass band and anvil accompaniment.

Special excursion rates to visitors from all parts of California.

CATTLE ENTRIES CLOSE AUGUST 15TH

Bring the wife and babies and renew the old times at the Fair we had in the days of our daddies.

J. A. FILCHER, Secretary

B. F. RUSH, President

THE DAIRY

THE COLD CURING OF CHEESE.

Recent investigations in the manufacture and curing of cheese have determined some interesting questions as to the relative advantages of cool curing, where the rooms are kept above 50° F., and cold curing, with the rooms at temperatures ranging from 30° to 50° F., and the results of these investigations have just been published in a bulletin of the Dairy Division, Bureau of Animal Industry, United States Department of Agriculture. This bulletin gives also an interesting summary of previous experiments carried on at the Wisconsin Agricultural Experiment Station and at the Ontario (Canada) Experiment Station.

In these earlier experiments at the Wisconsin station it was shown that the curing of cheese at temperatures above 60° F. was apt to be unsatisfactory, while that cured at the lower temperatures, from 50° to 60° F., remained longer fit for consumption and had the better flavor according to the standards of that time. With lower temperature for curing, the quality of the cheese appeared to be more uniform and the product brought higher prices. Some bad effects followed storing at temperatures low enough to freeze the cheese, but they were only temporary. The Canadian experiments showed that the temperature of 40° F. for the curing room gave very satisfactory results, and that there was not only a uniform quality secured, but also very little loss of weight. It was made plain also that the temperature of 55° or 60° F. would not check many of the undesirable ferments which may occur in the ripening of cheese.

Mr. C. F. Doane, dairy expert in the Dairy Division, planned and executed a series of experiments to study, under factory conditions and on a commercial basis, the problems of temperature in curing and storage. The factory with which co-operation was arranged in this case was at Plymouth, Wis., and had a capacity of 15,000 lb. of milk daily. The cheeses investigated were made by the Cheddar process from June 19 to August 24, 1905. In these experiments the usual amount of rennet, 3 oz. to 1,000 lb. of milk, was used for one-half of the cheeses, and twice the amount, or 6 oz. of rennet to 1,000 lb. of milk, was used for the other half.

The output used in these experiments amounted to 14 "Daisy" cheeses daily. Two of these were stored immediately in the curing room having a temperature of 32° F., two were stored in the curing room having a temperature of 40° F., and two were cured in the factory curing room at a temperature of about 65° F. The other cheeses remained also in the factory curing room until, at the end of one week, two were placed in the curing room having a temperature of 32° F., two in the room at 40° F., and, at the end of two weeks more, two more cheeses were placed in the 32° room, and two more in the 40° room.

The cheese was examined and scored January 6, 1906. The judges were Mr. U. S. Baer and Mr. C. A. White, of Wisconsin, and Mr. I. W. Steinhoff, of Stafford, Canada. The results of the testing show that there was slightly less loss of weight in the cheese put into cold storage at one week of age than in that stored at two weeks.

In the case of the low-rennet cheese, that cured at 32° F. directly from the press scored highest, the average being 95 points out of a possible 100, while that cured at 40° F. directly from the press scored an average of 94.3. The cheese cured at 32° F. after one week in the factory curing room, scored an average of 93.8, and that cured at 40° F., after one week in the factory, scored an average of 90. The cheese cured at 32° F. after two weeks in the factory scored on an average 93, and that cured at 40° F. after two weeks in the factory scored on an average 90. The low-rennet cheese cured entirely in the factory curing room scored only 81.4.

The results in the case of the high-rennet cheese show that the cheese cured at 32° F. directly from the press averaged 94.4, and that cured at 40° F. directly from the press averaged 92.3. The cheese cured at 32° F. after one week in the factory scored 93.4, while that cured at 40° F. after one week in the factory scored 90.3. The cheese cured at 32° F. after two weeks in the factory scored 91.6, and that cured at 40° F. after two weeks in the factory averaged 90.9, while the high-rennet cheese cured entirely in the factory curing room scored 90.5.

It was also shown in these investigations that taint developed more noticeably in the factory curing room than in cold storage, and that taints once started in the cheese were checked more by storage at 32° F. than at 40° F. It appears also that cold curing derives its value chiefly from its effect on what might otherwise be poor cheese. Another important conclusion is that curing cheese at 32° F. checks acidity much better than the 40° temperature. Mr. Doane concludes that

the quicker an acid cheese can be put into cold storage, and the colder the storage, the better the cheese will be.

In popular tests made by placing cheese of these various groups on sale in the markets, it was found that in comparison with the sales of five or ten years ago there is a decided indication that the popular taste is growing toward a preference for mild cheese, either cured or uncured. It appears that the time is soon coming when all cheese, if ripened at all, must be ripened at low temperatures, and the sooner it is put into cold storage the better.

WHAT IS ADULTERATED BUTTER?

In the publication of the Treasury Department is given Commissioner Yerkes' reply to an inquiry, asking about rulings and regulations of the Internal Revenue Department in regard to what constitutes adulterated butter. Mr. Yerkes' reply to the inquirers, whose names are not given, is as follows:

Gentlemen.—Your letter of April 24, 1906, was duly received, and reply thereto has been delayed in order that the matters therein referred to might receive careful consideration.

You refer to the nature of your business as that of buying and selling what is commonly denominated "packing stock"—that is, butter purchased from merchants which comes in barrels and boxes composed of various churnings of various farmers scattered throughout the country from which such stock is drawn.

You sell this packing stock to the renovated butter factories. You rehandle and rework it, making what is termed by the trade "ladle butter." You state that the butter as purchased from merchants, made up from many churnings, contains, in many instances, more than 16% of water, sometimes more, sometimes less. You ask to be informed whether the sale of such butter containing 16% or more of moisture creates liability as wholesale dealer in adulterated butter when sold in quantities.

You further inquire as to the liability of the merchants who sell you this butter, and also as to the status as regards special and other taxes of the farmers who furnish the merchant the butter containing water in excess of the legal limit.

Concisely stated, your questions are: What is the legal status under rulings and regulations of this office, of the merchant handling (buying and selling) this class of goods, the farmer making and selling the same, and the manufacturer buying and converting it into ladle butter or selling it as packing stock?

It is presumed that you are and have been in possession of the regulations of this office, approved by the Secretary of the Treasury, known as regulations No. 9, revised December, 1904, and if this is true, your attention has doubtless been particularly attracted to the parts relating to renovated and adulterated butter which contains matters necessarily of vital importance to persons or corporations engaged in the business of handling an article the nature of which may or may not be classed as a taxable product under the Federal laws.

In the regulations mentioned the law describing taxable products (Sec. 4, Act of May 9, 1902) is printed in part on page 101, and this is followed by a carefully prepared statement under various heads embracing the views of this office relative to question as to when or under what conditions ordinary butter of commerce may become liable to the tax imposed on adulterated butter under the act referred to.

It may be noted that the statutory definition of "butter" as set forth in the aforesaid Section 4, makes no reference to the degree of moisture that may be contained in such butter, but the question is at once involved in the definition of adulterated butter immediately following, so that butter defined in the oleomargarine act of August 2, 1886, becomes adulterated butter when it is found to have been so treated as to bring it within the definition set forth in the act of May 9, 1902, either by the addition of chemicals, any substance foreign to butter, to cheapen the product, or when manipulated or manufactured by any process or the addition of any material with intent or effect of causing the absorption of abnormal quantities of water, milk or cream.

It is well understood that butter produced on the farm is often loaded with water, but it will be seen by reference to the regulations these small individual lots are not taken into account in connection with the taxing question, but when these lots are gathered up and manufactured or manipulated so that they lose their identity as the farmers' product they enter a sphere where surveillance of the law becomes operative, and some of the more common kinds of resulting new products are referred to under the heads of "ladle butter," "creamery butter," "whey butter," and "sweet

Lost Strayed or Stolen—One Cow

That is about what happens each year for the man who owns five cows and does not use a Tubular cream separator. He loses in cream more than the price of a good cow. The more cows he owns the greater the loss. This is a fact on which Agricultural Colleges, Dairy Experts and the best Dairymen all agree, and so do you if you use a Tubular. If not, it's high time you



did. You can't afford to lose the price of one or more cows each year—there's no reason why you should. Get a Tubular and get more and better cream out of the milk; save time and labor and have warm sweet skimmed milk for the calves. Don't buy some cheap rattle-trap thing called a separator; that won't do any good. You need a real skimmer that does perfect work, skims clean, thick or thin, hot or cold; runs easy; simple in construction; easily understood. That's the Tubular and there is but one Tubular, the Sharples Tubular. Don't you want our little book "Business Dairymen," and our Catalog A.151 both free? A postal will bring them.

The Sharples Separator Co.
West Chester, Pa.
Toronto, Can. Chicago, Ill.

butter," with the information as to when such may be classed as taxable.

It is an indisputable proposition that butter containing abnormal moisture is adulterated butter, and is subject to a tax of 10c. per lb., which is required by law to be paid by the manufacturer.

Being a taxable product it must be packed, branded, and have tax-paid stamps affixed to the packages when found off the premises of the manufacturer; otherwise it is in an unlawful condition and is forfeitable the same as other taxable articles which may be found on the market tax-unpaid.

It has been the uniform custom of this office ever since this law went into effect to caution creameries, ladlers, and other handlers of butter, either for sale or for storage stock, to see to it that the product sold by them should not infringe on the law by being permitted to contain water in excess of the limit fixed in the regulations.

It has been held that butter in cold storage for sale at future time containing moisture to the extent of 16% or more is adulterated butter illegally on the market, the tax by law not having been paid and other requirements not having been complied with. Seizures have been made of this class of butter, the same sold or otherwise disposed of, and the manufacturers and dealers charged with special taxes.

Had the regulations been followed, much if not all of this trouble would have been avoided.

If the material accumulated and manipulated by them is not right it is important that it be made right before being sent out on the market. They are the judges of the class of materials they will accept, and can refuse that which they find dangerous to use in producing the article proposed to be marketed. If the moisture content is kept below 16%, it is not in danger from interference on the part of the internal revenue officers unless there are other questions involved than that of the moisture limit.

If, however, the water content is 16%, or above, it is over the line of immunity from tax, and is necessarily likely to fall under the scrutiny of the officers of this bureau.

It may be said in general terms that the law taxing adulterated butter will be enforced. Special taxes incurred by manufacturers and dealers will be exacted and a tax of 10c. per lb. will be imposed on the product. It is not intended to invoke the special penalties provided by law when no intent to defraud the government is apparent, but may be in cases of persistent continuance of the unlawful practices.

The foregoing, taken in connection with the regulations to which reference has been made, will doubtless afford you the information you seek.

Respectfully,

JOHN W. YERKES,
Commissioner of Internal Revenue.

HOME CIRCLE.

DEATHLESS.

Thews of the the dauntless Norman knight, blood of the Saxon thane, Eye of the hillman, eagle wise, scanning the far-off plain, Mind of the gentle Puritan, stern in his single thought— This was the blood of the Pioneer, this was the Argonaut.

Out of the hills of the Sunset Land, out by the Western gate, Builded a city to last for aye, under the hand of Fate; This was the Temple of Destiny, out of the Future brought; This was the lasting monument raised by the Argonaut.

Sorrow may come to the western land. Ruin may stalk the town, Blackening all of the beauty there, flinging the temples down; Courage! For though Desolation spreads, bringing the day to naught, Still in the midst of the ruin dwells the soul of the Argonaut. —Lowell Otus Reese, in Sunset Magazine.

HOME COMING OF COLONEL HUCKS.

A generation ago a wagon covered with white canvas turned to the right on the California road and took a northerly course toward a prairie stream that nestled just under a long, low bluff. When the white pilgrim, jostling over the rough, unbroken ground through the tall "blue stem" grass reached a broad bend in the stream it stopped. A man and a woman emerged from the canvas and stood for a moment facing the wild, green meadow and the distant hills. The man was young, lithe and graceful, but despite his boyish figure the woman felt his unconscious strength as he put his arm around her waist. She was aglow with health; her fine, strong, intelligent eyes burned with hope, and her firm jaw was good to behold. They stood gazing at the virgin field a moment in silence. There were tears in the woman's eyes as she looked up after the kiss and said:

"And this is the end of our wedding journey; and—and—the honeymoon—the only one we can ever have in all the world—is over."

The horses moving uneasily in their sweaty harness cut short the man's reply. When he returned his wife was getting the cooking utensils from under the wagon and life—stern, troublous—had begun for them.

It was thus that young Colonel William Hucks brought his wife to Kansas.

They were young, strong, hearty people, and they conquered the wilderness. A home sprang up in the elbow of the stream. Little children frolicked in the king row and hurried to school down the green lines of the lanes where the hedges grew.

There were years when the light in the kitchen burned far into the night when two heads bent over the table figuring to make ends meet. In these years the girl's figure became bent and the light faded in the woman's eyes while the lithe figure of the man was gnarled by the rigors of the struggle. There were days—not years, thank God!—when lips forgot their tenderness; and, as fate tugged fiercely at the curbed bit, there were times when souls rebelled, and cried out in bitterness and despair, at the roughness of the path.

In this wise went Colonel William Hucks and his wife through youth into maturity, and in this wise they faced toward the sunset.

He was tall, with a stoop, grizzled, brawny, perhaps uncouth in mien. She was stout, unshapely, rugged; yet her face was kind and motherly. There was a boyish twinkle left in her husband's

eyes, and a quaint, quizzing, one-sided smile often stumbled across his care-furrowed countenance. As the years passed, Mrs. Hucks noticed that her husband's foot fell heavily when he walked by her side, and the pang she felt when she observed his plodding step was too deep for tears.

It was in these days that the minds of the Huckses unconsciously reverted to old times. It became their wont, in these latter days, to sit in the silent house, whence the children had gone out to try issue with the world, and, of evenings, to talk of old faces and of old places in the home of their youth. Theirs had been a pinched and busy life. They had never returned to visit their old Ohio home. The Colonel's father and mother were gone. His wife's relatives were not there. Yet each felt the longing to go back.

For years they had talked of the charms of their childhood. Their children had been brought up to believe that the place was little less than heaven. The Kansas grass seemed short and barren of beauty to them beside the picture of the luxury of Ohio's fields. For them the Kansas streams did not ripple and dimple so merrily in the sun as the Ohio brooks that romped through dewy pastures in their memories. The bleak Kansas plain, in winter and in fall, seemed to the Colonel and his wife to be ugly and gaunt when they remembered the brow of the hill under which their first kiss was shaded from the moon, while the world grew dim under a sleigh that bounded over the turnpike.

The old people did not give voice to their musings. But in the woman's heart there gnawed a yearning for the beauty of the old scenes. It was almost a physical hunger.

After their last child, a girl, had married, and gone down the lane towards the lights of the village, Mrs. Hucks began to watch with a greedy eye the dollars mount toward a substantial bank account. She hoped that she and her husband might afford a holiday.

Last year, Providence blessed the Huckses with plenty. It was the woman who revived the friendship of youth in her husband's cousin, who lives in the old township in Ohio. It was Mrs. Hucks who secured from that cousin an invitation to spend a few weeks in the Ohio homestead. It was Mrs. Hucks, again, who made her husband happy by putting him into a tailor suit—the first he had bought since his wedding—for the great occasion. Colonel Hucks needed no persuasion to take the trip. Indeed, it was his wife's economy which had kept him from being a spendthrift and from borrowing money with which to go on a dozen different occasions.

The day which Colonel and Mrs. William Hucks set apart for starting upon their journey was one of those perfect Kansas days in early October. The rain had washed the summer's dust from the air, clearing it and stenciling the lights and shades very sharply. The yellow of the stubble in the grain fields was all but a glittering golden. The sky was a deep, glorious blue, and the downy clouds in it appeared near and palpable. The old couple paused outside the front door while Colonel Hucks fumbled with the key.

"Think of it, Father," said Mrs. Hucks as she turned to descend from the porch. "Thirty years ago—and you and I have been fighting so hard out here—since you let me out of your arms to look after the horses. Think of what has come—and—and gone. Father—and here we are, alone, after all."

"Now, Mother, I—" but the woman broke in again with:

"Do you mind how I looked that day? Oh, William, you were so fine and so handsome then! What's become of my boy—my young—sweet—strong—glorious boy?"

BEEF SCRAPS

GUARANTEED: 65 per Cent PROTEIN.

RAW BONE

GUARANTEED: 25 Per Cent Protein and 45 Per Cent Bone Phosphate
PURE ANIMAL MATTER
POULTRY FOODS

Write us for price list and samples; they are free.
We want you to see the kind of Poultry Foods that are manufactured from CLEAN, RAW MATERIAL. This means HEALTHY ANIMAL FOODS for your poultry.

WESTERN MEAT COMPANY
SOUTH SAN FRANCISCO, San Mateo County

Mrs. Hucks' eyes were wet and her voice broke at the end of the sentence.

"Mother," cried the Colonel, as he went around the corner of the house, "just wait a minute till I see if this kitchen door is fastened."

When he came back, he screwed up the corner of his mouth into a droll, one-sided smile and said, with a twinkle in his eyes, to the woman emerging from the handkerchief:

"Mother, for a woman of your age, I should say you had a mighty close call to being kissed just then. That kitchen door was all that saved you."

"Now, Pa, don't be silly," was all that Mrs. Hucks had the courage to attempt, as she climbed into the buggy.

Colonel Hucks and his wife went down the road, each loath to go and leave the home-place without their care. Their ragged, uneven flow of talk was filled with more anxiety about the place which they were leaving than it was with the joys anticipated at their journey's end. The glories of Ohio, and the wonderful green of its hills, and the cool of its meadows, veined with purling brooks, was a picture that seemed to fade in the mental vision of this old pair, when they turned the corner, that hid their Kansas home from view.

Mrs. Hucks kept reverting in her mind to the recollection of the bedroom, which she had left in disorder. The parlor and the kitchen formed a mental picture in the housewife's fancy which did not leave space for speculations about the glories into which she was about to come. In the cars, Colonel Hucks found himself leaning across the aisle, bragging mildly about Kansas for the benefit of a traveling man from Cincinnati. When the Colonel and his wife spread their supper on their knees in the Kansas City union depot, the recollection that it was the little buff cochin pullet which they were eating made Mrs. Hucks very homesick. The Colonel, on being reminded of this, was meditative also.

They arrived at their destination in the night. Mrs. Hucks and the woman of the household refreshed old acquaintances in the bedroom and in the kitchen, while the men sat stiffly in the parlor and called the roll of the dead and the absent. In the morning, while he was waiting for his breakfast, Colonel Hucks went for a prow down in the cow lot. It seemed to him that the creek which ran through the lot was dry and ugly. He found a stone upon which as a boy he had stood and fished. He remembered it as a huge boulder, and he had told his children wonderful tales about its great size. It seemed to him that it had worn away one-half in thirty years. The moss on the river bank was faded and old and the beauty for which he had looked was marred by a thousand irregularities which

he did not recall in the picture of the place that he had carried in his memory since he left it.

Colonel Hucks trudged up the bank from the stream with his hands clasped behind him whistling "O, Lord, Remember Me," and trying to reconcile the things he had seen with those he had expected to find. At breakfast he said nothing of his puzzle, but as Mrs. Hucks and the Colonel sat in the parlor alone during the morning, while their cousins were arranging to take the Kansas people over the neighborhood in the buggy, Mrs. Hucks said:

"Father, I've been looking out the window, and I see they've had such a dreadful drought here. See that grass there, it's as short and dry—and the ground looks burnder and cracked than it does in Kansas."

"Um, yes," replied the Colonel, "I had noticed that, myself. Yet crops seem a pretty fair yield this year."

As the buggy in which the two families were riding rumbled over the bridge, the Colonel, who was sitting in the front seat, turned to the woman in the back seat and said:

"Lookie there, Mother, they've got a new mill—smaller'n the old mill, too."

To which the cousin responded, "Bill Hucks, what's got into you, anyway! That's the same old mill, where me and you used to steal pigeons."

The Colonel looked closer and drawled out, "Well, I be doggoned! What makes it look so small? Ain't it smaller, Mother?" he asked, as they crossed the mill race, that seemed to the Colonel to be a diminutive affair, compared with the roaring mill-race in which as a boy he had caught minnows.

The party rode on thus for half an hour, chatting leisurely, when Mrs. Hucks who had been keenly watching the scenery for five minutes, pinched her husband and cried enthusiastically, as the buggy was descending a little knoll:

"Here 'tis, Father! This is the place!" "What place?" asked the Colonel, who was head over heels in the tariff.

"Don't you know, William?" replied his wife with a tremble in her voice, which the woman beside her noticed.

Every one in the buggy was listening. The Colonel looked about him; then turning to the woman beside his wife on the back seat, he said:

"This is the place where I mighty nigh got tipped over trying to drive two horses to a sleigh with the lines between my knees. Mother and me have remembered it, someway, ever since."

And the old man stroked his grizzled beard and tried to smile on the wrong side of his face that the women might see his joke. They exchanged meaning glances when the Colonel turned away, and Mrs. Hucks was proudly happy. Even

the dullness of the color on the grass, which she had remembered as a luscious green, did not sadden her for half an hour.

When the two Kansas people were alone that night the Colonel asked:

"Don't it seem kind of dwarfed here to what you expected it would be? Seems to me like it's all shriveled and worn out, and old. Everything's got dust on it. The grass by the roads is dusty. The trees that used to seem so tall and black with shade are just nothing like what they used to be. The hills I've thought of as mountain's don't seem to be so big as our bluff back—back home."

Kansas was "home" to them now. For thirty years the struggling couple on the prairie had kept the phrase "back home" sacred to Ohio. Each felt a thrill at the household blasphemy, and both were glad the Colonel had said "back home," and that it meant Kansas.

"Are you sorry you come, Father?" said Mrs. Hucks, as the Colonel was about to fall into a doze.

"I don't know; are you?" he asked.

"Well, yes, I guess I am. I haven't no heart for this, the way it is, and I've some way lost the picture I had fixed in my mind of the way it was. I don't care for this, and yet it seems that I do, too. Oh, I wish I hadn't come, to find everything so washed out—like it is!"

And so they looked at pictures of youth through the eyes of age. How the colors were faded! What a tragic difference there is between the light which springs from the dawn and the glow which falls from the sunset!

After the first day Colonel Hucks did not restrain his bragging about Kansas. And Mrs. Hucks gave rein to her pride when she heard him. Before that day she had reserved a secret contempt for a Kansas boaster, and had ever wished that he might see what Ohio could do in the particular line which he was praising. But now Mrs. Hucks caught herself saying to her hostess, "What small ears of corn you raise here!"

The day after this concession Mrs. Hucks began to grow homesick. At first she worried about the stock; the Colonel's chief care was about the dog. The fifth day's visit was their last. As they were driving to the town to take the train for Kansas, Mrs. Hucks overheard her husband discoursing after this fashion:

"I tell you, Jim, before I'd slave my life out on an 'eighty' the way you're doing, I'd go out takin' in whitewashin.' It's just like this—a man in Kansas has lower taxes, better schools, and more advantages in every way, than you've got here. And as for grasshoppers? Why, Jim West, sech talks makes me tired! My boy Bill's been always born and raised in Kansas, and now he's in the legislature, and in all his life, since he can remember, he never seen a hopper. Wouldn't know one from a sacred ibex, if he met it in the road."

While the women were sitting in the buggy at the depot waiting for the train, Mrs. Hucks found herself saying:

"And as for fruit—why, we fed apples to the hogs this fall. I sold the cherries, all but what was on one tree near the house, and I put up sixteen quarts from just two sides of that tree, and never stepped my foot off the ground to pick them."

When they were comfortably seated on the homeward-bound train Mrs. Hucks said to her husband:

"How do you suppose they live here in this country, anyway, Father? Don't any one seem to own any of the land joinin' them, and they'd no more think of puttin' in water tanks and windmills around their farms than they'd think of flyin.' I just wish Mary could come out and see my new kitchen sink with the hot and cold water in it. Why, she almost fainted when I told her how to fix

a dreem for her dishwater and things." Then after a sigh, she added: "But they are so onprogressive here, now-a-days."

That was the music which the Colonel loved; and he took up the strain and carried the tune for a few miles. Then it became a duet, and the two old souls were very happy.

They were overjoyed at being bound for Kansas. They hungered for kindred spirits. At Peoria, in the early morning, they awakened from their chair-car naps to hear a strident female voice saying:

"Well, sir, when the rain did finally come, Mr. Morris he just didn't think there was a thing left worth cutting on the place, but lo, and behold! we got over forty bushels to the acre off of that field as it was."

The Colonel was thoroughly awake in an instant, and he nudged his wife, as the voice went on:

"Mr. Morris was so afraid the wheat was winter killed; all the papers said it was; and then come the late frost, which every one said had ruined it—but law me!"

Mrs. Hucks could stand it no longer. With her husband's cane she reached the owner of the voice, and said:

"Excuse me, ma'am, but what part of Kansas are you from?"

It seemed like a meeting with a dear relative. The rest of the journey to Kansas City was a hallelujah chorus, wherein the Colonel sang a powerful and telling bass.

As the train rolled into the little town on Willow creek that afternoon the Colonel craned his neck at the car window to catch the first glimpse of the big red standpipe and of the big stone school house on the hill. When the whistle blew for the station the Colonel said:

"What is it that fool Riley feller says about 'Grigsby's Station, where we used to be so happy and so pore'?"

As the Colonel and his wife passed out of the town into the quiet country, where the shadows were growing long and black, and where the gentle blue haze was hanging over the distant blue hills that undulated the horizon, a silence fell upon the two hearts. Each mind sped back over a life-time to the evening when they had turned out of the main road in which they were traveling. A dog barking in the meadow behind the hedge did not startle them from their reveries. The restless cattle wandering down the hillside toward the bars made a neutral complement to the picture which they loved.

"It is almost sunset, father," said the wife as she put her hand upon her husband's arm.

Her touch and the voice in which she had spoken tightened some cord in his throat. The Colonel could only repeat, as he avoided her gaze:

"Yes, almost sunset, Mother, almost sunset."

"It has been a long day, William, but you have been good to me. Has it been a happy day for you, father?"

The Colonel turned his head away. He was afraid to trust himself to speech. He clucked to the horses and drove down the lane. As they came into the yard the Colonel put his arm about his wife and pressed his cheek against her face. He said drolly:

"Now, lookie at that dog—come tearing up here like he never saw white folks before!"

And so Colonel William Hucks brought his wife back to Kansas. Here, their youth is woven into the very soil they love; here, every tree around their home has its sacred history; here, every day above them recalls some day of trial and of hope.

Here, in the gloaming tonight stands an old man, bent and grizzled. His eyes are dimmed with tears, which he would not acknowledge for the world, and he is dreaming strange dreams while he listens

to a little cracked voice in the kitchen half humming and half singing:

"Home again, home again,
From a foreign shore."

—William Allen White in Rural Magazine.

DOMESTIC HINTS.

Graham Waffles.—One pint sweet milk, three well beaten eggs, one tablespoonful of sugar, butter the size of a walnut (melted), salt, one pint of graham and one cupful of wheat flour, mixed with two heaping tablespoonfuls of baking powder.

French Mustard.—One-half cup vinegar, four tablespoons cream, three tablespoons mustard, one teaspoon salt, one of sugar, one egg; let come to a boil, stirring constantly.

Green Tomato Pickles.—Slice a gallon of unpeeled green tomatoes and six large onions and mix them together. Stir into these a quart of vinegar, a cup of brown sugar, a tablespoonful each of salt, pepper and mustard seed, a half tablespoonful each of ground allspice and cloves. Stew until the tomatoes are very tender, put into glass jars and seal.

Eggs and Tomato.—For an appetizing dish, cover the bottom of each individual egg shirrer with tomato sauce that has been highly seasoned with paprika and onion. Drop into each a poached egg, place on it a small piece of butter and put for a few minutes in the oven.

Escalloped Onions.—Fill an earthen baking dish with layers of bread crumbs and boiled onions pulled into small bits, each seasoned with salt, butter and pepper. Fill the dish with sweet milk and bake half an hour.

Chile Con Carne.—Cut two pounds of steak into small pieces and fry in dripping or butter; seed six chiles and cover with boiling water, soak until tender, then scrape the pulp into the water; when the steak is done add flour to the fat in the pan and brown it, stirring constantly; cover with the chile water, add a little garlic and thyme and simmer until the meat is tender and the gravy thick and smooth.

Molasses Puffs.—Beat together one-half cup of sugar and one-half cup of butter, add one cup of molasses, one beaten egg, one level tablespoon of ginger, one level teaspoon of soda, one cup of hot water, a pinch of salt and four cups of flour; beat and bake in buttered gem pans.

CHAFF.

Mrs. Smith (calling at her husband's office)—You say my husband is out. Is he out to lunch? New Office Boy—I don't think so. De typewriter's here!

Jawback — My mother's cooking—Mrs. Jawback—Well, she deserves it. But I didn't think you'd acknowledge it so shortly after her death.

"That seems a very bad cold you've got, my little man." "It's a very good cold, sir; it's kept me away from school for two weeks now."

Jack—It's cool on the piazza. Won't you put my coat around you? Helen—Maybe. But hadn't you better put in on?

Husband—Now, dear, just as soon as you arrive you must telegraph. Wife—All right. How much shall I telegraph for?

"Poor man!" said the inquisitive old lady. "I guess you'll be glad when your time is up won't you?"—"No, ma'am, not partiklerly," replied the prisoner, "I'm up for life."

Wife—I'm sorry to see you come home in such a state as this, Charles. Husband—I knew you'd be sorry, Carrie, and that's why I told you not to sit up.

"Thank you," she said, as he finally gave her his seat in the car. "It's almost impossible to stand on your feet." "That

was because I was pulling 'em out your way, ma'am," he replied.

Strawler—I've seen Snippem, the tailor, going up to your studio every day for a week. Is he sitting for you? Dauber—No, he's laying for me.

"Before we were married, dear, you were always giving me presents. Why do you never give me any now?" "My love, did you ever hear of a fisherman giving bait to a fish he had caught?"

Mrs. Naggsby—How well I remember the night you proposed to me, Henry. You looked like a fool. Naggsby—Appearances are not always deceitful, my dear.

"I say, old chap, why don't you send a painting to the Academy? They accept some awfully rotten stuff, you know."

"Is this pure milk?" said the inquisitive lady customer. "Yes," replied the milkman. "We sell the cream separately."

CALIFORNIA DRIED APRICOTS IN ENGLAND.

A recent letter from an Englishman to a fruit-growing brother in the Lodi district, contained the following interesting reference to the fruits in demand there:

"I have meant in the last three or four letters to tell you about the dried fruits that have come into the English market from California. The apricots are the coming success, and the dried peaches have been turned out of the lists because no one cares for them; so that if you are planting at Lodi fruits for drying, apricots are the friend, not peaches. The apricots sell at the stores in London at 8d a pound; at the retail shops here 1s a pound. They are well worth 8d, as half a pound, when really well soaked and well cooked, makes a pie that will go round our family of nine souls, and we can't buy fresh apples to do that. The dried apples sell at 6d a pound (the rings), and we have found them very useful in spring before rhubarb comes in, for many years, but I don't know whether they are produced in California or not. The dried apricots can give the canned ones fits, as far as flavor is concerned."

MOVING CORN TO MONTANA.

Another new wrinkle in the range cattle business is the carrying of corn from Nebraska to the Yellowstone Valley alfalfa country for beef-finishing purposes. In the Big Hole region native hay puts a good hard finish on steers, but this cannot be done with alfalfa which lacks hardening qualities. This year S. W. Gebo tried the experiment of using Nebraska corn in conjunction with alfalfa and found the venture profitable, some of his cattle selling at \$5 per cwt. at Chicago last week. With additional railroad facilities between the corn-belt and Montana's alfalfa fields this industry will be susceptible of indefinite expansion.



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CURES NINE CRIPPLES OUT OF TEN

Zolfo, Fla., Feb. 2, 1906

Dr. B. J. Kendall Co., Enosburg Falls, Vt.

Dear Sirs:—Find enclosed two cent stamp for your "Treatise on the Horse and His Diseases". I am a user of Kendall's Spavin Cure, and it will cure any nine cripples out of ten, and do the other one good.

Yours, H. G. Murphy.

Thinks Caustic Balsam better than any other.

Fall River, Mass., Jan. 26, 1905

The Lawrence-Williams Co., Cleveland, O.:

We have used GOMBAULT'S CAUSTIC BALSAM wherever a blister would be used, and think it better than any other.

INTERLACHEN FARM, Spencer Gordon, Prop.

PATRONS of HUSBANDRY

THE GRANGE.

(Written for the Pacific Rural Press.)

It is time we wrote again about this good Order. Reports kindly sent to me by lecturers and secretaries of other jurisdictions are most encouraging. They show life, increase, system, co-operation. For instance, Brother Richard Pattee, State Lecturer for New Hampshire, sends a copy of his quarterly circular to subordinate lecturers, urging efficient work even during the hot weather. From reports of lecturers, for the first three months he finds that nearly 53,000 people heard the 2438 readings, 581 essays, 327 addresses, besides music, etc. He begs that every Grange will discuss the question of the railway tax, and offers a mass of information that he has gathered on the subject. He says: "I hope to arrange a series of lecturers' conferences in connection with the field meetings already announced. I shall hope to meet every lecturer in the State at these field meetings."

The journal of proceedings of the 32nd annual session of Maine, shows 400 masters and wives, from subordinate Granges, and 123 delegates and wives present, and much good work done. California must hustle ever to approximate such reports.

Brother M. V. Griffiths, master of our State Grange, writes that he is about to initiate a class of 16. Brother Larsen of Manteca, tells me he has a class that will soon be ready for work.

Santa Rosa, despite the earthquake, is planning with the master, secretary and executive committee of State Grange to have a splendid session of the latter body next October.

Oakland, San Jose and Berkeley Granges are doing well. Mrs. E. B. Marcen, lecturer San Jose Grange, has a good plan of work that must prove both interesting and instructive. Prof. Wickson gave a forcible address upon "Agricultural Education; and How the Grange may Aid the College of Agriculture." So writes Kathrine Wheeler. It also accepted an invitation from the Literary Society to a picnic.

Gold Hill Grange, at Lincoln, Placer county, held a Fourth of July celebration. So did Ripon, Manteca and French Camp Granges in connection with the W. C. T. U. So there are signs of activity and progress.

The matter of Mutual Fire Insurance Companies for farm property and the smaller towns, is being taken up by some of the Granges. The general testimony is that the rates are much lower than usual.

The summer is wearing on, and soon it will be time for active field work. The Master of the State Grange, W. V. Griffiths, Geyserville, will gladly send a State deputy to canvass and co-operate wherever there is a reasonable prospect of organizing a new Grange. I have hopes of thus reviving the long dormant one at Modesto.

J. W. WEBB, State Lecturer.

GRANGERS' EXHIBIT AT STATE FAIR.

An addition of three members has been made to the Sacramento County Granger

committee that will select their exhibit for the State fair.

The committee now consists of L. S. Dart, Alice Madison, Edward Booth, H. C. Muddox, Lillie Orr, Carrie Holmes, Mark Hunt, Thomas Wait, Jos. Holmes and John Hayden. They declare their intention of preparing the best exhibition ever made by this county.

Their position in the pavilion has been selected and carpenters are at work, under the supervision of Committeeman H. C. Muddox. The committee request every Granger in the county to contribute to the exhibit.

VETERINARIAN.

TREATMENT OF STOMACH WORMS OF SHEEP.

It is during the summer months that loss from the twisted stomach worm of sheep occurs, and flock owners should early endeavor to prevent their flocks from becoming diseased. Healthy adult animals seldom become affected with this disease, and the greater part of the loss occurs among young and weak animals. However, if the conditions are favorable for the sheep to become infested with this parasite, the death rate among the mature animals is also heavy.

This disease is not as difficult to treat successfully, as it generally believed. The preventive treatment is very important. It is based on keeping the sheep in a healthy vigorous condition, and among surroundings unfavorable for the entrance of the eggs or larvae of the parasite into the digestive tract with the feed. Drinking surface water and permanent pastures, especially if pastured close, are favorable for the production of the disease. The preventive measures that are most practical to use under the local conditions can be judged best by the person in charge of the flock, and the success of this part of the treatment will depend on the precautions that he deems necessary and the thoroughness with which they are carried out.

Sheep raisers, who have lost sheep from this cause in former years, should not wait until the disease develops in the flock before using medicinal treatment. The following mixture is recommended by Dr. Law, and has given excellent results: arsenious acid one dram, sulphate of iron five dr., powdered nux vomica two dr., powdered areca two oz., common salt, four oz. This mixture is sufficient for 30 sheep and can be fed with ground feed once or twice a week. In case the symptoms are already manifested, it should be fed once a day for two or three weeks. In giving this remedy in the feed, the necessary precautions should be taken, or each animal may not get the proper dose. Turpentine is largely used in the treatment of stomach worms. It is administered as an emulsion with milk one part turpentine to sixteen parts of milk. The emulsion should be well shaken before drenching the animal. The dose is two oz. for a lamb and four oz. for an adult, and to be effective should be repeated daily for two or three days.—R. A. CRAIG, Veterinarian of the Indiana Experiment Station.

POISONING SKUNKS.

Mrs. W. B. Chandler gives the Northwest Horticulturist, her method of poisoning skunks as follows: The poison was strychnine mixed with fresh lard and packed in a two-inch auger hole in a large block of wood. The blocks are put out at night near the chicken houses, and taken up early in the morning. Some times for several nights there will be no teeth marks on the lard, then again each block will show it has been nibbled, and once or twice the hole was cleaned out in one block. So we think we surely have gotten some other prowlers besides the skunk.

AGRICULTURAL REVIEW

Butte.

HARVESTER OUT, BINDERS IN.—Gridley Herald, July 27: C. J. Burdick, of Durham, is experimenting this year with a new method of harvesting his grain. Like all the big operators in the Sacramento valley Mr. Burdick has, in years past cut his wheat and barley with a harvester, drawn by 26 to 30 mules. Up to a few years ago he farmed about 4,000 acres, and in handling that amount of land in grain a harvester was absolutely necessary. Of late, however, Mr. Burdick has confined himself to his own ranch—something over a thousand acres. He farms it to grain and alfalfa, and this year has about 400 acres in wheat and barley. Mr. Burdick has been of the opinion for some time that the harvester, while a cheap means of gathering the grain, was responsible for some adverse conditions, and this season he has adopted another method. He purchased two eight-foot cut binders and harvested his grain with them, beginning when the wheat was in the stiff dough. He finds that the berry has matured in the shock and finds also that the grain is rich in gluten. The wheat was of the variety known as Oregon Blue Stem, and the yield promises to be 12 to 15 sacks to the acre. Mr. Burdick is not yet ready to say whether he is satisfied as to the results, for he has yet to thresh the grain and does not know what the expense will be to haul the grain to the machine. He keeps several hundred head of cattle, and figures that the feeding value of the straw cut green will be considerable and expects that item to help offset whatever extra cost there may be in handling the crop by this new method. Sample bundles of wheat and barley from this ranch have been on exhibition, and they have been of considerable interest to local farmers.

Fresno.

FRUIT SHIPMENTS.—Fresno Republican, July 31: Shipping activity is caused by green fruit and watermelons, with some outgoing raisins of the hold-over. Watermelons are being shipped chiefly to the Northwest. The Fresno melons supply the early market there. In the early season melons brought \$15 a ton—some cars brought as high as \$200. The price has now dropped to \$6 and \$8 a ton, according to quality.

Melons are grown throughout the valley, but great quantities come from Clovis, Dinuba and Sultana. Exeter is known as the cantaloupe center, but this year they were raised plentifully around Clovis and Selma. They have sold for as high as \$1.50 a crate. The price now is between \$1 and \$1.25 a crate. Peaches are now being rushed into the canneries. There has been an advance of \$5 a ton in the price of canning peaches. Phillips clings and Tuscan clings now bring \$45 a ton and other varieties \$40 and \$35.

Glenn.

DRY WEATHER CORN.—Orland Register, July 28: P. D. Bane has experimented this season with two varieties of corn, known as "dry weather corn," and the results of this experiment should be of interest to every farmer. Mr. Bane, acting at the suggestion of Secretary Beard of the Sacramento Valley Development Association, procured the seed from the government and planted 2½ acres in April. By July 4 it was furnishing roasting ears for his table. This shows it to be a quick maturing corn. Mr. Bane says the corn was planted in gravelly soil, and owing to the late rains, he was kept busy at his almond orchard and consequently when he was through cultivating his orchard, the condition of the soil in his corn patch would not permit

cultivation. Notwithstanding the crop has come to maturity without either irrigation or cultivation, an excellent yield has been produced. This corn is particularly valuable as stock feed. One of the varieties stools out at the ground, making it a desirable crop on which to turn hogs. It seems that corn that will grow like this could be grown profitably by farmers, by planting it on their summer fallow ground in the spring, as it would not interfere with the sowing of their grain in the fall.

Kings.

A GROWING INDUSTRY.—Hanford Journal, July 24: In the past it has been the custom to ship dairy products to Los Angeles by freight, which fact proved a check to the county's exports. Now arrangements have been made by Wells-Fargo Company whereby perishable products are exported by express. A refrigerator car is run three times a week from Hanford to Los Angeles, and another car is used to pick up cream at the various stations through the valley. Some idea of the value of the creameries of this county may be had when it is known that a refrigerator car contained 120 cases of butter, weighing 160 lb. each. The value of a week's shipment of butter from Hanford is about \$12,500, and in addition many cases of eggs are shipped in each car, and the exports are increased from time to time by shipments of from 1000 to 3000 lb. cheese. From two to three tons of cream is on the Flyer every morning.

MONEY IN HOGS.—Hanford Sentinel, July 26: Much is being said just now about the profits in the fruit raising industry, but the man with the hogs is also in it to some extent for the price of the porkers is now \$6.30 per hundred, and it does not take a great many hogs to bring a nice sum of money. It is said that the supply of hogs is somewhat short at present, which accounts for the good prices; there are a great many hogs that will be fattened on the grain stubble and it is thought that the number of hogs for sale will be increased when these are ready for market.

NEVADA.

NEVADA LAMBS SHIPPED EAST.—Sacramento Bee, July 28.—Lambs by the 10,000 are being taken from Nevada by the numerous sheep buyers that are here in the interest of the big packers and stockyards. Sixteen thousand left Reno in one shipment yesterday, and next week Swift & Co. will take out a trainload. The San Francisco buyers are taking large orders, but for the first time in the history of the State the Eastern buyers are purchasing in unlimited number. Probably one-half the production will go East this year.

Orange.

A FINE PATCH OF CORN.—Anaheim Gazette, July 26: Mr. Neff has growing between the trees of his young walnut orchard ten acres of corn, planted upon ground on which peas had been sowed as fertilizer. The corn was some days ago given its final irrigation and may now be compared to the best patches of the cereal in the county. Mr. Neff is a firm believer in fertilization and is preparing

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A Cure for Spavin. Washington Globe, Nov. 3, 1900. Dr. B. J. Kendall Co., Dear Sirs:—Enclosed find a 2 cent stamp for your book, "A Treatise on the Horse and his Diseases." Yours respectfully, W. James Fitzpatrick.

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DR. B. J. KENDALL COMPANY, Enosburg Falls, Vermont.

to sow vetches in his older walnut orchard. He finds vetches do better than peas where the larger trees shade so much of the ground. Peas do well in the sunlight, but in the shade are a failure. The cost of this green fertilizer is much cheaper than barnyard manure and much more efficacious. "Put humus in the soil," is the motto of this orchardist, and the excellent appearance of the ranch generally attests the success of his idea.

WALNUT BUYERS HERE.—Anaheim Gazette, July 26: Rosenberg and Wilde, of San Francisco, met the directors of the local walnut growers' association. A contract was signed for the association's crop, and \$4,000 deposited to apply upon shipments as soon as made. The association expects to ship from 15 to 20 cars. The price will be that agreed upon by the walnut associations later in the season.

Sacramento.

OFFERS PARASITES FREE.—Sacramento Union: Elwood Cooper, State Commissioner of Horticulture, has sent out a circular announcing that the scutellista cynea, parasite of the black scale, which infests oranges, lemons, olives and various deciduous fruits, as well as shade trees and ornamental bushes, will be available for distribution shortly. All persons desiring these parasites may procure them by sending a specimen of the pest and stating the number of trees infested. If troubled with other pests on trees or plants, by sending a specimen of the same, colonies of beneficial insects will be forwarded. All beneficial insects are sent to residents of the State free of charge.

WHITE HELP FIRST.—Sacramento Bee, July 28: It has been agreed by local hop growers to employ white labor in preference to Japanese or Indians this year. The hop-growing industry in California gives employment to thousands of laborers from six weeks to two months of the summer season. Arrangements have been made with the Relief Committees of San Francisco to transport those desiring work in the hop fields, to Sacramento at a special rate.

At a recent meeting of the California Hop Growers' Association it was resolved that sufferers from the San Francisco fire should be given the preference.

San Bernardino.

FRUIT GROWERS FORM MUTUALS.—San Bernardino Index, July 26: The fruit growers are following the example set by big growers of the valley, in withdrawing from the packing unions and three groups of orange growers filed articles of incorporation of mutual companies.

HIGH-PRICED APRICOTS.—Lodi Sentinel, July 24: About the only apricot yield in this county this season was the 20-acre orchard of W. A. Thornton of

New Hope. Early in the season, Mr. Thornton contracted his crop on the trees to Chinamen for \$555. Mason Brothers later bought it cured for \$2,000 and turned it over to a commission house at a big profit, who in turn shipped the fruit east.

PRUNES GOING EAST.—Lodi Sentinel, July 24: Mason Brothers are shipping a crop of 200 acres of sugar prunes from the Langford orchard. About 40 women are engaged in packing. Four years ago Senator Langford grafted 200 acres of almonds into sugar prunes and the yield this season will pay the grower \$75 per acre, which is a 50% increase over any former yield. The present price for the sugars dried is 4½¢ per lb.

BIG PRICE FOR PRUNES.—Lodi Sentinel, July 24: Receipts of peaches from Georgia and Texas are heavy and market going to pieces. Texas peaches selling from 50 to 75 cents for 4-basket crates. Georgias, 6-basket crates from 50 cents to \$1.50.

The foregoing paragraph tells why California peaches will not be shipped in any large lots to eastern markets this season. The dispatch is important from another view point. It contradicts the general belief that an over-supplied market of one fruit affects the sale of other varieties. While Eastern peaches have been a drug in the Eastern markets, California prunes and plums in the same markets have demanded higher prices than ever before known. Saturday last a carload of prunes shipped from this point sold in New York for \$1761, the highest price ever before paid for a carload of fruit of this variety.

San Luis Obispo.

FINE HORSES.—Paso Robles Record: E. Deffenbough, a Los Angeles buyer, shipped one of the finest carloads of horses ever sent from this county. The horses range in value from \$150 to \$250. They sold for \$60 per ton, packed and general purposes.

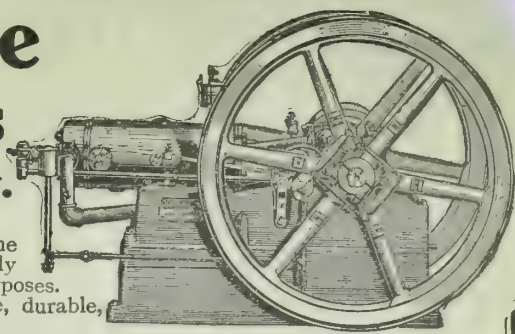
Santa Clara.

Sunnyvale Standard: G. W. James has finished picking the largest crop of apricots ever raised on his ranch. He has a little over three acres in apricot trees and this year's pick is about 25 tons. They sold for \$60 per ton, packed and delivered in the packing shed.

Sonoma.

MELON SHIPMENTS.—Turlock Journal: The melon shipments will start this

Gasoline Engines For Irrigating.



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week. John Green has shipped 6,000 crates. Some few shipments by express have been made, but by next week the main shipments will begin. Melons all over the State are late this season, and in some places the crop is a failure, but here the crop is good.

HOP OUTLOOK.—Healdsburg Tribune, July 26: The hop crop of this county will be excellent. There will be a great increase over last year. Of the coming crop 18,000 bales have been contracted. The highest actual contract made is said to be 14¢, but it is reported that offers of 15¢ were being made Monday. It is estimated the crop here will yield from 32,000 to 40,000 bales this year, as compared with 24,000 bales last season.

HOPS TAKE A JUMP.—Healdsburg Enterprise, July 24: The hop market took a jump on Thursday and 13½¢ were offered by dealers on contract for the 1906 crop. It was predicted several days ago that the price would ascend and there may be a farther advance.

Sutter.

SHIP PLUMS TO ENGLAND.—Sacramento Bee, July 28: H. H. Wolfskill, representing the Earl Fruit Co., Yuba City, has closed a deal in the Biggs dis-

trict for 100 tons of plums of the Yellow Egg and Silver Prune varieties and the entire lot will be packed and shipped to England. Up to date this company has sent out 50 cars of green fruits from here, of these two-thirds have been pears and the balance plums. The cannery have been offering \$30 per ton for canning pears, while the shipments to date on an average have cleared up something like \$75 to \$80 per ton net to the growers, or about \$1.80 to \$2 per box. The offer of \$30 per ton included some pears that would hardly be accepted for shipping. Plums have sold well for those who have put up any kind of a pack have received \$1 per single crate for everything.

Ventura.

WILL SLICE BEETS.—Oxnard Courier, July 20: The first four loads of sugar beets were hauled to the factory last Tuesday. The first load, which was from the American Beet Sugar Co.'s experimental farm weighed 13,310 lb. and showed an average of 15.6% sugar. The total acreage to be harvested this year is something over 13,800, which at a fair tonnage ought to furnish 160,000 tons of beets. Assuming an average of 15% sugar the total crop will yield about 24,000 tons of the finished product.

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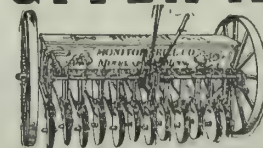
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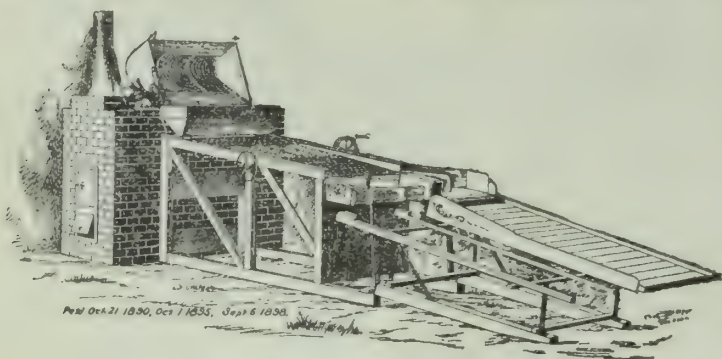
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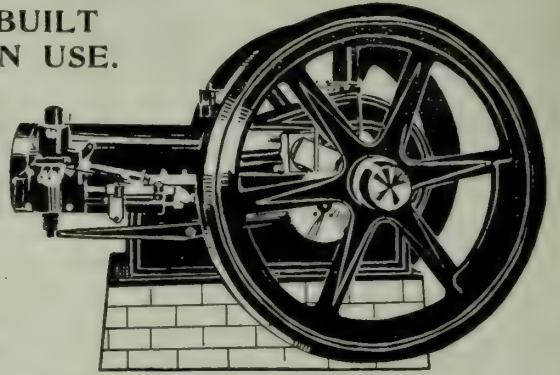
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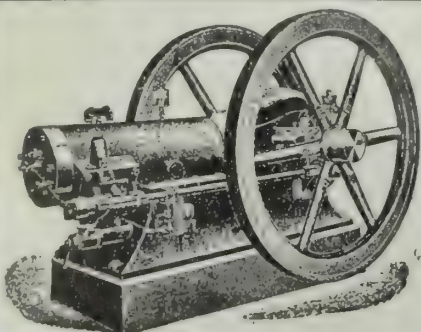
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AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXII. No. 6.

SAN FRANCISCO, SATURDAY, AUGUST 11, 1906.

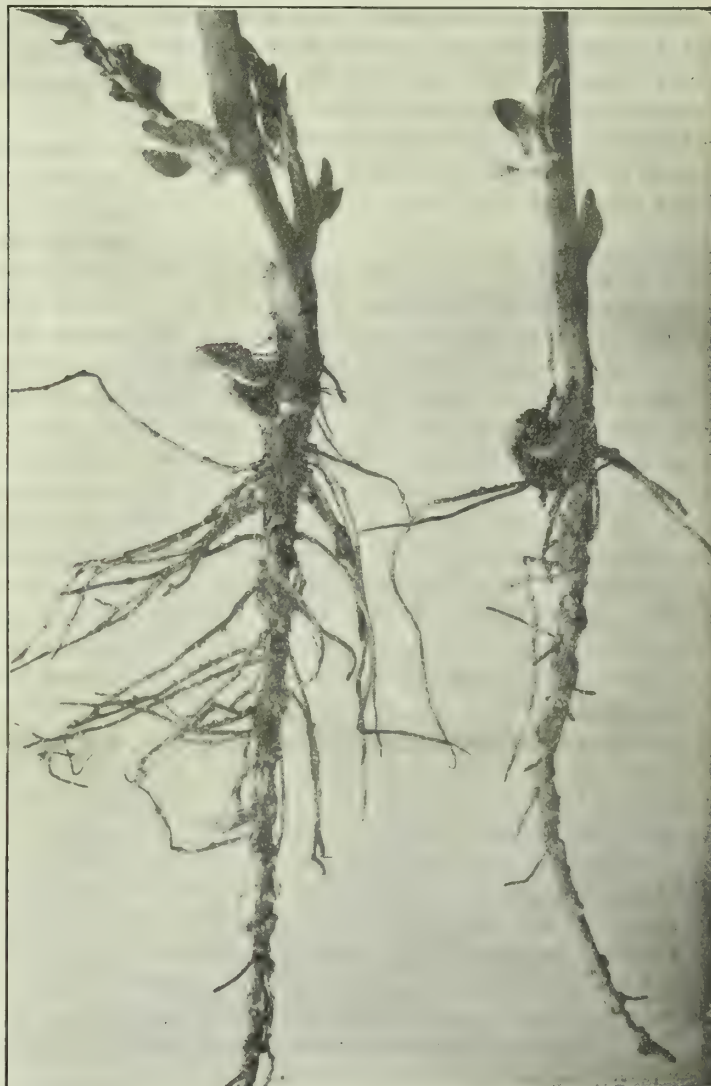
THIRTY-SIXTH YEAR

A LEGUMINOUS LEGEND.

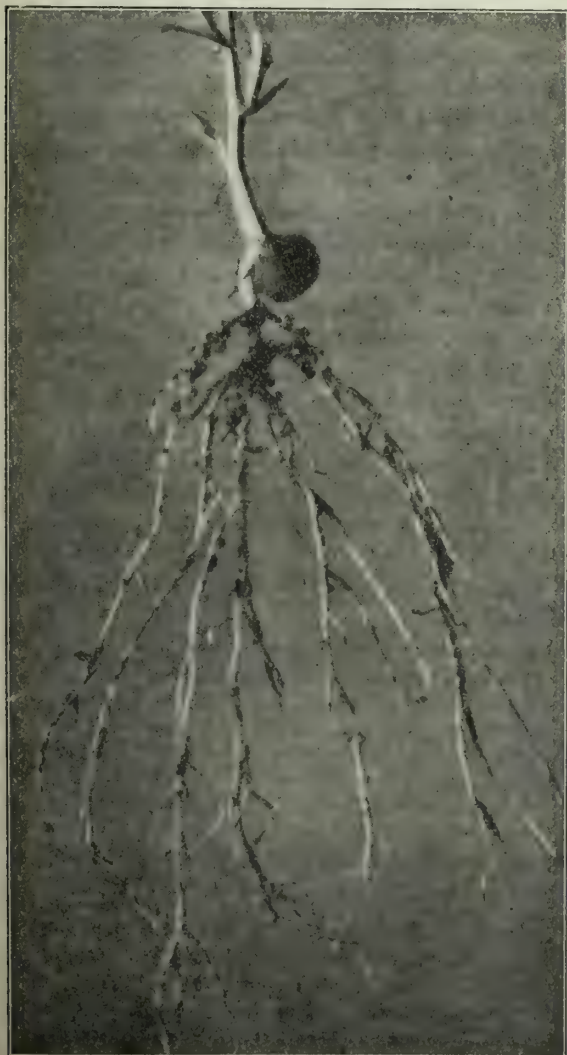
We indulge in a pictorial lesson on nitrogen-gathering bacteria this week, in case any reader, in the rush of his affairs, has not yet made connection between the root tubercles, about which we frequently write, and the real things as they occur upon the roots of leguminous plants. The accompanying engravings are from plants grown in the University Economic Garden at Berkeley, where a large collection of winter-growing leguminous plants have been under observation for a number of years to determine their relative value for green manuring. The two plants shown in the pictures, the common horse or Portuguese bean and the ochrus pea, are among the best for winter growth in the bay region of California. It is obvious that different plants will show highest adaptation to different regions, and the many articles which we have published during the last two years contain hints of conclusions drawn from experience in different localities. But this is not the point we had in mind in this connection. We desired rather to make a general suggestion of two considerations of importance in the growth of any legume—the abundance of the top growth and the length and tuberculous character of the roots. The pictures bring out both these points very well for the plants shown. The heavy growth of vegeta-



Plot of Horse Bean, University Economic Garden.



Roots of Horse Bean (Natural Size).



Root of Ochrus Pea (Natural Size), Showing Nodules.



Plot of Ochrus Pea in University Economic Garden, Berkeley.

tion, ready for plowing under early in the springtime while there is plenty of moisture for its decay, to contribute, ultimately, humus to the soil, from which supplies of nitrogenous food will come for plants, is seen by a glance at the plots. This decaying organic matter also makes the soil more friable—a quality which facilitates both cultivation and plant growth. The humus element also increases the ability of the soil to hold moisture available for the use of plants. All these qualities pertain also to the decay of the root.

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THE WEEK

Since our last issue we have risen about a mile and a quarter above our ordinary haunts and have had a chance to reflect upon how the Creator made California, as silently disclosed by the mountain rocks, and to hear what men think of California as loudly proclaimed on the piazzas of mountain resorts. We have drawn satisfaction from both.

We understand that California has in Lake Tahoe the greatest body of fresh water in the world at its altitude. We understand also that the geologists hold that California is one of the most recent works of the Creator. When these things are in mind there come also some memories of what the honored Joseph Le Conte used to say about how Tahoe came to be: how the crest line of the Sierra Nevada divided at this point into two ridges leaving a valley about a mile deep from highest crest to lowest canyon: how a great glacier followed, filling this valley and having many tributary smaller glaciers entering it from the sides: how these agencies for ages ground down the ridges and with their rubbish built out lesser ridges into the valley and how finally the great glacier ceased its work before it had opened a wide mouth for the valley and melted down, leaving a land-locked lake of peerless size and depth to the waters of which its abandoned ice was the basal endowment. The smaller glaciers outlived the larger and continued to build their projections into the lake and perhaps to launch icebergs upon it, and they carried small glacial products to the distant shores as the winds drove them thither. Finally the smaller glaciers were turned to streams as the glacial epoch closed in California and we have now Lake Tahoe with its wonderful depth and peerless hues to entice and charm the world:

We are not trying to write geology nor to measure creative progress either in time or space, consequently we can claim liberty of suggestion. To our lay mind the propositions about Lake Tahoe which we have collated connect well with even more recent events, and distill comfort and assurance. They suggest the immanence of God in mundane affairs. It comforts us to believe that the Creator whose well directed agencies wrought many of his latest wonderful works in California, is still in command. The grand convulsions which thrust up our mountains and the grand forces which ground these massive uplifts into soil and free gold and forested the mountains and valleys—all these acts being incidents in the scheme of habitability—were recent creative acts, measuring time as the world's life goes, as beneficent in motive as magnificent in plan. The period of "roughing out" long since ceased: the period of finishing is still in progress. Our mountains are still rising and their shoulders are still pushing through the lower levels which encompass them. Such movement gives a thrill and quiver to the surface, but it should not occasion undue alarm except as man brings himself into dangerous relations to it. Fear seems to come from misapprehension of the world-stage we are now in: fear of cataclysm when such occurrence is impossible according to any rational conclusion which one can form of world-building. Fear of cataclysm is the product of one of the most unfortunate thoughts which ever entered into the mind of man, although it may have corrected the lives and thoughts of many. It is at enmity to any rational view of the

relation of God to man. How much of the mental suffering of recent experience was due to the fear that "the end of the world had come."

The proper escape from such cataclysmic fears, it seems to us, is in thought of how the world was made and how it is maintained and how the Maker is still continuously at work and is, in his perfection of knowledge and moral obligation, committed to the safe finishment of his work with due reference to the maintenance of man, the masterpiece of his creative work. Contemplation of divine beneficence as a ruling motive in all his works should give freedom from distraction and from emotional excess. It is when man loses command of himself that he comes out of harmony with the truth of divine immanence and design and becomes himself the wreck which he fears to see surround him.

It should be a comforting thought to Mother Earth that she is still young. Though possessed of matronly dignity and beauty she is still developing new charms. Her life has been trying, surviving a hydrocephalic trouble, volcanic fever and glacial chills were only a few of her later infantile ills, but how gloriously she passed the period of youth and entered upon maturity. How beautiful and fruitful that has been and is to be. With all finishing agencies still active and all elemental forces apparently resting from their labors or operating in subdued form, lovely Mother Earth is still becoming more and more fit to bear grander nations of men, until, in the end perhaps, the godlike in man shall attain full supremacy and a finished manhood shall dwell upon a finished world. Then shall Shiloh come. Mother Earth shall not die by cataclysm. So long as the world grows the world shall live. Tremors and thrills which slightly modify the surface are the tokens of growth. Countless eons will be required to reach fullness of growth and eons beyond to reach decadence. Even then cataclysm need not intervene. Silent and cold but still brilliant the planet may still pursue its ordained way until time is lost in eternity. Timid people who fear a sudden closing of mundane affairs forget the suggestive legend that it was not in the storm nor in the earthquake but in the still small voice that the will of God was declared. This still small voice is always to be heard when man bends his ear to the throbbing of nature's heart and to the tender murmuring of his conscience. Thus the material and the moral world are disclosed to man and he is brought to worthiness or unworthiness as he himself shall choose.

But musings in the woods, upon the cliffs or the bosom of the lake are not the whole of a brief escape from accustomed duties. The proclamations upon the piazzas very quickly bring one to closer contact with current affairs. In their ways these declarations are also comforting. One might think that San Franciscans had never made any money or projected any wide-reaching enterprises, if one should listen long to the plans and projects which they picture for each other during the idle afternoons at the resorts. The reconstruction of the metropolis and its relations to its rich environment seem to afford many opportunities for invention, energy and nerve. It has often been claimed that San Francisco was tired and antiquated in policy and method, and that new rivals for metropolitan distinction would outstrip her by the pursuit of more progressive policies. Whether this was ever true or not it seems to us that during the last years before the disaster, San Francisco disclosed new spirit and a more modern metropolitan method and was in fact passing through quite a rapid evolution from the old into the new scheme of metropolitan activity. However this may have been, the disaster has precipitated such a change which will be immediately rather than progressively realized. Piazza talk was eloquent of discernment of a new spirit of hustle, of the incoming of new actors and new capital and of new ways of business. The wreck of established concerns and methods offers a free field not only for re-establishment but for new

entry and the prospect is not only of a greater but a more modern city which shall better reflect the new life and business interests of the coast. We are too far from commercial life to understand fully all that we heard, but it was clear that the tone was confident and the spirit progressive. The opportunity for profitable investment and effort in agricultural lines and the chance of profit in new and well planned colony enterprises, was freely discussed, chiefly by brisk and energetic eastern people who had been looking over the California valleys from a business point of view, and were resting in the mountains before crossing the plains. It is interesting to note that in all this talk which covered several days and at several places, not a word was said of any feeling of insecurity or that any such factor had to be taken into account in planning enterprise or making investment.

QUERIES AND REPLIES.

DENATURIZED ALCOHOL.

To the Editor: Can you tell us more about the factory for denaturized alcohol at Santa Clara? Has experiment gone far enough to determine if it can be produced so cheaply as to compete with other fuel? Is the operation so simple that each ranch can easily work up its own waste fruit? The seeming inevitable waste is a painful experience to one who is at all conscientious in use of property.—GROWER, Saratoga.

As we understand it, the factory near San Jose is to be one of the best possible distilleries in plan, equipment and process, and the manufacturing of denaturized alcohol is only one of its departments. We understand also that to manufacture such alcohol cheaply the very best equipment and large-scale operations are necessary. We do not suppose that home-made alcohol is contemplated, because of the cost of operating on a small scale and because it is necessary that Uncle Sam should keep his eye on the business. Some careless people might forget to denaturize the product and this would result in a scourge of home-made drunkenness. There might possibly be a home extraction of waste fruit juices which could be delivered at a central factory for distillation and in this way the community might get into the business on either a proprietary or co-operative basis. Of course, a central establishment could include crushing and pressing if the hauling of the whole fruit could be done for less than the home crushing. It must be remembered, however, that in the nature of things there could be very small returns for the fruit, possibly too little to pay for picking it up. Fruit brandy is a much higher grade product than alcohol made from the baser waste products, but this would count for nothing, because the matters of taste or hygienic quality do not enter into the judgment of commercial spirit. And yet, whether you can make fruit spirit or not depends upon whether it can be brought down to the price of alcohol from waste vegetables or grain or wastes from sugar making, etc. Denaturized alcohol must be cheap in order to compete with petroleum spirits, etc.

On the other hand, there seems to be little doubt that the fruit grower will be able to buy cheap alcohol to advantage, even if it is not certain that he can make it for himself at home. In a recent paper on the subject Mr. C. J. Zintheo gave the following interesting information:

Alcohol made repugnant to the taste is being used as an incandescent light. Instead of being drunk, it is burned. It propels the farm motor, the automobile and the launch, and the simple fact of obtaining denaturization permits each private citizen to light his farm or factory, to heat his home, do farm work, or transport himself. One of the neatest of the many new devices used in Germany is an alcohol flatiron with a small reservoir, which being filled with alcohol and lit, heats the iron for the hour's work at a cost of less than two cents. The cleanliness and economy of these figures to the housekeeper are obvious. For farm motors alcohol is a perfect fuel because of its complete combustion, the absence of its noxious odors, its uniform quality and its unlimited and universal sources. While it is true that the heat of combustion of alcohol is practically only half that of gasoline, yet twice as large a percent

age of heat can be converted into useful work as in gasoline, and hence point for point, alcohol is as efficient as gasoline. Only slight modifications of gasoline engines adapt them to the use of alcohol.

In the United States alcohol was used for lighting, cooking and industrial purposes in the early sixties. Before the War of Secession the manufacture of spirits was free from all special taxes and supervision. It resulted from this freedom that alcohol served a multitude of industrial uses. The production was enormous, amounting to 90,000,000 gal., coming especially from the distillation of corn. For lighting purposes enormous quantities were employed. In 1864 the city of Cincinnati alone utilized 12,000 bushels of corn per day for distillation. Because of its low price alcohol was also used as fuel for the domestic kitchen, for bath and laundry. Denaturized alcohol has been produced in Germany chiefly from potatoes, and sold for 13c. per gallon. It is stated in the March number of Power, 1901, that a New York distiller produced alcohol at a cost of 8c. per gallon. It was sold in New York in carload lots at \$2.26. The tax is \$2.08 per gallon, which would leave 18c. to cover the cost of production, profit, and risk of tax. Distillers claim that from 40c. corn, alcohol can be manufactured for 13½c. per gallon of 94% strength. In Cuba, Peru, Brazil and other sugar producing countries alcohol is manufactured from the waste products, and hence very cheaply produced. The present price in Cuba is about 10c. per gallon. It is thus seen that alcohol can successfully compete in price with gasoline, which now sells from 12c. to 22c. per gallon.

THOSE FAILING PRUNE TREES.

To the Editor: I wrote you a short time ago about the condition of my prune trees—the tops turning yellow. You suggested digging down four feet and finding out about the soil. I have dug up a dead tree; the root seemed to smell sour. Two feet down is excellent heavy loam soil, then one foot (10 in., rather) of coarse gravel and soil, then one foot more of soil. I send you a sample of the soil of the last foot. The soil is moist all the way down. It does not seem to me to be too wet, as water cannot be squeezed out of it at all. I also send some leaves, showing how some of my trees are acting; the whole tree is in this condition. My prune orchard has always received excellent care; plowed to the trees every fall, away from them in the spring, then cultivated as often as it was needed during the summer. None of my neighbors' orchards have received half the care mine has, and their orchards are very slightly involved. Mine has fine drainage for the winter rains. I am puzzled as to what is the matter, and you can imagine how an ambitious man feels to see the labor of twelve years come to this end. The trees that stand close to the house and barn and are not cultivated are all right, also a few in a low place on Myroabolan root—ORCHARDIST, Santa Rosa.

We regret that we cannot give you any confident answer. We can only surmise that the roots of the failing trees were injured by the standing water resulting from the heavy and continuous rains late in the winter. If this is true, the survival of the uncultivated trees near the house is due to the fact that so much of the water ran off the hard surface and was collected in the cultivated land, and the survival of the trees in the low places is due to the Myroabolan root, which is hardy against both standing water and drouth. Sometimes late winter and spring injuries from standing water do not manifest themselves until the midsummer following. That the trees must have been in too wet land last winter seems indicated by the fact that so late in the season as this the soil you send is still so moist without irrigation.

FARMHOUSE HEATING.

To the Editor: Have you knowledge of any best modern manner of heating a ranch house? How will the model State farmhouse be heated, which the Legislature has lately bought?—READER, San Jose.

It will probably be heated with denaturized alcohol, but just in what way we cannot at this moment tell. The model farmhouse will not be constructed first because of the necessity of beginning at the coarser end of instruction, such as the growth of animals and manufacture of animal products. Stock buildings and a creamery will probably be first built. The institution will be gradually evolved and it will take time and money to do it. It would not do to start in with a fine farmhouse and not have anything to do farming with. Probably the University farmer will have to do as other farmers do: live in a shack in the midst of fine

barns and other productive buildings. The farmer is always the last animal to be properly housed, and the University cannot afford to depart from necessary economic development.

BLACK SCALE AND DODDER.

To the Editor: Our olive trees are badly infested with black scale. What is the best spray to use? Would spraying the last of August, when the insects are not closed down for the winter, injure the olives for pickles? Would you recommend spraying with weak lye, say one pound to 20 gal. of water, as a good spray? Please answer in your best of fruit papers.—SUBSCRIBER, Fair Oaks.

Black scale is very hard to clean out with sprays. For this reason fumigation with hydro-cyanic acid gas has largely displaced spraying in Southern California, where the pest has to be vigorously fought on citrus trees. This process requires, however, an outfit of tents and much special knowledge. You can reduce the scale considerably with sprays of kerosene or distillate emulsion, and the time of the year you mention is about the best. If properly made it will not injure the fruit; in any event there is little danger in it, because the scale will not only spoil the fruit with smut, but soon put the tree into such condition that it will not bear any fruit to speak of.

TO DESTROY ANTS.

To the Editor: Can you tell the "elect lady" how to fight black ants, which are specially thick this year?—FARMER, Santa Clara.

We have practically exhausted our wisdom on the subject of ants. If you will look back through the indexes of several volumes you will find suggestions of many methods the escape from which will tire out all the ants in the community. We propose that the subject be referred to the women's clubs and sewing circles. We do not mind ants much anyway.

DODDER IN ALFALFA.

To the Editor: I send you a sprig of a small vine I find in my alfalfa. What treatment is best to get rid of it?—READER, Sacramento county.

The vine is parasitic upon alfalfa and is known as "dodder." It is a species of Cuscuta. It grows from seed which is usually carried with the alfalfa seed. This seed sprouting in the ground produces a plant which soon attaches itself to the stem of the alfalfa and when it has done that the stem leading to the ground perishes and the dodder lives after that as a true parasite, entering the tissue of the alfalfa and appropriating its juices to its own uses. When the dodder is first noticed the patch should be covered with straw and burned, so that the dodder would not have a chance to make new seed; as it is an annual plant its continuation depends upon bearing seed. Some advocate spraying with kerosene and setting fire to the doddered spot. Sometimes the fire is not hot enough to kill the alfalfa roots, but the patch should be raked and new seed scattered. It is also claimed that harrowing both ways with a sharp tooth harrow after cutting the alfalfa has a tendency to kill out dodder by destroying young plants which may be starting. Where the alfalfa is used for pasturage the cropping of the animals prevents seeding and in this way the plant is often stamped out. If, however, it has secured such a start that it cannot be checked by burning the seeds or by pasturing the field, there is nothing left to do but to plow up, turning under the old surface as deeply as possible and resowing with seed which is free from dodder seed.

ONLY THE NATURAL GROWTH.

To the Editor: Under separate cover I am sending you a growth on our acacia trees which I would like to have you examine. The trees were planted twelve years ago, and have grown well. Last year these peculiar leaves appeared. We attributed it to the excessive heat of July, 1905. This year almost every acacia tree on our sidewalk is so affected. Last year it was confined to but a few. Would you kindly let us know what causes this and how it may be remedied?—AMATEUR, Merced.

We do not see anything the matter with the acacia twigs which you send. We find only the ordinary

leaves and a very vigorous growth of seed pods and satisfactory bearing of seed, all of which are natural to the tree. These seed pods open and probably appear to you as peculiar or diseased leaves, but they are not. The free seeding of the acacias and the appearance of the pods makes the tree less verdant and is objectionable from an ornamental point of view. The same is true of some of the eucalypti, which have an excessive growth of seed cups. The escape would be to develop sterile varieties, but that is a long-distance proposition.

LACK OF AFFINITY IN GRAFTING.

To the Editor: I send by mail some almond grafts. All that are gummed like sample break out. The scions knit when grafted, but do not grow over the cut limb. They grow about three feet before blowing out. I cut them back some and yet all that gum breaks out. The trees were grafted in February and commenced breaking in July. The trees are nine years old. Those that are not gummed do not break out. Will you please inform me as to the cause?—GROWER, Contra Costa county.

The trouble with your grafts is plainly due to a lack of knitting of the graft to the stock, and the gumming is caused by this lack of union, being simply the outflow and partial drying of the sap which should be freely carried into the graft. This is very different from the failure of buds to "take" through excessive sap flow resulting in gumming, because in this case there has been free growth of the scion, attaining a length of three feet or more and a diameter of nearly an inch, while the failure of a bud to take is due to excessive sap flow resulting in what is called the "drowning" of the bud. If the growth of the tissues had been satisfactory, no such trouble could have occurred as you have reason to complain of. There is manifestly some lack of affinity between scion and stock, and without such affinity there can be no permanent success of a graft, although the first growth may be very large and free. What is the stock on which you placed these almond grafts? If it should be the apricot the whole matter could be easily understood, because the hostility the almond and apricot show toward each other has been demonstrated by a good many years of experience. Your letter does not state what trees you grafted the almonds into, and we should really very much like to know that fact.

THE FRENCH WALNUTS.

To the Editor: Does the Franquette ripen earlier or later than the Proeparturiens? Does the Franquette shed its husk readily or does it have to be husked by hand? Is it a prolific bearer? How old ought an English or French walnut be before it commences to bear from the seed?—PLANTER, Colusa county.

We are not sure of the relative ripening of the several French varieties. Will some one having a collection send us observations on this point? The husking of the walnut is dependent upon the amount of moisture in the soil at the ripening rather than the variety. A late irrigation improves the opening. The Franquette opens well under good conditions. It is prolific. The proeparturiens takes its name from early bearing from the seed, but it does not have a monopoly of this character. It is not unusual to get nuts in the nursery row. On the average a seedling French variety will bear at about half the age of the Southern California soft-shell seedlings, but bearing can hardly be definitely predicted. It depends upon circumstances and varies with the same variety under different conditions.

THE TOMATO WORM.

To the Editor: I send you an insect found on my cucumber vines. I have never seen anything like it before and presume it to be a rarity. It would be interesting to me to know something about it.—READER, Martinez.

The caterpillar, nearly as large as one's finger, which attacks your cucumber vines is very formidable, but quits familiar, and not rare, as you suppose. It is the "tomato worm," which also attacks tobacco and a great many other plants. Its company name is *Protoparce quinquemaculata*. In its perfect stage the insect is one of the humming-bird moths. The best way to handle such immense caterpillars is to give them a snip with the scissors whenever you see them.

HORTICULTURE.

GROWING GOOD AND TRUE NURSERY STOCK.

By Mr. S. A. Miller, Milton, Oregon, at the Meeting of the Pacific Coast Nurserymen's Association.

There are certain principles upon which the successful issue of business enterprises depend. While each may be different in itself, yet in the aggregate they tend to the same common end. The nurseryman's work is composed of many little details, all of which tend for, or against, his success, as he masters or neglects them. In considering the vocation of the nurseryman we find his business built up and conducted on the same principles of success that underlie other enterprises. In the different phases of the nurseryman's calling, perhaps no one thing contributes more to his success and the upbuilding of a solid reputation than the growth of nursery stock which is absolutely true to name. This not only consists of the actual propagation of the stock itself, but the care of the same from the beginning to the end, or so long as it remains in the hands of the nurseryman.

Method and system stand foremost. Work can be done in various ways; but there is only one best way. The best way is what we want, and this will have to be determined by, and depend upon, our surroundings. So study your situation. Haphazard efforts and work only reap disappointment.

A nurseryman must become thoroughly acquainted with the habits and growth of the different kinds of stuff he handles. Such knowledge will enable him to prepare in season for the different stages of the work in which he must engage. He will be enabled to detect errors and thus avoid mistakes because of this knowledge.

The selection of the stock upon which the work is performed, while not directly concerned, indirectly has its bearing upon the ultimate results. Whether it be apple or pear, cherries or peaches, or whatever, we select only the very best of its kind. It must be free from insects or disease. It must be planted at such a time that its season of growth is sufficient to insure a proper condition when one is ready for the more special work of propagating varieties.

It requires but little if any more time to lay out your blocks in rows of uniform width. To secure straight rows which add to the beauty and uniformity of a block of trees, a line should be used, if possible, in planting. With the seedlings all set at the same distance apart, and at the same depth, every one has an equal chance to grow, other things being equal, and, as a result, more uniformity in the growing stock is secured. If seeds are planted, it is well to follow the plow which opens the seed bed with some arrangement which levels the bottom of the furrow and breaks the clods. Plant the seed at the proper distance, and because of the leveling of the bottom of the furrow each seed will usually come up at the same time—all will start to grow together, which will also contribute much to the uniformity of the stock. The growth of the stock should be constant and heavy enough to secure the desired results. Like a field of corn, nothing delights a block of young growing trees more than frequent and thorough cultivation.

Where irrigation is possible it should be practiced, as the growth of the stock can be regulated almost at will. When the proper time comes for ripening the trees, preparatory to digging, irrigation and cultivation may be suspended to a large extent, if not altogether, and the tree brought to a healthy, natural state of maturity. Unless a tree has been fully matured and is dormant before being dug, more or less risk must be run. Perhaps no one thing contributes more to the dissatisfaction of the customer, and rightfully, too, and is responsible for shriveled and dead trees, than digging too early, before the trees have been fully matured and hardened.

Care With Propagating Stock.—In the selection of buds and scions, the only absolutely sure means of knowing the variety of the parent stock is for you, yourself, to see it bear and ripen fruit. You cannot depend upon the word of others in regard to this. Not because of wilful misrepresentation, but you know people sometimes make mistakes, or forget. When you have seen a tree bear and ripen desirable fruit, and it being a variety from which you wish to propagate, make a record of this in a memorandum book you use for this purpose solely, showing the location, exactly, as the tree stands in the orchard. Then at any time, by reference to your book, you can go to any tree you have booked and know just what you are getting without a doubt. Some label the trees, but this cannot be depended upon. A mischievous boy or someone not knowing the import might remove it, either altogether or to some tree of an entirely different variety. This would be but the beginning of trouble. Do not trust the cutting of scions or buds to the best man in your employ. Do it yourself, if you would know and be sure it is done properly. After the budding is performed, see that every variety has a proper stake with the name printed upon it with some good, durable, black paint. Number each row, and record in your

memorandum book for this purpose the variety in the row. If the row contains more than one variety, be sure a printed stake marks the division. You cannot be too careful about this. By having every row numbered and recorded, ready information may be obtained at any time by reference to your record. If the stake is destroyed you do not have to guess what is in a row of a certain number.

Digging and the Help Problem.—When digging time comes, the utmost vigilance must be maintained in order to keep the varieties from being mixed. Tie everything in bundles as fast as it is pulled, and label it immediately. Do not be afraid to use plenty of labels. They are cheaper than mistakes. Pull but one variety at a time if practical. Each variety should be put in trenches by itself, and plainly marked with a printed stake, if intended for the packing ground, with all the stakes in the same relative position to the different varieties. This saves confusion in packing.

We sometimes think if we could do all the work ourselves we would be sure everything was done right, with no mistakes. But this we cannot do. Responsibility must be placed upon others. It is difficult to get hired help to work for more than their day's wages. In order to get your help to work for your interests you must let them know you have their interests at heart, and show courtesy to all. Pay them a good living wage, and educate them at every opportunity in the many little details of the work. Much depends upon their co-operation in the success of your business. There are but few, if rightly encouraged, who will not respond and manifest an interest in their work. Perhaps there is no other calling where one is brought in such close relation with nature and her work as in the nurseryman's. This makes it very attractive. But even with the most favorable surroundings, success depends upon eternal vigilance.

CULTIVATING THE DEWBERRY.

In writing a short article on the dewberry, says M. L. Bonham in the Rural Californian, I shall confine myself mostly to my method of culture. Those who have seen my plants are invariably impressed with the manner in which I grow them. I have observed the wild dewberry in the East, and find it growing on ridges, or on steep hillsides or abrupt banks. From that observation I conceived the idea of throwing up ridges similar to a sweet potato ridge, only about twice as large. I make the ridges about 6½ feet from center to center, allowing about two feet between them for a walk and to cultivate, and plant about 15 inches apart on top of the ridge. I split the ground with a spade and place the roots fan-shaped straight down, and deep enough so the bud will only be about one inch under the ground. After the plants are eight to 12 inches I tip them as we call it, or pinch out the center of the new growth. They will then branch and form a bush-like plant. After these laterals are a foot or more long I again tip them, so they spread out and make a perfect carpet all over the ridge and seldom run much below the ridge. They are much more productive grown that way, as it is more natural for them, and is much easier to pick, as a boy of 12 or 15 years old can stand erect, except only on the lower edge of row, but most of the berries grow on or near the top of the ridge.

I grow mostly the Austin and Lucretia, however I prefer the Austin. It is a fine, large, round, shining berry. It grows so dense that after it is well established it keeps down all weeds and grass except a few coarse kinds that can be easily pulled out.

[Mr. Bonham does not say anything about irrigating. We suppose he runs the water between the ridges; but we should think there would be danger in some soils of such high ridges becoming too dry.—Ed.]

STRAWBERRY GROWING IN SOUTHERN CALIFORNIA.

Mr. George P. Hall of San Diego made an excellent report of a strawberry discussion at a recent farmers' institute at El Cajon in which the leader was Mr. Dwight Griswold of Tropic, a berry center of Los Angeles county.

The first inquiry by Mr. Griswold was: Why do not you people of San Diego county stop us fellows up in Tropic shipping in from three to four thousand boxes a day into your city? Why don't you raise them? You have the soil and water, and I have seen no better showing than at Mr. G. W. Hawleys for a good prospect in El Cajon. You have lots of good land and now that you have water in sight you ought to get in and raise enough at least to supply your own city.

What kind to raise? Well, out of some four or five thousand acres in the vicinity of Tropic there are not more than a few acres of any other kind than Brandywine. That tells what we think is best. You want to be able to say here, when the lady of the house wants some of those "Northern deep red berries," Madam, we raise them right in San Diego county.

We were like you before we got a water supply ample to meet our demands; we just failed all the time; got a crop in and ready to bear and then the water stopped. You know how it has been in the past. But we got a water supply unailing and now are happy.

How much will an acre net? Well, all the way from 0 to \$2000. These were from Brandywines and Lady Thompson, the next best. Every locality has its particular wants, and every berry will not do the same in every place. Do not plant extensively of any kind that has not been tested in your vicinity.

Change stock; get it from the East and even from different parts of the State. We have the rule to change or make new beds every three years, but I have run them five and six by careful management. It takes from five to seven thousand plants, according to method of setting out. A change of plants even from Gardena to Tropic or other points is advisable.

I consider the "pedigree" talk simply an advertisement dodge, but you want good vigorous stock, just good stock of your own, or from other good growers.

When to plant? Why, you can in this locality every day in the year, but better time is—if you want results the first year—to plant in August to September 1. Have the land well graded so there are no hollow or low spots. If there are you will, in irrigating, cover up the crowns, which is death to the plant. If you leave ridges then the plants soon dry out. I put out from forty to sixty thousand per acre, if in double rows, sixty to one hundred thousand, putting them 18 to 20 in. apart in rows, and in the row from six to twelve, according to growth of plants. Sometimes plant in double rows two feet apart and 6 inches in the row. Plants set in August will fruit in October or November of the next year, and next season produce a crop of second-year berries; you get no small berries and no runners; the whole strength goes to producing the finest fruit. The next good time is from the middle of January to the middle of February, according to location, and will produce two good crops. To get second-year crop, set plants from middle of March to April, two feet each way and you can keep this patch for three years in good bearing. You will get as much fruit finally, but will get none the first year.

We have discarded horse-cultivation and raise only hand-tended plants, which are three times better; you keep more plants to the acre and less destruction. A man will not disturb the roots and cover the crown like a horse.

Never let berries stop growing. Do not irrigate too heavily; it gives a poor quality of fruit, and a bed can easily be spoiled by improper methods.

I have found that stable manure is not as profitable as blood and bone, berries will not stand up as well with only barnyard manure; get much better results than from fertilizers mixed on purpose, but are not so good as the blood and bone.

Good picking of good berries requires a good system for handling.

We use only "day work"; no piece work. A man working by the piece, if he picks poor fruit, wants his pay for putting it in the basket. We tell our hands to put nothing in the basket they would not eat themselves. We have separate hands who "face" the baskets and so add to the attractiveness of the goods. They understand how to pack them so they will not roll and crush in the baskets en route to market, but we have only one handling, and the boxes are sent in from the field to the packing house on trolley cars. The cases are put aboard, run on the bracket wire and returned, something like the cash deliveries in stores. You can put up 1000 for \$25. We market through an association and are not, as in other times, playing each other's fruit against the producer; we do not come in competition with our own fruit.

What may we expect from a crop? Well, a net average of from \$100 to \$350 per acre. I know of the gross receipts from 12 acres being \$24,000.

Follow level cultivation! no ridges except you have adobe soil. Sandy loam is best soil. I use the "Iron Age" hand cultivator.

Would you mulch with straw? No, it is so much in the way in irrigating. I use dust mulch, made by a share on the hand-plow. You will find the blacksmith can make you blades that will do special work.

We depend on Japs to do our picking; could not get white help sufficient. We pay them 14c. an hour, or \$1.40 per day.

Is the "A" berry a good one?

It is an old berry under a new name, is not much good only in the fall, is a good bearer, however, when it is at it, but falls down quick.

Alkali water will injure plants and berries, but the water you use has 18 grains of salt per gallon, but it wouldn't be enough to be permanently injurious.

How often do you irrigate? Every four or five days.

How much blood and bone do you apply? Five hundred pounds per acre, applied in three different lots or times.

How close to the plants do you water? Never let the water reach the vines; irrigate in only one furrow after plants are well started.

Is it not just as good to sprinkle the plants? If you use much force you wash away the pollen, and of course lighten the crop.

What do you do with your Sunday crop? We pick it; we cannot go to market on Saturday, as usually it is a half holiday, and our heaviest crop often comes on Sunday, and the Japs do not object to picking on Sunday, so we can reach the Monday morning market.

Do you use pistillate varieties? Never, unless we can get a variety that blooms at the same time, but we cannot figure accurately on their time of blooming; we prefer the staminate kinds; have had no success with others.

Where are most of the berries raised which are shipped into San Diego? In the San Fernando valley, by the association, at the rate of 4000 boxes a day, which you ought not to permit.

THE CALIFORNIA BLACK WALNUT ROOT.

Mr. F. Bouillard, who is preparing to plant walnuts in the Willamette valley, Oregon, writes a letter to the Oregon Agriculturist which deals largely with California observation and is locally interesting.

Seventeen years ago Mr. Bradley of Chico, California, had a California black walnut tree. When about seventeen years of age he inserted a graft of a French variety into it, twenty feet from the ground. The graft grew and now has a spread of about sixty feet and the body of the tree is three feet in diameter. The graft began to bear the second year and has averaged about 200 lb. of nuts per year since, and will have in the neighborhood of 600 lb. of nuts on it this season.

About 150 ft. from this tree, on the same premises, are two French walnut trees planted from seed sixteen years ago, and these are about one foot in diameter, with a spread of 40 ft. These two trees commenced bearing in about eight years from seed, and have averaged about 25 lb. of nuts to the tree each year since, with a prospect of about 50 lb. this season, providing they do not sunburn. The seedling trees appear to have just as many nuts on as the grafted tree, but the nuts do not have the same weight, the California black root furnishing more sap for the nuts to fill out and mature, while the nuts on the seedling trees fill out on one side only, the side exposed to the sun being burned and on the shady side of the nut the kernel is all right. The cause of this is the want of sap to carry them through the hot season.

On the same ground is a tree grafted on English root which does not bear more than a hatfull of nuts each season, but as this tree does not come out until very late, after all other trees are through blossoming, it is probably for the want of pollenization that it does not bear.

The above would go to show that the walnut grafted on California black root would be more profitable to plant in California than the seedling walnut, but I do not think that this would apply to the Willamette valley, where the soil remains moist and the sun is not hot enough to burn the foliage and nuts. At the same time, the planter in the Willamette valley would gain by planting the grafted tree, as he would get heavier and better filled nuts than from the seedling trees. I am of the same opinion as Messrs Leib and Burbank in regard to the California black walnut as a stock to graft the French varieties on.

There is no other place on the Pacific Coast where there are so many different kinds of soil as at Chico, and the California black walnut grows and thrives in all the different soils here, with no tendency to root-rot. Our streets and county roads are lined on both sides with huge walnut trees which furnish a splendid shade for the weary traveler. On the dry hill sides, in the sandy soil and in the wet adobe land these trees grow and thrive equally well.

Having been reared in the central part of the Willamette valley and being familiar with the climate and soil there. I believe it to be the ideal spot for walnut culture and believe that the time is coming when walnut culture will be the chief horticultural industry there.

As to the California black walnut not being hardy enough for stock to work French varieties on in the Willamette valley, I would state that if anyone would look at the California black walnut trees growing on the University campus at Salem, and around the grounds of the Salem Insane Asylum they would easily be convinced that the California black walnut is hardy enough for the Willamette valley.

The Chico Nursery Company has French walnuts

growing on both the American black and California black root and they do equally well on both, excepting that the American black is much slower in growth and would take longer to make a tree. Walnuts grafted on the California black bear much earlier than on their own root.

I have enough confidence in the Willamette valley that I intend to plant out about twenty acres of Franquettes grafted on California black stock. I have for the past four years made a special study of grafting the English walnut on to the black root. From my first attempt I obtained a 3% stand, but now I can easily secure a 50 or 75% stand.

Now we hope Mr. Bouillard will tell us how he does the grafting to get such good results.—Ed.

THE FIELD.

WHAT TO DO WITH THE COAL ASHES.

We have several times given in brief our convictions about coal ashes in answer to queries, and we are glad to find, in the writings of Mr. W. B. Cray, of Windsor, Conn., a detailed account of the uses of this material which will be helpful to many in turning to good account what is often a homely litter and rubbish.

Coal ashes are usually dumped in low places to get them out of the way, primarily, and, secondly, to fill depressions, no thought of their value on the land being given, or, if given the decision is against them. They make first rate filling-in material, also first rate roadbeds. With a layer of gravel to cover them, they form fine roads about the farm house and grounds. They are excellent for walks, and wherever they accumulate there is no need of wading through mud to the barns and outhouses if a little labor is expended in wheeling them out and spreading them where walks are needed. The housewife will scold if the ashes are tracked into the kitchen and sitting room; and well she may, for there is no need of doing it. A thin layer of gravel or sand over the coal ashes will compact itself upon them and form a hard, enduring surface. There is no better foundation for a sidewalk in the village than the clinkers and cinders from the furnace in the cellar or the factory. Some of the village improvement societies in New England keep the factory dumping grounds clear by carting off the slag and cinders to make sidewalks through the villages. They are better for foundations than gravel, because they pack together and form a surface which is not favorable to the growth of grass or weeds, and a layer of gravel on top works down among them and compacts itself finely.

I know this very well by experience, as our district wanted a sidewalk on a hillside, up and down which automobiles rush at all hours of the day, making it dangerous for school children, to say nothing of other pedestrians. Being one of a committee to do the work, we dug out the side of a bank, leveled a walk on it, extending it from the foot to the top of the hill, about nine hundred feet long, and spread a thick layer of factory cinders on it, beating the big clinkers down into it, raking it off and rolling it, and afterward covering it generously with gravel.

Of course, there was opposition. There always will be opposition to doing anything new or different from the existing order of things in old settled communities. There was laughter and plenty of prophecy that the rains would wash out the bank and the frosts would heave it so that the work expended would be worse than useless. That walk has grown harder and better every year. It has held the bank from washing down, and the frost does not heave it. It has proved to be a great comfort to the school children and is patronized by all pedestrians. The cost of it to date has not exceeded \$70 for the 900 ft. of its length. The cinders were given to us by the factory, as they will cheerfully be given by any factory to those who will cart them out of the way. This and much more may be said for coal ashes as foundations for walks and roads on the farm or along the highway.

There is another use for coal ashes, however. If not available as fertilizer for the land, they are valuable for a mechanical effect they have upon it if spread broadcast over the surface. I refer now to land which is stony and has a clayey subsoil. The special plot I have in mind is a hillside which slopes toward the east, which in fall and spring is wet and in summer bakes hard. By the month of May its surface is so hard that a hoe makes little impression upon it. Blackberries, raspberries and grapes grow finely upon it, and being now firmly rooted have stopped the wash of it. Yet the surface bakes hard like a stone.

Over a section of it I spread broadcast sifted coal ashes early last fall, with the idea of working them into it and thus loosening up the clayey soil. The

result has been surprising and pleasing. There may be no fertilizing value to coal ashes. Some of the agricultural chemists say so—perhaps all of them; and it may be so, although the most decided opinions of the most approved authority has sometimes been modified after experience. The sifted coal ashes acted as a mulch to keep the surface of that slope open and friable, so that a hoe digs into it as easily as into sandy loam.

I am not contending that there is fertilizing value in coal ashes. There may be none at all; there may be a trifle. But however that may be, sifted coal ashes spread over the surface of the soil will keep it open and moist, which is of great value to farmers and gardeners.

As to the effect of sifted coal ashes when dug into the soil upon vegetable growth, I would go no further than to say, having used them thus for years, I have noticed no ill effect upon plant life and vigor, but a slight loosening up of heavy soil in which they have been incorporated. Instead of refraining from thus using them, my experience inclines me to use all I can of them upon arable land. They are too valuable as a mulch, also to mix with hen manure, or, in the absence of sawdust, to sprinkle over the stable floors to absorb the moisture, and over the hen roosts and dropping boards and floors of hen houses to stifle some of the lice. They are too valuable on the farm, for a variety of uses, to cart out and dump in waste places.

Without any consuming desire to be critical and thus win the sharp retort of my fellows it is yet quite apparent that many farmers cart off from their farms and dump into holes dug for the purpose or deep places formed by nature much that has value on the farm in one way or another. For instance, one of the best farmers in a certain section lost a horse by death. He carted it off of his farm to a general village dumping ground, when by cutting it up somewhat and burying it in the orchard the carcass would have fed many of his trees. Another one who tore off the old plaster of his house carted it off his farm and dumped it on a river bank, while all the time some of his fields were crying out as loudly and plainly as vegetation can cry for lime. One might extend this character of remark upon the wastefulness of some farmers to almost any length. It would do no good, however, unless some clear indication were given as to the positive value in one way or another of some of the materials that are now carted off to the dump. Coal ashes have a value on the farm. Not a high value, perhaps, but a value high enough to pay for the work of spreading them. They have to be shoveled up and taken out of the cellar anyway, so that part of the work must not enter into the computation of their value. They are worth sifting. The cinders are valuable enough for walks and roads to pay for sifting them. And the sifted ashes are useful as a mulch to heavy land.

It may be noticed also by any observer that the ground about fruit trees that has been covered with sifted coal ashes is in better condition than ground not so treated. It is more moist. It is less filled with weeds and grass, and "they say" that trees about whose bases coal ashes have been strewn are less liable to the attack of the borer. From whatever cause it may be, it is true that some trees, definitely located, which have had sifted coal ashes banked about them have not suffered from borers and have borne good crops of fruit. The reference is to peach trees as well as apple. The ground about berry bushes and currant bushes has also been kept in a mellower condition by spreading sifted coal ashes over its surface.

The contention is not made that celery, or corn, or potatoes, or peas can be grown with sifted coal ashes, nor that they have any fertilizing value that would make it pay to use them on the land but they certainly do have a mechanical effect on heavy or clayey soils to loosen them up and mellow them if spread as top dressing over them. They are safe to use. They will not injure vegetation if used as top dressing or mixed with manure, and they give enough satisfaction where thus used to incline the farmer to continue it. You will hear it said by some, "They are no good at all. You might better cart them off and dump them in the river." So also some say of sawdust, which is one of the best absorbents and beddings of the stable. Coal ashes are worth saving at the farm, and using in the various ways indicated and in other ways which a thoughtful man will learn by experience.

DISKING ALFALFA.

Mr. H. B. Rice, of Hall county, Nebraska, writes as follows to the Twentieth Century Farmer on his experience in disking:

In a dry spell, just after the alfalfa has been cut and stacked, it has paid us well to disk the land. We disk both ways, then harrow smooth.

The increased yield may be 25 to 54% or more of

a full crop; hence a man might make \$10 to \$15 per day at this job, if well and promptly done. This applies to alfalfa three or more years old. Some, however, have disked it when only two years old and report good results. We prefer to use a sharp lever harrow at this stage of its development.

In a thin stand the disks may be set at a sharp angle, with a thick stand at a less angle. Set the disks to a good depth so as to cut through the crust formed and turn the soil well over.

Besides thickening the stand of alfalfa, hastening its growth and conserving the moisture, much good will be done by eradicating weeds, cut worms, grass, etc.

We often see fields where weeds and grass are crowding out the alfalfa and nothing is done to check their progress.

For best results, and to make it easier for the team, the disk should be sharp. Repeat the diskings after each successive cutting. If crowded for time, at least, make sure of the worst or the alkali spots.

Get all you can out of the alfalfa crop; prairie grass is short and thin.

HANDLING KAFIR CORN AND SORGHUM.

So much is being done in the interior valleys of California with the sorghum family, which includes Kafir corn, that records of experience in handling the crop anywhere is of immediate interest. Professor A. M. Ten Eyck of the Kansas Experiment Station, gives the Orange Judd Farmer an outline of practice in his State.

When sorghum is grown for forage it is usual to sow broadcast or in close drills, planting about a bushel of seed per acre. Planted thickly in this way the sorghum grows slender, leafy stalks and makes a finer quality of forage than when grown in rows and cultivated.

Sorghum cures very slowly and it is necessary to let it lie in the swath and windrow for a week or more before it is placed in the shock. The usual method is to place in large shocks and leave the crop in the field, hauling the fodder during the winter as it is needed for feeding the stock.

Stacking Sorghum.—We have had very good success in stacking sorghum hay when sufficient care was taken to cure it in the field before hauling to the stack. The fodder should not be stacked until cold weather begins and should be placed in narrow stacks with good ventilation beneath the stack. This may be secured by building the stack bottom of rails and brush. In order to insure the sorghum hay keeping well, some practice the plan of stacking straw between layers of sorghum.

Perhaps there is no other annual crop adapted for growing in this State which will produce so large an amount of forage per acre as sorghum. Yields of six to eight tons of cured fodder per acre have been harvested at the Kansas experiment station, from land of only average fertility. Sowed sorghum makes a very fair quality of hay and is good roughage for all kinds of stock, but should not be fed exclusively, since sorghum hay is rich in carbohydrates, but contains a relatively small percentage of protein. The hay should be fed in combination with alfalfa hay or with high protein grain feeds.

Kafir Corn Desirable.—Kafir corn may also be grown for forage in the manner described above. In some parts of Kansas sowed Kafir corn fodder is preferred to sorghum fodder. When left in the field during the winter and spring, sorghum often becomes sour and unpalatable and sometimes injurious to stock. Kafir corn cures better than sorghum and does not sour and spoil so readily as sorghum hay. Also kafir corn sown thickly makes finer and more leafy stalks than sorghum.

Kafir corn makes good forage also when planted in drill rows and cultivated. If the purpose is to grow for forage with little regard for seed production, then the kafir corn should be planted thickly in the row. The usual method at this station is to plant with the grain drill. Set the drill to sow about a bushel of wheat per acre, and stop up part of the seed cups so as to plant the rows the required distance apart, usually 3 to 3½ feet.

If kafir corn is planted for seed, the same method of planting may be followed, but the seed should be sown a little thinner in the row, so that the stalks will average 3 to 4 in. apart. Planted in this way in drill rows, kafir corn may be cultivated very much the same as Indian corn. When either of these crops is grown in rows, the preferable method of harvesting for forage is to cut with the corn binder, bind into bundles and shock in the field. The fodder may be fed heads and all, but the common method is to head the kafir corn or sorghum, threshing the heads to secure the seed and feeding the stover only as roughage.

Harvesting.—The usual method of heading is to drive between two shock rows with a box rack, which has a large wooden block at the rear. One man stands in the wagon with a broad-ax, or knife, made especially

for this purpose, while two men on the ground alternately hand up bundles from the shocks on each side of the wagon, the man on the wagon chopping off the heads, which fall into the bottom of the wagon. The headed bundles are set back in the shock and the stover is usually left in the field until required for feeding.

The usual method of threshing is to run the heads through a common grain separator, the concaves and part of the cylinder teeth being removed. This method of threshing, however, breaks much of the grain and injures it for seeding purposes. At the Kansas station we prefer to thresh with the flail a sufficient quantity of the kafir corn or sorghum to supply seed for the next year's planting. As the seed does not usually keep well when stored in large quantity, it is a common practice not to thresh until the grain is needed for seed. The crop is usually left in the shock in the field, or else the heads are stacked or placed under cover.

It is best to grind kafir corn for feeding all kinds of stock, except poultry. The usual method is to thresh out the seed and grind the grain. It is possible, however, to grind the seed, head and all. Feed grinding mills are advertised for this special purpose.

THE STABLE.

THE THOROUGHBRED AS A SIRE OF USEFUL HORSES.

Hidalgo of Los Angeles, an able horse writer, gives his views in the Breeder and Sportsman on an old subject, but in a new way. He proposes the organization of a breeding bureau, not to promote the production of race trotters from thoroughbred stallions, but to breed a type of work horses superior to what we now have by mating coarse and heavy mares with thoroughbred stallions. From mares thus bred are liable to come race trotters more frequently than one might at first imagine.

The late Mr. Simpson practically exhausted his favorite theme of "Thoroughbred Blood in the Trotter" and I have no desire now to thresh over old straw. The more I read the situation over the more seriously I am confronted with the stubborn fact that Venture 2:27½, bred by my dead friend and employer, Henry Williamson, is the only thoroughbred stallion ever to drop into the charmed circle. If thoroughbred blood were the sine qua non we should have more stallions like Venture in the 2:30 list. He was by Belmont, whose sire, American Boy, was undoubtedly the sire of Awful, the first horse to trot in 2:34 to saddle. But nobody ever claimed Awful's dam as being thoroughbred nor did his appearance begin to warrant it. If Mr. Haggin's gelding Monarch 2:27 (which was the real foundation of Mr. John Mackey's business connection with "The Sphinx") was not by Woodburn out of Victress by Belmont, I have yet to hear of a valid contradiction of that statement made at the time when Mackey was in the sulky behind that beautiful roadster. Belmont's son, Owen Dale, was the sire of George Treat's big stallion Copperhead, afterwards owned by James S. McCue; and in 1873 there was not a horse in all San Francisco that could beat "old Cop" from the City Hall to the Cliff House with two men in a Concord buggy. I believe Copperhead had a record somewhere about 2:34 in a race between horses.

My idea is to breed big and heavy-boned mares of unknown pedigree to thoroughbred stallions whose turf performances were of secondary consideration but who must be sound and free from vice. There are two stallions now standing in Kentucky, both of which have headed the list of winning sires since 1895 and whose books are always full a year or so in advance. Yet neither of those stallions—Hastings or Sir Dixon—gets more than one sound horse in four, but such is the craze for early speed, superinduced by such devilish inventions as the Futurity and Matron Stakes—that their get always commands top prices in the auction ring. And what kind of horses do they get? Answer—Stake horses at two years, selling platters at three and "dogs" forever afterwards. My project of a State breeding bureau does not contemplate anything of that sort. In his superb work on breeding, Count Lehindorff, the greatest authority in Continental Europe, writes: "The burning question is soundness and nothing but soundness, from the very beginning to the end." And I am content to take my stand by the side of the grim old Uhlan, who has done more than any other twenty men on earth to make the cavalry service of Germany just what it is.

But there will be those who laugh at my idea of breeding work mares to thoroughbred stallions. Let me tell you a little story within my own knowledge. Along in 1846 or thereabouts Colonel William Buford of Versailles, Ky. (he was the man who brought Medoc

to Kentucky in 1834), had a Medoc mare that would not breed. She had been tried to Gray Eagle, Sarpedon and several other popular thoroughbred sires, but all to no purpose. One day the veteran turfman got mad and said: "The next time that mare comes in season I'll breed her to a jackass." Then he went all over Woodford county in search of a jack, but found none to suit him. One day along came a man named John Kerr with a big English horse called Gilbert, a hairy-legged cart sire of the "Suffolk Sorral" type. He served the Medoc mare and the produce was a heavy-boned, big, strong work horse that subsequently was brought to California and stood about Haywards and Sunol valley. He was called John Kerr, and I think the old residents of Alameda and Contra Costa counties will bear me out in the assertion that he was as good a farm stallion as was ever brought to this State. I bred one of his daughters to Owen Dale and got a horse that could trot in 3:10 to a top buggy with myself and wife aboard. Now, John Kerr reversed the order of breeding which I advocate—good heavy mares to a sound and good-tempered horse of excellent individuality. He was by a coarse sire out of a good daughter of a good thoroughbred stallion, in fact, the best thoroughbred stallion in America between Sir Archy, foaled in 1805, and Lexington, foaled in 1850.

I think no man should be asked to give two stallions to this project as August Belmont did, in Don de Oro and Margrave, to the Breeder's Bureau of New York. Mr. A. B. Spreckels has one and so have Burns & Waterhouse, they could afford to give to such a purpose; and my good old neighbor, Mr. Baldwin, has two or three that could well be spared from where they are now located. These stallions should be let to none but big and coarse mares, at a fee not to exceed \$15 the season, or \$20 with the return privilege, if the horse is alive in the following year. Now, granting this breeding bureau is as thoroughly organized here as in New York, you will ask what I propose to do with the mares arising out of this cross between thoroughbred sires and mares of no verified pedigree. My answer is a very simple one. Breed them in alternate years to race trotters (say within the 2:25 class) and Hackney stallions, like Mr. Jack Parrott's sorrel horse Rufus. My own idea is that in following this line you will be breeding for the coach and for the livery stable as well. Forty years ago Napa county had the best livery horses of any county outside of San Francisco and Santa Clara. It was because the farmers of Napa had bred their mares to Independence, son of Boston, and to Collier, a three-quarters thoroughbred horse owned by Nathan Combs, before he brought out Ashland and Cheatham. I think I have pointed out the way for a general improvement of the common breed of horses in our State, and I hope the farmers will take advantage of any and all offers made to them in this direction. We must breed "onward, upward and true to the line" if we hope to make California the greatest breeding State of the Union.

THE POULTRY YARD.

AN EASTERNER'S TALK WITH A CALIFORNIA POULTRYMAN.

Mr. Charles A. Jackson, a racy writer for the Prairie Farmer, has been in California, and his talk with a local poultryman is very interesting.

Perhaps Southern California has more poultry to the square inch than any other State in the Union—that is, in the same given area. Everybody has a "yard," from the farmer up in the mountains down to the humble "flat-dweller" in the cities, be his home ever so humble or limited. Out there the "chicken fever" seems to attack all alike—the rich, the poor, the lame, the halt and the blind. Some raise them just for the fun of the thing, others for profit, and still others believe their mission on earth is to start a new breed.

However, there is money in the business, and the market is always "steady." Besides the home product, there were shipped in nearly a quarter of a million cold storage eggs—which shows the thing far from being overdone.

An Instance.—That readers might know something of the "latest fashion in chickens." I went out to see one of the most prominent poultrymen in the State. I say prominent because a man may be just as well known raising poultry as he would be in Congress. Anyway, he always heads the list as a judge at all the "shows," and his poultry yard shows that this confidence is deserving. He has "ten acres in poultry," as one might say, but this includes the home grounds. There are shade trees, plenty of pasture, and a dust yard. The houses are just ordinary, built for utility rather than show. Outside of the incubator house, all the coops (about 4x5 ft.) are portable, with a one-foot

air space all around. He is an old Vermonter, a typical Yankee, weighs about 235 or 240 lbs., has a voice like a fog-horn, a merry twinkle in his large, brown eyes and dresses like an ordinary farmer just in from the field. He has a fine library on poultry alone, and I noticed several poultry magazines and farm papers scattered around on the porch, where he spends much time reading and keeps posted on everything that is going on in the poultry world.

I ventured to ask him if he wouldn't talk "shop" for the benefit of poultry-raisers.

"Sure, I will. Go ahead."

"Is the poultry business overdone, or is it likely to be in the future?" I asked.

"No, I don't think so. Prices today are better than ever—that is, for the best. Of course, we'll have to put on the market what people want and what they are willing to pay for."

Capons and Dated Eggs.—"What would you suggest in the way of improvement over present methods?"

"Of course, there are many things in that line we could improve. For instance, there seems to be a growing demand for capons. I know of very few poultrymen in the State who make a specialty of raising capons."

"What's the reason, since it is so profitable?"

"Well, everybody thinks no one can perform the operation but a veterinary surgeon, when, in fact, any one can do it. It don't take half the nerve it does to cut a chicken's head off. My son, who's only 18, does all our work. A complete set of instruments can be bought today very cheap, and the directions are so simple, I often wonder why more do not go into the business."

"How do capons compare in price to ordinary poultry?"

"From five to seven cents more per pound for the former."

"As a rule, who are customers?"

"First-class hotels, though that need not be the case. The meat is so much superior that once tasted people who are fond of poultry would eat no other."

"Anything else to suggest?"

"Stamp your eggs the day they were 'born.' Every egg that goes out from my place has my name and the date the egg was laid stamped on it in red. That is a guarantee of its reliability, don't you see—from the hen to the user, as it were."

Women and Cranks.—"Who are the best poultry-raisers—men or women?"

"Women, as a rule. They are more patient and have a knack of detail. But men are more successful with poultry on a large scale, as they have more executive ability, though I know several women who own and run large yards. It takes a lot of patience with poultry to be successful."

"As a rule, who gets the blue ribbon at shows when you are judging?"

"The 'chicken crank.' Perhaps he has only eight or ten, but they are the best that money can buy. He scours the country over for 'show' stock, and spends his whole time feeding and caring for them."

Incubators.—"Do you recommend incubators—that is, do you think it would pay the average farmer to use them?"

"Yes. If farmers would take more interest in poultry they would be a good deal better off. Incubators today have reached such perfection that no good excuse can be offered for not having one. The average farmer has the idea that he must be an engineer with a diploma in order to run one successfully. As they are made today they are simplicity pure and simple and need no 'monkeying' with. I am using a common machine of 100 egg capacity, and have no trouble whatever. The wooden hen is all right."

"How about poultry ailments? Isn't that one of the great drawbacks?"

"The secret of the whole thing is cleanliness. I wish I could impress that upon people who raise poultry. Good, wholesome food is another. A fowl gets indigestion from overfeeding the same as you do. Let 'em scratch for most of their living; it won't do any harm to let them go hungry part of the time. Give plenty of lettuce, onion tops chopped fine and clean water and there won't be much trouble."

"Any new remedies?"

"Yes—the axe. When one of my chickens gets the 'dumps,' off goes its head! I don't care if it has a pedigree a yard long."

Breeds.—I reserved the all-important question until the last. Being such a prominent poultry-raiser and coming in contact with so many different breeds, I rather surmised he would have a strong preference. It was pretty evident he was no amateur, for he shifted around several times in his chair before he said anything when I asked him what breed he considered the best—that is, the best all-around bird.

"That's a hard one. My honest opinion is that it depends on the breeder as much as it does on the breed. Then, too, it is a question of whether you want eggs or meat. Every breed has some good points. For instance, the leghorns are inveterate layers; when you have said that you have their best point. The Rocks are, perhaps, the best market fowl, and so on. For my own yard, I use largely the White Plymouth Rocks. They are a beautiful bird are good layers and grow large enough to be profitable for market. The Buff Orpington seems to be attracting a good deal of attention now. I know of several who are changing their flocks for this breed and they claim they come more nearly up to the all-around standard than any other. The worst trouble with them is, it is hard to get pure-bred stock. They resemble somewhat the Buff Cochin and one should be careful not to buy eggs or stock except from a very reliable dealer. I notice they are raised a good deal in the cities and villages around here, and from what I know about them they will be popular."

THE MARKETS.

Wheat.

There is not enough change in conditions governing wheat to suggest anything more than a fair market for the present. Speculators seem to hold that it is fairly safe to purchase on any sharp decline with a view to selling later on. Conservative buyers are taking a more friendly view of wheat, the improved feeling being based on the prospective falling off in receipts. Foreigners are expected to take hold better as soon as the market hardens. Notwithstanding the generally favorable outlook, the spot market in this city has declined. The price for No. 1 shipping, being now \$1.30, as compared with the nominal rate of \$1.32½, which has prevailed for some time past. Even at the present rate shippers claim that the price is too high for export purposes, and they assert that wheat will not be on an export basis until it gets down to \$1.27½ or \$1.25. Nevertheless, rather than pay \$2 per ton for rock ballast, ships now ready for loading are being steadied with wheat purchased at \$1.30. However, only enough is taken to act as ballast. Steamers are now offering freely in competition with sailing tonnage. One steamer has been offering at 25s. September loading and a good deal of business in steamers for early loading at San Francisco or on the Sound is reported at 27s 6d. A late wire from Chicago says that the spring wheat crop of the United States will aggregate 275,000,000 bushels and that the total crop, including both spring and winter, will aggregate 775,000,000 bushels. Advices from Portland continue pessimistic as regards the wheat outlook in the Pacific Northwest. In the Portland market very little is doing and no business is expected before the new crop comes in, which will not be for several weeks. The stock in regular warehouses and on the wharf here was only 24,775 tons. The receipts for July were 3903 tons.

Flour.

While the volume of business in the local flour market has not increased to any large extent there is a notable improvement in the general feeling and a number of millers are taking a more hopeful view of the situation. The fact that the market at present is between the old and the new crop makes it a little difficult to transact any business. Foreign buyers are willing to purchase on reduced quotations, and \$3.05 per barrel has been offered by cable, but so far as known has been rejected in all cases. Owing to the slowness of the settling of the price for new wheat millers have been compelled to work on the old prices. The amount of export business during the month of July has not been very satisfactory as compared with former years, when the demand from both China and Japan was good. A great many of the interior mills in the Pacific Northwest have gone out of the export business, finding it more profitable to confine their operations to local and coast-wise trade. The expected orders from Japan are not coming in notwithstanding the increased tariff which takes effect October 1. No new business is being done with Central and South America, though some shipping on former orders is to be noted.

Barley.

The stock of barley in California warehouses and at tide water on August 1 was 9287 tons, as compared with 3563 tons on July 1. The receipts during July amounted to 5806 tons. The market continues very strong for spot, owing to the extreme scarcity, and feed barley is for the time being bringing practically the same prices as brewing barley. Advices from the north show decreased estimates as to the barley yield owing to the hot weather of July. Prices are relatively higher in

the North than in San Francisco and buyers are waiting for increased supplies to bring the prices down. If prices in Portland and Seattle continue at the present high level, considerable shipping from California will be indulged in as soon as the California crop is marketed.

Oats.

The oat market continues very quiet, with practically no business being done during the week. The reason for this is obvious when it is understood that there were only 30 tons in warehouse and on the wharf on August 1. The amount on hand on July 1 was 201 tons. Locally the situation is entirely a waiting one. In the North holders of old oats are rushing their holdings to market and prices are dropping. A large crop is in prospect in Oregon and Washington, and Eastern oats are still offering quite freely.

Corn.

Corn is still very quiet and quotations are practically nominal. Stocks in regular warehouse and on the wharf at the first of the month amounted to only 36 tons, a falling off of one hundred tons as compared with July 1. Receipts during July were only 85 tons and little or nothing is now coming in. During the week small, round, yellow corn fell off slightly in price as did also brown Egyptian. Advices from the East show that an excellent crop is promised in most of the great corn-growing States. The Chicago market is weaker.

Millstuffs.

The feature of the market has been the unusually large arrivals of bran and shorts from the North. In a single day 11,781 sacks of bran and 7112 sacks of shorts arrived. These heavy deliveries did not, however, affect the market, as they were sold prior to arrival. The market is, however, a little easier than a week ago. Stocks on hand are comparatively limited.

Hay.

The railroad company has not been sending in any hay this week and the daily arrivals are not sufficient for the actual needs of the city. In consequence there has been something of a scramble for good hay and there is some talk of a hay famine in spite of the fact that hundreds of cars are sidetracked in the country waiting to be hauled in. Meanwhile considerable supplies are coming in by schooner, though these arrivals are totally inadequate. Some fear is expressed that even with a favorable turn in transportation it would be impossible to market or house all the hay crop before the early rains. Active purchasing throughout the country has ceased owing to the inability to secure shipments. Although San Francisco dealers anticipate a decline in prices, no drop seems possible as long as the railroad embargo lasts.

Beans.

Lima beans are weaker and pinks and whites are a shade firmer than last week. Some little trading in pinks is reported and the outlook is for a cleanup before the new crop comes in. The outlook in the growing districts is good.

Hops.

Interest still continues in the coming harvest, which will begin about the 15th. The outlook is generally good in California and elsewhere on the Coast. Considerable anxiety is felt by growers owing to the apparent scarcity of pickers. Help is scarce both in California and in the northern coast States. The reduction in the freight on hops which has just been announced is generally received with satisfaction. The new rate is \$1.50 per hundred pounds on all shipments in carload lots of ten tons, as compared with \$2.00 per hundred pounds under the old schedule. For shipments in less than carload lots the old rate will prevail.

Wool.

The wool market is showing very little activity and is still more or less depressed by the poor showing made at the London auctions a couple of weeks ago. Very little wool is now changing hands in California and dealers are understood to have withdrawn all outstanding quotations until the market becomes more decided. In Boston the reaction is felt and the improved demand which was noted about the middle of July has not been continued. Eastern buyers are showing some little interest in California wools on the Boston market, but no sales of any size have been made recently. Most of the business has consisted in putting out sample lots on the basis of 70c. clean for good northern wools. In fall wools there is very little doing. Middle county wools are quoted at Boston at about 23c. in the grease. Oregon wools are quiet in the East. The Shaniko clip is arriving at Boston, and manufacturers are interested in them, but so far all that has been accomplished is the sending out of sample bags.

Bags and Bagging.

The scarcity in grain bags seems to be a thing of the past and the market has taken on an easier tone. One lot of 75 bales was turned back on the market, the buyer failing to take delivery. This lot was sold at 9½c. Since then prices have steadied again and are held as before at 9½ to 10 cents.

Butter.

Butter has been steady throughout the week with no change in values. Toward the end of the week receipts, which had been rather limited, increased in volume, and the market was slightly easier, though receivers claim to have had little difficulty in working off all receipts. The city is absorbing more butter each week and is apparently able to care for all offerings.

Eggs.

Receipts of eggs at the San Francisco market have been moderate this week and there has been a corresponding improvement in the tone. Prices are generally higher and the market is firm at the improved figures. Selected and first quality ranch eggs are in particularly good demand, there being a wider range between the prices of select and off-quality eggs. A few selections have been selling as high as 28c. The steady improvement in conditions in this city is leading to a gradual improvement in the demand.

Cheese.

Cheese has been coming in quite freely, but prices have continued steady and all arrivals have sold well at ruling figures. Toward the end of the week business eased off and the stock on hand is probably a little heavier than a week ago. Dealers seem to anticipate no great change in the present situation.

Poultry.

The poultry market continues with little change, the general tone being one of weakness owing to a superabundance of undesirable stock and a scarcity of those lines most in demand. There is a good demand for full-grown young roosters and for heavy hens, at steady prices, but there is very little stock to be had in these lines. Consumers are buying only for immediate needs of the light stock which constitutes the bulk of the poultry on hand.

Fresh Fruits.

The market for fresh fruits has been fairly active during the greater portion of the week. Quotations generally show but little change. However, as the season advances and receipts increase, the absence of the local canneries which were burned in April is becoming a weakening factor in prices. In former seasons the canneries, by caring for the surplus whenever prices reached a certain figure, acted as a steadying influence and fixed the minimum prices. Now, however, without the canneries to care for the surplus, even a slight overcrowding of the market necessitates a sacrifice and a consequent break in prices where no break is justified by the general condition of the market. For this reason the prices of perishable fruits may be more uneven during the coming season than usual. Berries are a little weaker this week and nutmeg melons have continued weak under heavy arrivals. Cantaloupes are in increased supply and are lower. Apples, while nominally at the old figure, are showing some weakness, and dealers report difficulty in obtaining \$1.25 per box for round lots of the finest Gravensteins. Loose Bartlett pears are coming in rapidly from the river, but have so far been well cared for by canners and dryers.

Dried Fruits.

Notwithstanding a few arrivals of apricots, the dried fruit market is still largely a reflection of the Eastern demand. Prunes are quiet as far as spot is concerned and there are conflicting reports as to the doings in futures. Eastern distributors of raisins are waiting with some interest the outcome of the sharp competition between the packers in California which is now reported to be extending into all dried fruit lines. The raisin output is guessed at 6000 cars, though it should be remembered that this is merely a guess. Buying of the new crop apricots and peaches throughout California is quite active, but prices on the new crop have not been definitely fixed in this market.

Vegetables.

The vegetable market closed the week in a rather unsatisfactory condition. Prices were weak in most lines. Notwithstanding the shipment of California tomatoes to Eastern points, the San Francisco market was overloaded and old lots were turned over to sauce manufacturers at low figures. First quality tomatoes have, however, held up well. Cucumbers are in over supply and are lower in price. Other lines of vegetables, while weak, are generally quoted at the old figures.

Potatoes.

The business done by the potato dealers this week has not been very heavy. Retailers have generally limited their operation to the purchasing of small lots for immediate needs. The supply has been more than ample for all requirements and the prospect for the next week is not particularly encouraging. The arrivals are generally satisfactory as regards quality, and except for limited storage facilities they could probably be cared for without trouble. So far the freight blockade has not made itself felt in limiting supplies.

Citrus Fruits.

There is no great activity in the orange market, though there is a fair demand for Valencias, which are the only variety to be had in any quantity. Considerable interest is shown in the coming crop, and figures as to the size are already being put forth. The general idea seems to be that the output this year will be about 25% short of last year's crop. It is, however, yet too early to make definite predictions.

SHEEP AND WOOL.**THE PREPARATION OF WOOL FOR MARKET.**

The seventh international conference of sheep breeders, convened by the National Sheep Breeders' Association, London, England, took place in the Guildhall, Derby, on June 26. Many matters of wide interest were discussed. The following on the occurrence of vegetable matter in wool may be suggestive even at this great distance:

Vegetable matter in wool has this last eighteen months occupied a very prominent position in the wool world, due to a large extent to its being on the increase. Growers cannot fully estimate how injurious this is, manufacturers alone being able to estimate the importance of keeping fleeces free from everything vegetable in character. Put it down as a well-defined principle that the more vegetable matter there is in shorn fleeces, the more will buyers fight shy of it in the future, besides paying less for it. Wool containing loose hemp, string, straw, short, fluffy bits from the inside of tares, means much extra cost in manipulation; while, owing to vegetable matter not taking the dye like wool, has been the direct cause of serious loss arising through spoiled pieces. There are several forms of vegetable matter which wool growers need to watch with the strictest vigilance. While the fleece is growing there is the vegetable matter which is picked up. In colonial fleeces this is represented by burrs, seeds, and shives, while in English wools the worst feature to contend with is straw. After washing, sheep should never be turned into straw before shearing, while even in the turnip field straw should not be spread unless the land is very heavy and wet. Then there is vegetable matter getting into the fleece while shearing is being conducted, and this should be avoided by the shearing floor being kept entirely free from all extraneous matter. Of course, this can be picked out at the sorting table, but it means increased cost, and this the sheep farmer has to pay by receiving less for his clip. Then there is the worst feature of all, namely, the tying up of fleeces with loose, fluffy jute twine. This practice has nearly disappeared, and the sooner it is a relic of the past the better. It is mostly practiced in the south of England, and principally in the counties of Somerset and Devon. Wool fleeces do not need tying with band at all, and the few stations in Victoria, Australia, where it is still done, need not continue the practice. Then there is the evil arising from using poor tares. When this is done, the loose, fluffy bits from the inside rub off on to the wool, and no amount of sorting will rid these from the wool. When hemp or jute fiber gets into the wool and passes through the scouring machine, it gets so broken up that it is lost sight of, but it refuses to take the dye as the wool does and injures the appearance of the cloth made from the yarn.

PREPARING SHEEPSKINS FOR MARKET.

A good deal of attention is being directed at present to the question of the exportation of pelts, says an Australian exchange, and the local tanners wish for an export duty. But there is an aspect of the question which concerns not only the small sheep farmer, but the squatter, and that is the preparation of skins for market. If the producer could only see the quick-grading process which usually takes place before the skins are submitted by auction, and note how few are classed "firsts," it would be a profitable object lesson to him. The difference in the skins and hides from large slaughter houses and the average station or farm bale

is quickly noticeable. The preparation of skins for market by the average sheep breeder seems to be a subject severely left alone. One man can recall many places where one or two sheep are killed each evening for home consumption. Watch the operation: The pelt is off; the care of the skin seems a secondary consideration, for when stripped from the carcass we often see it thrown on the ground to await the dressing of the carcass; then it is roughly thrown on the fence of the killing pen, where other skins are lined, to be the meal and roost of crows until enough are skinned to make a load to remove to the shed. This accounts to a large extent for the large number of low-grade skins, for this rough system means shriveled, blood and dirt-stained skins. Let attention be given to skins and they will be profitable. The owner should see that skins are well stretched, when fresh skinned, from neck to tail, and hung over wires or narrow poles, given a painting with arsenic to protect them from rats, mice and insects; classed before pressing them for market, and a better price will be realized, and the broker saved abuse. The unusual demand abroad for pelts should inspire those who have skins for market to send them in the most attractive and best-prepared form.

REMOVING THE BURRS.

Probably wool growers do not know how much trouble it is to get the burrs out of wool and the agencies the scourers have to employ for that purpose. Mr. C. H. Haring, of the Aurora Scouring Mills, gives the American Sheep Breeder a note on that subject.

There are two leading ways of removing burrs from wool; one is by putting it through a burr picker, and the other by carbonizing. The former is objectionable, because the picker tears and mutilates the staple that much that its value is greatly impaired; besides it will not entirely remove all kinds of burrs, such as the spiral or soft burr, but scatters the fragments through the wool in such a manner that it must finally be carbonized before it is fit for use. Carbonizing is the only method of removing them completely. This process consists of soaking the wool in a solution of sulphuric acid or its equivalent and then putting it into bake ovens or through dryers built for the purpose, where it is subjected to a very high temperature; the action of the heat upon the acid-soaked burrs carbonizes or turns them into charcoal. When thoroughly dry the wool is passed through heavy crush rolls and all the vegetable matter it carries, whether burrs, seeds, chaff, shives, wire grass or what not is pulverized. It is then passed through special dusters, where the agitation from spiked cylinders and air blasts from large fans blow out this charcoal dust. The wool must then be neutralized by washing it in chemically prepared waters so as to remove all traces of the acid before it is passed on to the dye room, or the colors will not come out true. Wool must be scoured before it can be carbonized, for the acid will not take effect upon the burrs until the natural wool grease has been removed, and the acid is of that nature as will not affect the wool, being animal matter, but only the burrs, etc., being vegetable. As the old Illinois farmer said, it is our business "to take 'em out"; the charge for it is nominal, and when finished the wool is as good as ever. So it is easy to get around this unfortunate condition if you know what to do, but if you sell it to the speculators, burrs in, they will roast you alive, as some of you probably know by experience. It is very rare that burrs accumulate in the whole fleece, except in those from some sections of the South; they are usually gathered about the neck and shoulders, and while the balance of the fleece may be entirely free from them, the wily buyer quickly finds enough to condemn the whole—it is all classed as burry and brings a burry price. Now, in our treatment of these fleeces, we separate the actually burry from the free parts in the sorting process, keeping them separate and giving each the treatment it requires to put it in its best marketable condition. Our wool growers could save considerable money on their burry wools by resorting to this simple process rather than selling their whole clip as burry, when it may be the fleeces carry only a few burrs about the neck and shoulders.

SEAWEED FOR TANNING.

Consul-General Miller writes from Yokohama that, according to a Tokyo dispatch, the funori, a kind of seaweed (*gloeopeltis intricata*) exhibited at the St. Louis exposition by an Osaka merchant, has obtained a good reputation in America, where it is largely used for tanning leather, and is obtained chiefly from England. The Japanese Government has received an application from America, asking for a trial shipment of funori. The application has been referred to dealers in the article in Tokyo and Osaka.

THE DAIRY.

A LECTURE ON DAIRY ECONOMICS.

Mr. W. F. McSparran of Furniss, Pa., gives the New York Tribune a lecture for dairy owners and managers on the best use of dairy labor. He thinks the boss should take to himself some of the blame which is bestowed upon poor cows and poor labor. It may fit somewhere, even in California.

The result of the scarcity of reliable farm help is becoming very manifest in the decidedly upward tendency of wages. This is especially noticeable in dairying, in which labor bills are no inconsiderable item in striking net returns. That the dairyman or the members of his immediate family may do the work does not alter the economic aspect of the case, for the laborer is always supposed to be worthy of his hire. I might presume to modify the comprehensiveness of this assertion somewhat by adding the supposition that his work shall be well directed and performed with capable implements.

It is assumable that a good worker would generally be able to sell his own labor to some employer for about what the labor of some other man would sell for, and it seems the folly of unbusiness for the dairyman to be satisfied to make less for himself than he would have to pay for similar service from another. Obviously, therefore, when bought labor is dear personal labor should be proportionately as productive in net returns.

It is a fact that in thousands upon thousands of dairies the profits lie only in the dairyman's selling, through the product of his cows, his own labor for a higher price than it is worth in various other branches of agriculture; hence he concludes dairying pays. It is true that this is a much better finding for the business than its antipodal expression, "Dairying doesn't pay;" but in reality it has only paid for labor and has not paid a satisfactory return of interest upon equipment investment or created a maintenance fund or credit. The dairyman has, as before stated, for his labor about the return he could command for the same labor if he were to hire to some other dairyman.

While there are dairies almost without number thus managed as merely profitable occupations for their owners, there are many also that are conducted upon the same loose jointed general principles of mismanagement, which employ hired labor, largely with the result that when the labor and feed bills are paid the small balance is as likely to be upon the debit as the credit side of the account.

Both of these classes of dairies are the

kinds that in the nomenclature of the business are listed as "average." They stand between the ones that are making good, better, best profits and those that are making losses in the declining degrees of their class.

The "average" dairy has an average dairyman at the head of it. He is keeping it not up to the average, but down to it. It is always safe to calculate that the dairy under such management that is simply paying its way has individual cows in it that if given a chance to show their working ability, by having the intelligent co-operation of a progressive owner, are quite able to move up from the stagnation rank of "average"; but the cow is always passive in the hands of her owner. Not being a free physical agent she often has the disgrace of "average" thrust upon her by reason of the dairy shortcomings of her owner.

It is useless for us to go out crying for better cows and bemoaning the circumstance of the advancing hire of the laborer until we have done some work toward making the dairyman as good as his cows and his business. If the laborer is to be worthy of his hire, the "boss" must be equal to directing the efforts of the laborer along lines of greatest production. He will not set him to working corn or potatoes with a hoe, or mowing grass with a scythe. He can't afford to let him harvest the wheat with a cradle nor to thrash it with a flail. Those average methods in farm operations have become obsolete. The profits in farming come from the intelligent use of hired help operating improved implements and tools made for best doing specific work.

Following closely upon the coming of the better dairyman we will see the better cow. A good dairyman can handle and feed almost any cow up to the class of average; at this point he will discover his need for the better cow—the tool that will do his specific work best. In the hands of such a dairyman, with cows ordained for their work, the hire of the laborer, if he be a worthy worker, need not be discounted.

MILKING SHORTHORNS AT THE STATE FAIR.

Mr. Robert Ashburner of Woodland, who has stood for a third of a century as the leading California authority on Shorthorn cattle, gives the Dairy Review, a proper exhortation on the subject of prizes to be awarded for milking Shorthorns at the State Fair, which will open at Sacramento, on August 25:

I want your reading dairymen to know that at our coming State Fair there will be special premiums offered for the best milking Shorthorns. In all \$400 is offered, half of which will be paid by the Amer-

ican Shorthorn Breeders' Association. The prize money will be divided into three premiums for each class, \$100 for first; \$60 for second, and \$40 for third premium. There will be two classes, one for cows over three years old in which each cow must give 22 lb. of milk at each milking, or 44 lb. a day, equal to 50 lb. a day at home, which is the only proper place in which a reliable test can be made. Cows that have been milking more than three months since calving must give not less than 17 lb. at each milking.

Cows under three years old must give not less than 16 lb. of milk at each milking, and not less than 13 lb. at a milking if they calved more than three months before the first day of the show. There is good common sense in making this allowance for difference in time of calving. Once upon a time premiums were given at the California State Fair for cows that produced the most butter in seven days, by Babcock test.

The quantity of milk will not be the sole condition governing the making of awards in the above named classes. The other conditions are as follows: "And as the object of this class is to show the adaptation for both beef and milk production, judges shall have regard for the size, shape and general appearance of the udder both before and after milking, and also for the size, quality and general appearance of the animal from the standpoint of beef production, and shall allow 50 points for each of these dual purposes."

Here is a chance for Shorthorn breeders to prove the general utility of their cows. It is true that the majority do not breed for and train the milking habit in their cows, but, comparatively speaking, very few breeders do have their cows milked without which there can be no development of dairy qualities. It cannot be known what kind of a milker a cow is as long as the calf takes either a part or the whole of the milk—oftener the whole of it than not.

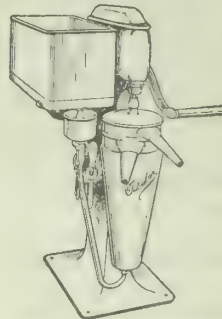
I hope that those few breeders who use their Shorthorns as dairy cattle will come together at the proper time with such of their best cows that may be in proper condition for the contest and make competition lively, and I hope agreeable to all concerned. It is said that competition is the life of trade, and without it at our live stock shows visitors would not have the pleasure of comparing the different qualities of the various herds.

At our State Fair there is an antiquated rule still in force which ought to have been done away with years ago. I allude to the second paragraph in Rule 43, in which it says that only 50% of the first premium will be paid where there is no competition. Such a rule was all well enough forty years ago when there were only one or two exhibitors of each breed of cattle. It may not be unjust now as applied to certain breeds of any kind of live stock when it is known that there are not more than one or two herds, or flocks, as the case may be, in the State that are eligible for competition yet, after all it cannot but be considered as anything better than a want of confidence in the judge. If he is not competent to decide whether an animal is worthy of being awarded either first, second, or another premium, the proper thing for him to do is to retire from the ring. If an exhibition brings forward a cow or other animal that is in every respect eligible for a premium, that animal ought to be placed where it belongs, competition or no competition.

Fred—The best capital a man can have is brains. Florence—You can't be accused of making a vulgar display of your wealth.

Because You Need The Money

It's your business and if you don't attend to it, who will? You cannot afford to keep cows for fun. That isn't business, and, furthermore, it isn't necessary. There is money in cow keeping if you go at it right, and besides there is more fun in going at it right than there is in staying wrong.



You need a Tubular Cream Separator because it will make money for you; because it saves labor; because it saves time; because it means all the difference between cow profits and cow losses.

Look into this matter; see what a Tubular will do for you and buy one because you need it.

How would you like our book "Business Dairying" and our catalog B.131 both free. Write for them.

The Sharples Separator Co.
West Chester, Pa.
Toronto, Can. Chicago, Ill.

CANNING WITHOUT COOKING.

The following is worthy of trial by every housekeeper in the land, for it simplifies one of the burdensome features of the work of the home. An Iowa correspondent of the Boston Cooking School Magazine says:

I have canned thirty cans of tomatoes that kept their shape perfectly, and were delightful for salads, molded in jelly, or wherever whole tomatoes were wanted. Select tomatoes, perfectly fresh and firm and not too ripe, of a size to go into the can without cutting. After removing the skins, fill the jars, add salt to each jar (about one teaspoonful), fill with boiling water and seal at once with covers that have been boiling in a vessel on the stove. See that all spaces are filled with water, allowing no large air bubbles to remain. Screw covers down tightly and place jars in a wash boiler or canner containing boiling water, and allow to remain until the water is cold. Tighten the cover again, if necessary, and put in a dark, cool place. The jars should all be fitted with covers and tested, to be sure they are air-tight, before the fruit is put in, and care must be taken not to get covers mixed after fitting. Fruit is canned in the same way, using boiling syrup instead of salt and water. In this way I successfully canned 200 quarts of fruit, consisting of raspberries, currants, cherries, pared plums, grapes, soft peaches, and soft pears. Strawberries, hard peaches, hard pears and apples will not keep prepared in this way. I have never had a single jar of fruit spoil, and the work of canning is reduced to a minimum. The fruit retains its shape perfectly and tastes almost fresh.

Veterinary Experience



Infallible guide to horse health. 100 page book, free. Symptoms of all diseases and treatment, by eminent veterinary compounder of

TUTTLE'S ELIXIR.

Sure cure for curb, colic, splint, recent shoe boils, most horse ailments. \$100. reward for failure where we say it will cure.

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TIME IS THE TEST

of durability in a high-speed machine like the cream separator. No other machine a farmer uses has harder use. Run twice every day, winter and summer, it must not only do thorough work, but to be permanently profitable, it must be durable.

U.S. CREAM SEPARATORS

are built for long service. A solid, low frame encloses entirely all the operating parts, protecting them from dirt and danger of injury. The parts are few, simple and easy to get at. Ball bearings at high speed points, combined with automatic oiling reduce wear as well as insure the easiest operation. Such careful and thorough construction is what enables the U. S. to better

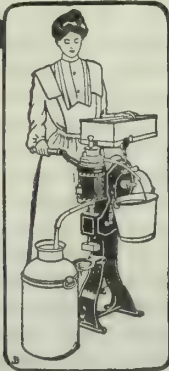
STAND THE TEST

than any other separator. You don't have to buy a new one every year or two. And remember: the U. S. does the cleanest skimming all the time. Look into this. Write today for a copy of our handsome, new separator catalogue. Ask for number 143. It is finely illustrated and tells all about the U. S. Address

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Prompt deliveries of U. S. Separators from warehouses at Auburn, Me., Buffalo, N. Y., Toledo, O., Chicago, Ill., LaCrosse, Wis., Minneapolis, Minn., Sioux City, Ia., Kansas City, Mo., Omaha, Neb., San Francisco, Cal., Portland Ore., Sherbrooke and Montreal, Que., Hamilton, Ont., Winnipeg, Man. and Calgary, Alta.

Address all letters to Bellows Falls, Vt.



Prompt Delivery Assured

California customers from San Francisco warehouse. No delays. Address all letters to Bellows Falls, Vt.

HOME CIRCLE

THE LITTLE SISTER.

When days are dreariest,
When the nights are long.
Sudden on the creaking stair
Sounds her careless song;
Sudden on the darkened sill
Falls a footstep free.
And the little sister comes
Back again to me.

Blithe and gay and jubilant,
All her words a jest,
Laughter on her merry lips,
Youth upon her breast.
Happy dreams within her eyes,
Daring days to be—
So the little sister comes
Back again to me.

And she hath the eyes I had
When the world was new
And she hath the heart I had
When the world was true.
And my very name she bears—
Ah, so close our tie!
Just the little sister now
Who one day was I.

Strange that she who knew no tears
So my tears should wake;
Strange her very happiness
My own heart should break.
One, so other than myself,
Two, yet one, are we—
Little sister of my age
Comes she back to me.

Not a wistful ghost she comes—
Better so, perchance—
But with lips too fain to sing,
Feet too fain to dance.
And I turn my eyes from her
(Eyes she must not see)—
When the little sister comes
Back again to me.
—Theodosia Garrison in Sunday Magazine.

THE RING AVAILLETH.

She knew that everybody at the hotel was sure she was engaged. She felt them observe her subtle ways of expressing the open secret of her heart. She was aware that they noticed her anxiety about the mails going out and her eagerness about the mails coming in. She would affect that tender glance at the ring when she really knew that every one was looking.

She would hurry into the dining-room a half-minute late folding a letter and crushing it into the front of her shirt waist. She would stand before the long windows in the palmroom or sit silently in one of the large rattan rockers on the porch and gaze absently across the links.

When the boys asked for a set of tennis she would look at once startled and pleased, and hesitatingly would say: "Tennis! Why, I would dearly love to, but—" And she would turn inquiringly to her aunt with an expression by which most girls would mean, "Do you think it is all right?" but by which she seemed to mean, "Do you think that he would think it is all right?" The more she declined the more persistent they became, till at length she was the center of all social activities.

"It is not because of myself. Men always are silly about engaged girls." This was her secret thought.

She enjoyed it immensely, however, and the other girls envied and gossiped.

One afternoon a young college man was presented to her. "Do you know," said he, "I've been dying to meet you—that is, ever since I heard—er—you were engaged."

"Is it such a dreadful thing to be engaged?" she exclaimed. "I know men just simply despise engaged girls."

"Oh, no, we don't—that is, some of us don't. You are all so different from other girls, you know."

They took a short walk, and ended by sitting on a bench in the arbor.

"Oh, yes, it's much cooler here," she was saying, as she toyed with the leaves and twigs. They talked and talked, and got to know each other far better than even she could have expected.

The boys said "Whew!" and asked her no more to play tennis. The girls ceased to envy, but continued, however, to whisper. The boys joined them and whispered, too.

The next morning when the crowd went over to the links he carried her sticks. She did not usually play golf in the mornings, but on this particular morning she was the first to go over. She knew he would walk with her. She thought he liked her, at least for the moment; and, knowing the fickle frame of men, she realized the critical situation.

They played a few holes, but lost their last ball, and rested by the brook.

"I'm sorry you learned I am engaged," she was saying.

"Sorry? Why you needn't be," he rejoined, frankly. "Do you know, I'm deucedly fond of engaged girls."

"Indeed! Why, I really thought you fellows were rather afraid of them."

"Afraid of them! Nonsense." His boyish nature was growing enthusiastic. "It's the other kind that I'm afraid of—not engaged girls. Why, a fellow like me could go with a girl like you all summer and—er—she would never expect—that is—"

The girl had lowered her head and was gazing intently into the brook.

"You see, my friends tell me I am susceptible," and he softened his voice to an extremely confidential tone. "That's why I'm glad you're engaged. You see, there's no chance for me to fall in love this summer."

She was not quite so sure about it, and was thinking to herself what a fine beginning it all was.

"Haden't we better try and find the ball?" she broke in, but made no effort to go. In fact, they did not go. The lazy morning slipped by, leaving them at the brook. They came in late to luncheon, and she knew what all the girls were saying.

It rained torrents during the two days following, and he taught her to play chess.

"The object is to checkmate the King," he told her.

"Yes, I see," and she wondered if it were not equally commendable to be able to checkmate a "Jack."

As soon as the sun shone they were out of doors again. They didn't play tennis as much as golf, and seemed to enjoy paddling a canoe better than either. There wasn't so much to do in the canoe and they could talk volumes. He told her of his work at college, and, boy like, built for her castles of future success. She appeared to be most interested and asked him so many questions that he began to think his plans were worth something after all. She was the only one who had ever spoken encouragingly of them.

"I shall be so anxious to learn in after years of the name you surely will have made for yourself," she said to him one evening as he bade her good night.

He looked longingly into her eyes as the elevator boy waited in a "going-up" attitude.

"By Jove," he ejaculated, "if I only had a sister like you!"

"I suppose she'd get you to quit smoking cigarettes." And she laughed out of his head—once and for always—that bothersome, sisterly idea.

Rex Flintkote ROOFING

For Fire

Rex Flintkote Roofing is the best protection against fire. It keeps outside fires from getting in, and inside fires from getting out. It is not a tarred paper, but a close pressed wool-felt, treated with our special water and fire-resisting compound. Fire-brands falling upon it smoulder and die. Fires started in buildings roofed with Rex Flintkote have consumed half the rafters, and still left the roofing intact.

For Water

Rex Flintkote keeps poultry and hay from destruction by wet; even slush may lie indefinitely upon Rex Flintkote and not a drop will penetrate.

Samples FREE with booklet on roofing. Our natural red paint produces artistic effects on Rex Flintkote. Include 4 cents in stamps for book, "How to Make Poultry Pay." J. A. & W. Bird & Co., 11 India St., Boston Pacific Coast Agents: W. F. Fuller & Co., San Francisco, Cal.; F. T. Crowe & Co., Tacoma, Wash.

That night she wrote in her diary something like this

"Every morning—3 hours.

Every afternoon—3 hours.

Every evening—2 hours.

Total 8 hours every day.

Eight hours a day for two weeks would be equivalent in point of time to a series of weekly calls spread out through a period of two years—and besides he has greater efficiency for speed than most men."

A summer is not a lifetime, but is long enough—at least she thought it would be long enough. She was to remain through the month of October; he was to leave the last of September. Time passed more rapidly and more happily than ever before. They were having the sweetest experience of their lives.

"He cares for me," she thought over and over again. "He likes me, but why doesn't he—?"

She began to realize that his "efficiency for speed" was not so great.

"My engagement attracted him, and yet my engagement holds him off," she concluded. She knew it—his every word and act proved it. He need not speak; and yet he ought to.

At length the days of field and wood were over. Their evening strolls were at an end. Even summer-end "good byes" are sad, and there is no use repeating them. All were said—that is, all "good byes" were said—but nothing more. He went to pack his grip. She retired to her room to weep, to dry her eyes and to weep some more. For a long time she lay on her bed, face down, and the pillow was tear stained.

"It's all over now," she was thinking.

Then she walked to the window and nervously tied the shade string in ever so many little bows and knots. She was looking at the two-carat stone on her engagement finger.

"My ring attracted him—and alas! my ring is driving him away." And she tied more knots in the window shade string.

"I have it!" she cried, and in a burst of enthusiasm she jerked the string and snapped the shade to the top of the window. Her tears burned dry and eyes beamed with determination and glowed with anticipated success. It took only a few minutes to pull the ring from her finger, seal an envelope and wrap up a small, dark-green box about an inch square.

Every evening at five o'clock the stage drove to town—not to return before the following morning. When she came down on the porch the horses were waiting and he was about to step up into the stage.

"Will you mail these in town for me?" she asked, as with her left hand she gave

him the letter and the package. He glanced from the package to the hand and back again to the package. It was addressed to a man in Colorado. The letter was directed to the same man.

"Good by," he said; "I'll mail them." She was expecting him to say more, when suddenly all the guests came hurrying out of the hotel. They crowded around him and bade him a most demonstrative adieu.

"Oh, pshaw!" she said, as the stage swept round the bend. "I didn't think the whole house would be here."

She ate no dinner that evening and sat alone on the porch till it was very late. The west wing was deserted save for her. She was watching down the dry, dusty road over which he had driven. At length some one came trudging around the bend. It was a man with a grip. It was he—he was coming back.

"Hello!" she called in a vain attempt to be cheerful. "Did you miss your train?"

"No, I didn't miss the train," he replied as he came up on the porch. His voice was as hoarse as his clothes were dusty. "No, I didn't miss my train, but I drove clear into town before I understood what it all meant. I registered that package and sent it special delivery, too." He was sitting close enough to whisper. "And I walked back over six miles of the roughest road I ever traveled just to ask you if I couldn't put another ring where the old one used to be."

The moon rolled back of a kindly cloud casting an impervious shadow over it all and even the omnipotent story teller couldn't see.

Late that night, sitting on the floor in her room, she held a diamond ring between her fingers and contemplated it. It was the same ring she had worn all summer, the same ring that made the people talk, the same ring that attracted him.

With an air of satisfaction she returned it to her jewel case.

"And what would dear old papa think," she was musing, "if he only knew I can never wear his present again."—Marshall Robie, in the Columbia Monthly.

BEST ON EARTH

Used Over 20 Years
Tatumville, Ky.,
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Dr. B. J. Kendall Co.
Dear Sirs:—I have been using your Spavin Cure and other remedies for over 20 years and think they are the best on the market.
Respectfully yours
S. J. Cox.

Kendall's Spavin Cure

is the remedy for Spavins, Splints, Ringbones and Curbs that endures. Two generations attest its worth. Price \$1, 50¢ for 50¢. Greatest known liniment for family use. All druggists sell it. Accept no substitute. The great book "A Treatise on the Horse," free.

DR. B. J. KENDALL CO., Enosburg Falls, Vt.

THE GARDEN.

THE CHICO PLANT INTRODUCTION GARDEN.

The National Plant Introduction Garden near Chico affords a scene of much activity, P. H. Dorsett having the garden in charge, maintains a force of men in the cultivation of growing plants and cleaning the plots of weeds. And what is to be more appreciated than the direct benefits of expenditures for labor is the magnificent promise of vast accomplishment for the development of new and improvement of old agricultural products. The impression is too often prevalent that the Plant Introduction Garden is maintained for other than the most practical purposes, and few of the people in Northern California appreciate the scope of practical work being done.

Much attention is now being given to forage crops, for the reason that in this direction there is unlimited opportunity to make the work of benefit to agricultural districts throughout the country. Over 1000 varieties of forage plants are now being grown at the garden, and their development is made a matter of record so that at the end of the season those of merit can be selected and given such further test as will show whether they are of value. These seeds have been imported from various parts of the world, and are being grown under as varied conditions as can be obtained at the local garden. Of many of the varieties, but few seeds were obtainable, consequently the number of plants of these is sometimes limited to a half-dozen or even less. The first season with these plants yields only seed that may be utilized next season in planting under conditions that would obtain where the plants are to be grown for their forage value.

Especially interesting are the plots given to the burr clovers, a few varieties of which are giving excellent promise of becoming of value. Unfortunately the season has been exceptionally favorable to the growth of weeds at a time when the clovers were not so far advanced as to crowd out the weeds.

Many varieties of the legumes are being observed with considerable interest both for the showing they are making in thriftiness and for their value as cover crops, or crops to be turned under to reinforce the soil. The lathyrus tingitanus, an imported pea, is making a conspicuous growth and at the same time the roots are showing the formation of numerous nitrogen gathering tubercles.

The growth of these legumes is giving convincing proof that on soil such as that at the garden, subsoiling is essential to the best results. On the best drained ground the growth has been exceedingly thrifty, and where the water has not immediately drained away from the plants the plants are stunted.

Certain of the new legumes are being well patronized by the bees from Mr. Rankin's apiary, they even seeking the legume blossoms in preference to a plant which was specially recommended as a source of bee food.

From the sorghums, of which there are approximately 500 varieties now growing on the farm, are expected some which will prove of value for cultivation on unirrigated soils. Many of them are recommended for the high and dry soils, and should they meet expectations, it is not unlikely that they will be tried on some of the high ground in this locality.

Comparative tests are being made with about thirty varieties of new corn. These are being planted in various localities on the farm, with a view to testing their adaptability to the different qualities of soil.

Of one variety of white corn grown last year on the farm and which made an exceedingly satisfactory showing in quan-

tity and quality, a test for selection is to be made this year. Fifty ears have been selected for planting this year, and will be planted one ear to each row. When the harvest comes, the yield of each row will be kept separate, and selection made of the best, thus securing as nearly as possible the best of the variety.

Twelve acres of the farm have been set apart for the department of viticulture. From 200 to 300 varieties are to be tested, the tests now being principally as to rooting qualities. There is to be a permanent vineyard established with two vines of each variety of grapes giving promise of value. Instead of numbering the stakes at the vines, the names of the varieties will be printed on the stakes, thus enabling viticulturists to visit the garden and make such observations of the vineyard as they desire without the presence of someone to inform them of the varieties. About a half-acre has been planted for permanence.

HINTS TO HOUSEKEEPERS.

In making fruit pie be sure to have a small opening in the center of the crust, and keep it clear with an earthenware or paper funnel.

In cases of inflammation of the stomach and bowels, try cloths wrung out of hot water in which a tablespoonful of turpentine has been put.

As canvas shoes can now be had in different colors to match the dress, preparation can be bought, pink, blue, red, grey, and black, as well as white, for cleaning and retinting when the shoes become soiled or faded.

The little red blood veins which sometimes show in the face are often caused by exposure of the skin to strong cold winds. Applications of warm wet cloths until the skin feels soft, and a gentle rubbing with good cold cream, into which a little distilled witch hazel has been beaten, will remedy the trouble.

If alum is added to the paste used in covering boxes with paper or muslin, moth and mice will avoid them.

If hooks for bathroom, kitchen and pantry are dipped in enamel paint there will be no trouble from iron rust.

If candles in warm weather are kept in the refrigerator for two or three days they will not burn away so quickly when they come to be used.

Cold asparagus placed on crisp lettuce leaves and covered with mayonnaise or French dressing is now a popular and refreshing salad.

When the collar of handsome linen or batiste blouses becomes slightly soiled, it may be cleaned with a little naphtha or benzine in the same manner as those of silk or satin. With this process the collar does not need pressing. Such waists never look as handsome after they are laundered.

To freshen stale rolls, wrap them in a wet napkin and place in the oven until the napkin is dry. Another way is to wrap them in a dry napkin and place in a steamer, over boiling water. Do not let the rolls get too damp. Cake may be freshened in either of these ways.

When tired physically stop work, if only for a few minutes, and throw yourself flat on your back on a couch, bed, or floor, if nothing else is handy, and rest so for five or ten minutes, every muscle relaxed, the eyes lazily closed, and the mind resting dreamily with the body. Such a rest, if taken before you are completely exhausted by your work, will send you back with fresh vigor and renewed courage, as well as a rested and refreshed body and brain.

OUR TRADE IN SOUTH AMERICA.

There is one point deserving of more serious attention than seems to have been given it as yet—the possibility of improved service and increased trade be-

BEEF SCRAPS

GUARANTEED: 65 per Cent PROTEIN.

RAW BONE

GUARANTEED: 25 Per Cent Protein and 45 Per Cent Bone Phosphate

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POULTRY FOODS

Write us for price list and samples; they are free.

We want you to see the kind of Poultry Foods that are manufactured from CLEAN, RAW MATERIAL. This means HEALTHY ANIMAL FOODS for your poultry.

WESTERN MEAT COMPANY

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San Mateo County

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AT SACRAMENTO

Aug. 25th to Sept. 1st (Inclusive)

This time a State Fair that comprehends all the State—the North, South, East, and West all to be represented.

THE BIGGEST AND BEST FOR YEARS

Magnificent display of industrial products; unequaled show of live stock. Poultry unexcelled, including herd of live ostriches.

SPLENDID PROGRAM OF RACES

All days big days, but the first day the biggest.

Opens with chorus of 500 voices with brass band and anvil accompaniment.

Special excursion rates to visitors from all parts of California.

CATTLE ENTRIES CLOSE AUGUST 15TH

Bring the wife and babies and renew the old times at the Fair we had in the days of our daddies.

J. A. FILCHER, Secretary

B. F. RUSH, President

tween the Pacific Coast of the United States and the west coast of South America. Among the imports of these west-coast countries are many goods which California and her neighbors might provide which are now purchased in New York or in Europe. Lumber, wood manufactures, canned and dried fruits and vegetables, breadstuffs, and cereal preparations, many forms of mining and milling machinery, etc., could be made the basis of a larger trade if shipping facilities were improved. The recent rapid development of California's manufacturing industries under the stimulus of cheap fuel oil is a new factor which lends new strength to the long-enter-

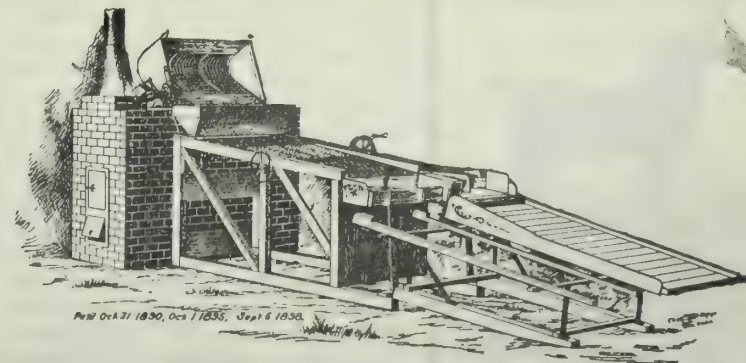
tained desire to build up an export trade from that State to the Pacific States of South America.

Teacher Hit Hard.—“Now, boys,” said the teacher, “how many months have twenty-eight days?” “All of ‘em,” promptly replied the youngster at the foot of the class.

Teacher—Yes, Bobby, C stands for cat; now what does D stand for? Bobby—What pa says to the cat.

Miss Beautigirl—Oh, mama objects to kissing. Jack Swift—Well, I'm not kissing your mama, am I?

SEE THIS!



The Anderson Processor.

It's a combination, dipper, perforator, grader and spreader. Can be operated by hand.

Cheap because of simplicity—every part has a use, and is made doubly strong for that use.

A fruit gets a big price. The increased price added to time and labor saved make a fatter purse. Drop a postal to

ANDERSON-BARNGROVER MFG. CO. San Jose, Cal.

They will gladly explain everything in detail

SICILY ALMOND CROP.

Consul Benjamin F. Chase, of Catania, writes that before the last of March the prospects were bright for a very good almond crop in Sicily, but the snowfall of March 31 and April 2 and the unfavorable winds for several days during April seem to have caused more damage than was at first anticipated. He continues:

Complaints are coming from inland that much of the young fruit is falling from the trees, apparently having been touched by the frost. On the whole, the crop of the provinces of Caltanissetta, Catania, and Syracuse can be estimated so far at about two-thirds of an average crop, or about 50,000 to 55,000 bags of 100 kilos (220.4 lb.) each of shelled almonds, as against about 65,000 bags of like weight for last year. Owing to the heavy damage to the almond crop in France (Provence) caused by frost in March, the prices have been advanced \$1.20 to \$2 per bag over old crop. The shipments from this district during 1905 were 4623 metric tons, as against 3008 tons in 1904 and 5397 tons in 1903. During the first three months of 1906 there were exported 1096 tons. The shipment of almonds, chiefly sweet-shelled, to America during 1905 was 615 tons, and for the first three months of 1906, 254 tons.

AMERICAN FRUITS AND VEGETABLES FOR BRAZIL.

The imports of fruits and vegetables into Brazil, writes the American consul, are not great, but they are considerable, and it is probable that they will soon greatly increase, for, if the exchange between Brazilian money and the money of gold-using countries continues long at the present rate it will be cheaper for consumers of fruits and vegetables to import them and pay high import duties, instead of buying them generally in the Brazilian markets at present prices. The volume of trade at present is considerably over half a million dollars a year. The imports of preserved fruits and vegetables in 1903 were 2,116,000 lb., valued at \$260,988, and in 1904, 2,104,000 lb., valued at \$271,712. The imports of dried fruits and vegetables in 1903 were 1,978,000 lb., valued at \$216,267, and in 1904, 2,238,000 lb., valued at \$253,614. The increase between these two years was considerable, and it is estimated that the imports of the two classes of goods last year ran to over \$600,000.

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Has Imitators But No Competitors.

A Safe, Speedy and Positive Cure for Curb, Splint, Sweeney, Capped Hock, Strained Tendons, Founder, Wind Puffs, and all lameness from Spavin, Ringbone and other bony tumors. Cures all skin diseases or Parasites, Thrush, Diphtheria. Removes all Bunches from Horses or Cattle.

As a Human Remedy for Rheumatism, Sprains, Sore Throat, etc., it is invaluable. Twelve bottles of Caustic Balsam sold for Warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars, testimonials, etc. Address

The Lawrence-Williams Co., Cleveland, O.

At this time of the year the most dreaded disease affecting domestic animals, namely, Anthrax or Charbon, is most prevalent. The Pasteur Vaccine Co., Ltd. of Paris and London with Chicago and New York offices in this country furnish the original and genuine Pasteur Vaccine which is still being produced for them at the Institute Pasteur, Paris, by Prof. Chamberland. It is important to vaccinate early and to be sure to have good and reliable vaccine. Write their Chicago office for literature and prices.

AGRICULTURAL REVIEW

Alameda.

SHEARING HAS COMMENCED.—Livermore Herald: Fall shearing has already commenced in the sheep camps and as the local flocks are scattered through the stubble fields of Contra Costa, San Joaquin and Stanislaus counties the local shearers have to go far afield.

Butte.

WHAT FIVE ACRES OF LAND DID.—Chico Enterprise, August 1: Frank M. Newbert some time ago bought 5 1/4 acres of land about two miles from Sacramento with the intention of making himself a home and he has done so and not only made a desirable home but one that is a producer. He erected a cottage in one corner and in the rear some chicken houses and purchased some chickens, thinking of the chicken as he did of everything else, that the best was none too good. Now he has about 800 white leg-horns and says that he will shortly have 1,200 and this is the number he intends to keep all the time. Mr. Newbert says the best authorities claim that from the sale of eggs and chickens at the market price for consumption only that a hen will produce clear above the expense of feeding her \$1 per year, but when eggs are sold for hatching and fine fowls for breeding that the profit is greatly increased. Mr. Newbert planted one and one-half acres to phenomenal berries and the past season he marketed 1,700 crates of berries at an average of 80c per crate. The cost of marketing them, including picking, crates and delivery was 20c per crate, leaving him the handsome profit of \$820 from this acre and one-half of ground, and the chickens have this ground to run on almost all the time, the chickens catching the bugs and worms and fertilizing the ground while the berries are growing. He also has some ground set to alfalfa as a foraging place for the chickens and where they can get green food, which is of importance. A good well furnishes the water, which is pumped with a windmill excepting when heavy irrigation is needed and then he puts a gasoline engine to work which furnishes enough water to almost flood the place and at the nominal rate of about 50c per day.

One Jap at the wages of \$30 per month does most of the work excepting the picking of the berries; then help is required, which is paid for by the box.

Kings.

PREMIUM MARE MULE.—Hanford Sentinel, August 2: A mare mule about a week old is decorating a stall at the Court stables. The mother of this premium specimen of animal flesh belongs to Patrick Tallent, of the Silver Bow ranch, and the sire, Henry Miller, is the property of Jas. W. McCord. The best judges of mules in this country declare that this young mule is a premium taker. The colt measured 43 in. high at birth. Mules will be good property when you can buy an automobile for half what one costs now, and the stockraiser who breeds in that line will be laying up treasures in the bank.

Nevada.

GROWTH OF INSURANCE AMONG FARMERS.—Grass Valley Union, July

26: Local insurance men notice a remarkable change in the regard which farmers have for fire protection compared with the past. This year there has been a large growth in this line of insurance business, as the farmer rightly reasons that he should protect himself against loss as a business matter just as much as his city neighbor. What has brought about this changed condition is the vivid memory of last year's conflagration which swept the complete western end of the county, leaving only blackened, smoking waste behind. Few of the farmers in the path of the fire carried insurance on buildings, hay or farm implements, with the result that their loss was complete. Since then they have done a lot of hard thinking, with the result that they have come to the conclusion that the cost of insurance is a mighty good investment. It was only yesterday that one of the farmers who was burned out last year came into town and took out a policy for \$1,000 on his hay crop. This is only one instance of many which have developed, but it serves to show the trend of the country people's thoughts. They keep careful tab on the reported "six-bit" companies, too, and when they make up their minds to insure, they make sure that the agent represents a concern that is classed in the dollar division.

Riverside.

TEXAS FEVER.—Riverside Press, August 2: A virulent epidemic of Texas fever has been located on the Gallwas ranch, five miles beyond West Riverside, and Dr. A. L. Ramage has been engaged to take charge of the case. Tuesday Dr. Ramage made his first visit, finding six animals already dead and a dozen others ill, out of a herd of fifty. The fever of the sick cattle was very high, ranging up to 106 1/2°. Dr. Ramage immediately took steps to burn the dead cattle, separated the sick animals from the others for treatment, and ordered the whole place under strict quarantine. Every effort will be expended to prevent the spread of the disease to other ranches. A visit by the doctor yesterday showed two others of the sick animals very nearly gone. All that die will be burned. The disease is carried by a microscopic germ and transmitted through cattle ticks from one to another, and is feared probably more than any other disease known to cattle on this coast. The disease has been in evidence on the Gallwas ranch since Dr. Kendall brought in some cattle about four years ago. Two years ago Mr. Decker lost twenty head, but the present case seems to be even more virulent than any of the preceding attacks. While several owners of cattle who have their stock now in the pasture and apparently well, wish to take them away, Dr. Ramage has refused to allow a single one to be moved, fearing the spread of the disease to other ranches. He has positively forbidden the removal of any of the herd until the disease is completely stamped out.

San Benito.

WILL BUY FLINT RANCH.—San

Juan Echo: Negotiations for the purchase of 1,100 acres of the Flint ranch are about completed, and the sale is expected to be effected within a few days. The land to be sold is the 3 1/2-mile strip along the county road, one-half of a mile wide. The dairy farm and grazing land will be farmed next year and Richard Flint will build a new dairy on the Flint land on the San Benito river, where a large acreage will be sown to alfalfa and the big dairy can be run to greater advantage. It is learned that the Braslan Seed Co. has leased the 1,100 acres of the Flint ranch for a year, and will buy if the land proves suitable for seed growing. Next year all of the level grazing land surrounding the Flint dairy, will be farmed, and if the season is favorable it will be interesting to note the growth of the crop. This land is about as good as any in the valley and has not been farmed in fifty years, during which time large bands of cattle have continually grazed over it, so a wonderful crop should be raised.

San Bernardino.

DAIRY PROFITS.—Chino Champion, August 3: Mark Rose has 80 cows, from which he received \$4,000 in the first half of the year. This includes \$700 for calves, the remainder for milk. They are, of course, all good; but he does not confine his herd to any particular strain, looking only to results for his choice of animals. Mr. Rose is an old settler of the valley, and his success shows what can be done in it.

San Joaquin.

MONEY IN TOMATOES.—Lodi Sentinel, July 31: Twelve acres of a fine

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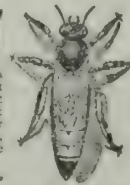
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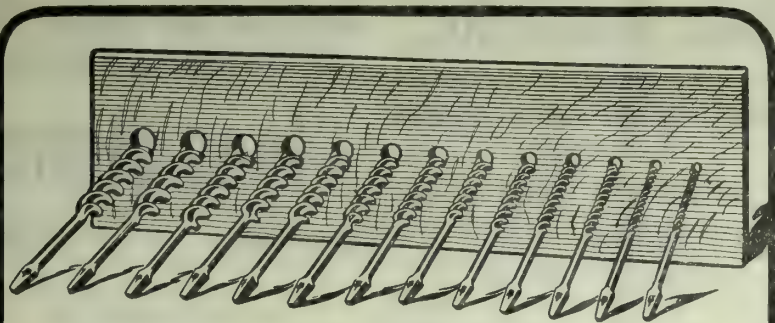
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St. Louis and New York,
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Remains Long After the
Price is Forgotten."
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quality and big yield of tomatoes are under cultivation on the Woodruff tract west of Lodi. A. Covell owns the property and will harvest the crop that the recent warm weather is ripening. The present wholesale price of tomatoes is 1½¢ per lb. and it is probable that Mr. Covell will dispose of a considerable part of his crop at \$20 and \$15 per ton. It is claimed that tomatoes in this soil are a paying product at even \$7 per ton. Mr. Covell will reap a snug sum for his summer's labor. Mr. Covell has not given the growing vines any irrigation. In fact he says an irrigated tomato is far inferior to the unirrigated for canning purposes. The canneries this year are paying a better price for tomatoes than for several seasons.

Siskiyou.
COLONISTS COMING.—Chico Enterprise: Two hundred and fifty families of Dunkards will arrive in eastern Siskiyou county from the East about September 15, and commence to build homes on a 31,000 acre tract the sect recently acquired for colonization purposes. The land lies along the line of the Weed railroad now known as the California & Northeastern, which is building towards Klamath falls. Leaders of the colony say that 500 or more families will arrive in the spring.

Stanislaus.
ALFALFA GROWTH ON DRILLED LAND.—Stanislaus News, July 27: Geo. H. Flanders, who arrived in Modesto only a little more than a year ago, who

has been experimenting with fruit plantings and berries on his well cultivated little tract of six acres on the Dry Creek road, has just cut some of his alfalfa that he grew on a peculiar plan. Last spring he drilled in a small field of alfalfa, putting the seed in rows so that this spring while the young shoots were growing, he has been able to cultivate between the rows. The alfalfa under this treatment has made an astonishing growth, it being more than 20 inches high, and green and succulent and heavy at the first cutting with but one irrigation. The hay was of a superior quality, drying green and tender, and the yield being bountiful for a first cutting. It appears that a new means of alfalfa culture might be evolved from Mr. Flander's experiment.

Sutter.

PLUMS TO ENGLAND FROM SUTTER.—Sutter Independent, August 2: The Englishmen will be eating Sutter county fruit in a few days. The Earl Fruit Co. has commenced to ship yellow egg and silver prune variety of plums across the water to England where big prices are obtained. Up to this date over 50 carloads of green fruit have been shipped from this place by this company.

Yuba.

HOP PICKING COMMENCED.—Wheatland Four Corners: Campers are arriving daily and the town has assumed a bustling appearance. Wheatland has become famous on account of this great industry. There are 1,500 acres of the best land California owns lying along the Bear river now being devoted to hop growing. Something of the true significance of this industry may be realized from the fact that one ranch alone last season expended over \$75,000 for the labor to care for and gather the hops, \$40,000 of this amount being paid to hop pickers. When it is stated that this ranch embraces but about one-third the entire acreage in hops the industry increases in importance for fully \$200,000 is annually paid out to employees in wages caring for a total acreage of but 1,500 acres.

I put MACBETH on my lamp-chimneys as I am satisfied to be known as the maker of the only good lamp-chimney.

There are other lamp-chimneys, but their makers fail to own them. It's no wonder.

My Index is useful to everyone who owns a lamp, and it's free.

Address, MACBETH, Pittsburgh.

Ventura.

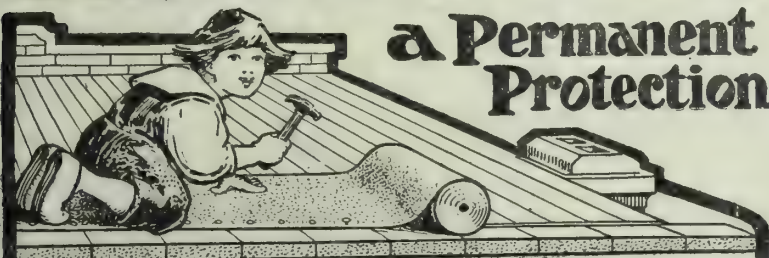
TO BUILD CANNERY.—Oxnard Courier, August 3: Tomatoes sold on the street yesterday at 4¢ per lb. in a small way, and 3¢ in boxes of 60 lb. each. A grower who had a fine assortment, well filled and free from spots, says he will get 15 to 18 tons to the acre, and that the tomato requires no more work than any other vegetable. He figures that he will put in 10 acres next year and start a small cannery, claiming that when canned they will return \$400 per acre.

RECORD PITTING.—Santa Paula Chronicle: Miss Julia Dempsey pitted 35 boxes of apricots in 9 hours and 40 minutes at T. E. Good's, last Friday. This is said to be the world's record for apricot pitting.

Yolo.

GRASSHOPPER PEST.—Woodland Mail: Grasshoppers have become so numerous south of town that they are a very serious menace to young trees, berries, and tender plants. Walnut trees are being stripped of the green foliage by these destructive insects, the alfalfa patches where they forage are becoming bunches of stalks. Some of the ranchers have determined to get the grasshopper machines in working order and make a decided fight against them. Every load of loose hay brought in from the fields has myriads of the pesky hoppers on it, and they are then scattered throughout the city.

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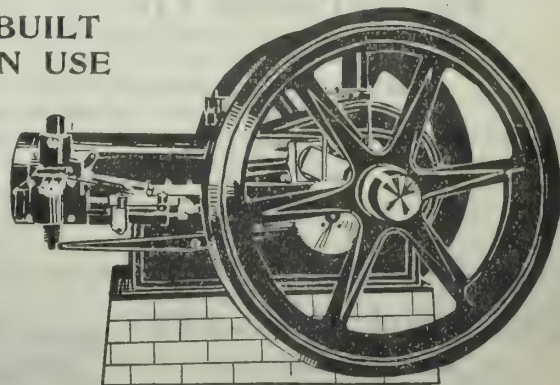
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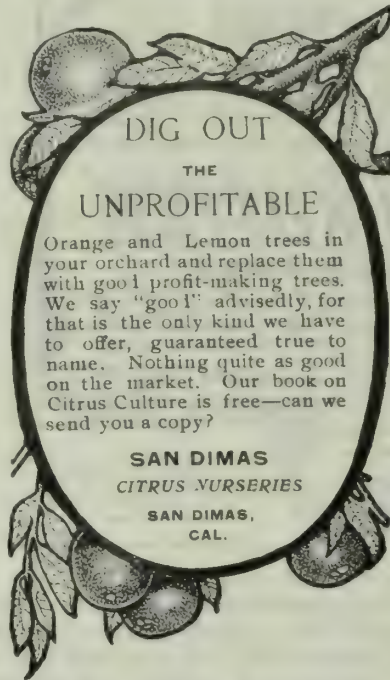
April, May and June best time to plant for heavy crop next winter. \$1.50 per dozen, \$7.50 per 100, \$50 per 1000.

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PLUMS FOR MARKET.—Plums are grown in the east and south, but nowhere do they attain the size, the shipping quality, nor the degree of perfection of the California grown fruit. California Plums have little competition on the eastern market. They are rapidly growing in favor and will continue to be a profitable crop.

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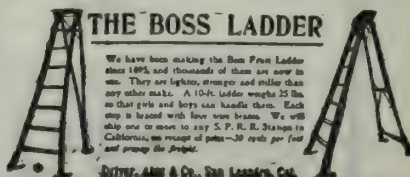
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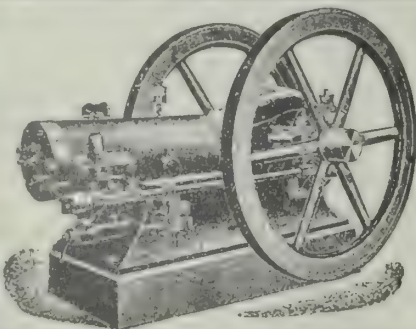
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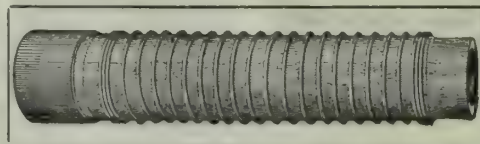
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Vol. LXXII. No. 7.

SAN FRANCISCO, SATURDAY, AUGUST 18, 1906.

THIRTY-SIXTH YEAR

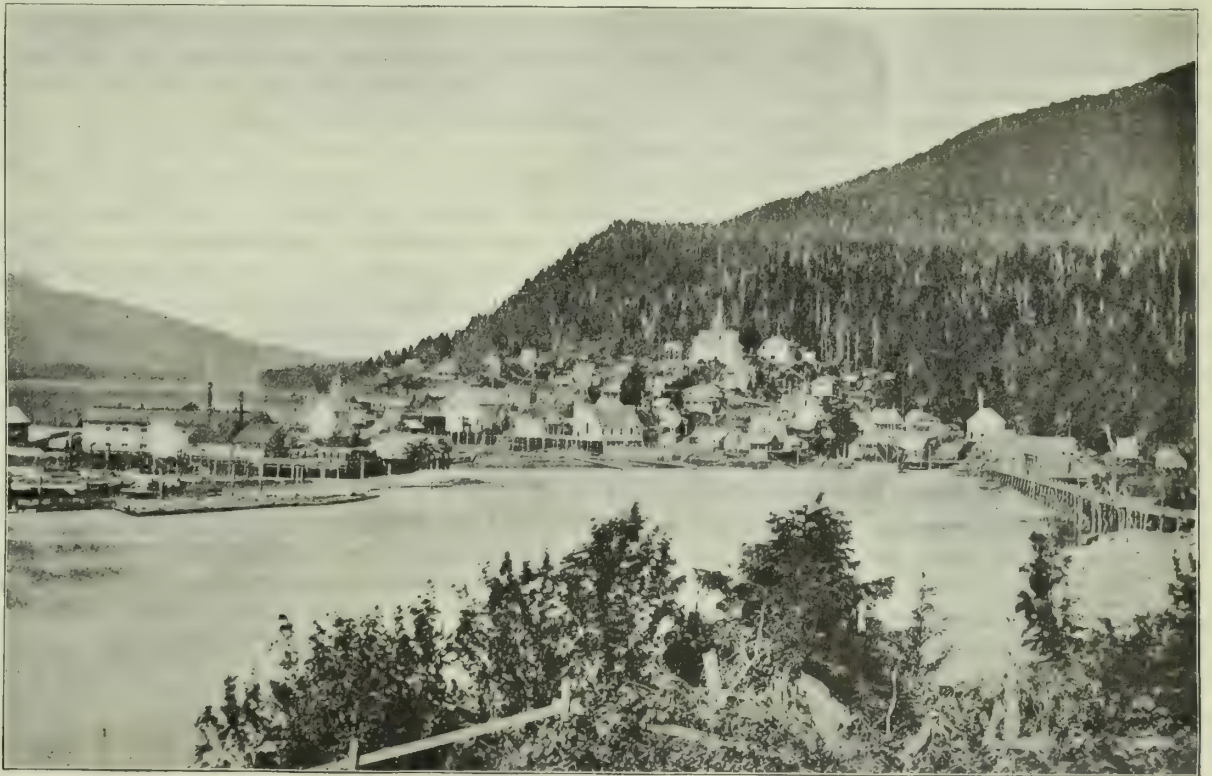
IN SOUTHERN ALASKA.

From time to time we have had pictures and descriptions of Alaskan scenery which have favored the impression that the name Alaska might be a synonym for something near polar conditions. The fact is, however, that Alaska in its far southern stretches is not a far-away neighbor of ours, counting the whole length of the Pacific Coast line. This truth will become more fully realized by contemplation of the pictures and text which appear upon this page.

The country we allude to is rich in names, for we have in view the city of Ketchikan, on Revillagigedo island, in extreme southern Alaska. It is the first port of entry reached by the Alaska steamers and is the distributing point for Prince of Wales, Gravina, Annette, and other adjoining islands.

The climate is warm and excessively moist, rain falling during the greater part of the year. Snow seldom lies long at the sea-level, but at an altitude of more than 2,000 feet there is usually a heavy covering during six months. The slopes of the ridges are steep and rugged, but well covered with coniferous trees up to about 2,000 feet. The summits are often quite bare of vegetation or soil; this denudation probably being the result of the scouring of glaciers that appear to have covered these islands at one time. Rocks near the shore, which have been protected from weathering by gravel and sand, show glacial grooving and striations plainly and the lake-beds of Prince of Wales island appear likewise to be ravines dammed up by glacial detritus.

The bottom of the numerous inlets of the sea and interior sounds is a marvel of marine life, star-fish of



View of Ketchikan, on Revillagigedo Island, Alaska.

various colors, sea anemones, and even corals are to be noted. These deep, narrow inlets or fiords are an important feature of the region, permitting as they do, steamers of 20-feet draught to reach nearly all the camps on the islands. Water transportation allows of cheap freight and encourages the mining of low-grade ores, such as occur in most of the mines.

It is an interesting fact that salubrious as the climate of the region now is, there was in geologic times something rivaling the climate of California.

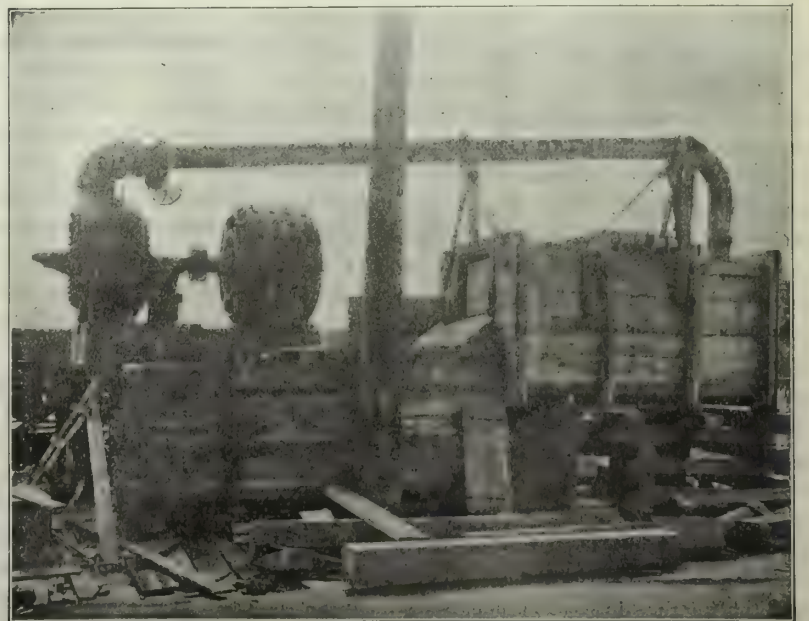
There is abundant evidence that during late Tertiary time a mild climate obtained throughout the western temperate zone of North America. In late Tertiary deposits we find remains of palms, and of animals the nearest relatives of which now live in warm climates. This warm period was succeeded by the glacial epoch, when vast masses of ice from the continental region of British America moved southward, covering the islands at least as far south as Vancouver island and Puget Sound. The loose and disintegrated surface of the late Tertiary may be presumed to have been scoured off by this moving ice-sheet, removing the upper portions and preparing the interesting conditions of rock and soil which are characteristic of the country today.



Marine View on Revillagigedo Island, Alaska.

TESTING PUMPS WHICH MUST MAKE GOOD.

Interested in large pumping plants as California irrigators and drainage men are, some account of the way in which an eastern firm of pump manufacturers and outfitters made sure that their product would fill their contract will be found entertaining. Not long ago the Buffalo Steam Pump Co., of Buffalo, N. Y., entered into contract with the McBryde Sugar Co. of the Hawaiian Islands to furnish them three pumps and electric motors which should meet specific requirements in capacity at a test made by the builders at the factory. The accompanying illustrations show the arrangement provided for making the test. For the sake of convenience in securing power, the work was done at a point adjacent to one of the transformer stations of the Cataract Power & Conduit Co., where the large supply of power necessary could be readily obtained whenever desired. The pump and motor will be seen mounted on timber blocking, to bring it on a level with the platform of a flat car. The weir tank shown at the right hand of the picture had a section 6 by 6 ft. and was 12 ft. long, with baffle plates to regulate the flow of water. The pump discharge runs to the end of the weir tank. From the weir tank the measured flow of water fell into the suction tank, with similar baffle plates to take the air out of the water. A hose connection from a hydrant supplied the deficiency due to leakage from the suction tank. Calibrated pressure gauges were placed on each stage and a vacuum gauge on the suction, the total head being recorded by the vacuum and high pressure gauge, plus the difference in level between them.



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THE WEEK

Higher temperature and cloud-free skies have prevailed not only in the interior but along the coast. Conditions have, therefore, favored the ripening and curing of the mid-season fruits and the due progress of the later varieties, as well as the harvesting of field crops in the later districts of the State. The rural districts have been exceedingly busy, subject, however, to the very serious embarrassment of a short labor supply and a blockade of freight by rail. We have been given all sorts of estimates of the thousands of laden freight cars which are sidetracked all along the line awaiting for a chance to discharge their contents at the terminals. There is surely a vast multitude of them and this is likely to beget a car famine when the farmers need them most. The old claim that the farmer is caught in every closing door thus receives continual demonstration. We must discharge our constitutional duty to advise our readers to look ahead and get as little of the squeeze as possible by preparing themselves to protect produce which cannot move promptly, but we are aware that such exhortation is a little cruel in view of the outrageous lumber prices and excessive mechanics' labor rates which prevail. Still one does not gain anything by trying to forget a bad situation. We have to croak a warning although we confess blindness to a general way out of the difficulty. Possibly, however, by looking hard, each can get a little light for himself.

Due effort is being made to increase the agricultural labor supply in California by inductions from regions east of the Rocky Mountains, but the difficulty seems to lie in the fact that there is a shortage of agricultural labor in all parts of the country. Agriculture in all parts of the United States is very active and prosperous and vast crops are to be handled. As we have previously noted, all other undertakings are drawing away farm labor so that even the normal supply is not available. It is fortunate that in much of our fruit women and children of legal age for employment are to a good extent available and eager for the work, for which they are well paid. The fruit interest is certainly doing much not only for the comfort of the people, but for the promotion of general thrift and industry by affording such desirable employment. There is, however, the heavy work of the fruit harvest, the picking and carrying, hauling and unloading, which require a good supply of men. The grape crop promises large and will require much male help. It is telegraphed from New York that Mr. C. B. Brown is there as an Eastern representative of the California Promotion Committee to secure labor of all sorts. Mr. Brown quotes Andrew Sbarboro, president of the Asti Swiss Colony, that there will be employment for 10,000 men in the vineyards of California during the months of September and October, when the grapes are garnered. Mr. Brown visited the labor information office for Italians in New York and explained the opportunity. Mr. Brown advises California grape growers that they combine and furnish transportation to the Italians in New York who are willing to come to the Coast. If the grape people do this they will also help in the general situation, for though many more men will be regularly needed to keep the great increased acreage of grapes in good condition, there will be some supply available for other purposes away from the vintage season.

The reforms in taxation which have been forcibly

urged for some time in agricultural circles are approaching their test by public declaration and it is desirable that discussion should proceed toward general enlightenment in advance of that even. The Tax Commission has made a preliminary report. The Chronicle recently said: "The criticisms of the Commission on our present methods will be accepted as just. The evils of those methods caused the creation of the Commission. The farmers do pay an undue share of the taxes. Taxation of personal property, and especially of credits, is a farce; nor has any State or country ever succeeded in making anything else of it." This is a frank declaration of the main point the farmers have contended for. If the State makes the revenue from the poll tax, inheritance tax, corporation tax, insurance premium tax, and a few minor sources, and frees the land from State taxation, leaving that source of revenue to counties and municipalities, the farmers will get a fairer show than they have ever had since California's antiquated system began.

We are glad to see indications that those who believe that the State Fair should be a grand agency for agricultural advancement and education are taking hold well for a demonstration of the fact that such an exposition wins popular support and favor. We have reports from widely different parts of the State of the preparation of county exhibits of produce and, as we understand, much of the space on the main floor of the pavilion will be given to these county displays. These will constitute a great horticultural exhibit as well as a broad showing of field crops. The Agricultural Department of the University will show several features of its work, and so will the California Polytechnic School at San Luis Obispo. The Fair this year will cover but a single week, from August 25 to September 1, and it should be full of entertainment and instruction from start to finish.

The excitement of the purchasing world over the claim of abominations in American meat packing establishments results in many declarations which are quite contradictory and give opportunity for the new manifestations of national differences. For instance, it is telegraphed from New York that the special agent sent over by the Norwegian government to investigate the matter, after visiting the establishments in Chicago and Kansas City, reported: "The big plants which I inspected were most cleanly and satisfactory in their manner of operation." He also said that if his home government acted upon his recommendations there would be much more canned meat and barreled beef bought in this country than there has been heretofore. This is quite jolly. It is rather more pleasant, in fact, than the reply of the British government in the House of Commons the other day, when Secretary of the Admiralty Robertson said that the men in the navy for the present would be allowed the opportunity of drawing Australian or Argentine corned beef in place of American meat. This was perhaps a comforting assurance to the excited questions. Probably, however, by the time the British tars have eaten up the American meats which the Admiralty has in stock, amounting to over a million and a half pounds, purchased in 1903, the British public will favor our meats as emphatically as the Norwegian does after his recent examination. It will work out right in the long run. It was evidently time our packers were checked up. The result will be a better product for some time to come.

Promotion of home study is one of the phases of University Extension work in agriculture and a subject which the University of California has just prepared for home study is one which will attract much attention. It is entitled "Reading Courses in Irrigation" and the descriptive circular (which can be had from the University at Berkeley) was prepared by Prof. Elwood Mead, the eminent authority on irrigation matters of the University. Literature will be sent to those who enter the course. After reading the students are expected to apply in writing to the University men for

any supplemental information they may desire. Professor Mead recommends that reading circles be formed by the farmers. When this has been done an entire reference library will be sent to the circle. Visits will be made to such circles by a member of the irrigation staff. The course of reading will include instruction in irrigation engineering, irrigation institutions and irrigation practice. Under irrigation institutions are included the business and financial methods under which canals are built and the rights to water acquired. Irrigation practice includes descriptions of the method of preparing land for irrigation, the cost of preparation and results of measurements to determine the amount of water used. No fees or other charges are to be paid by those who take this reading course in irrigation.

The growth of hybrids of the California black and the English walnuts is naturally attracting much attention owing to the fame which Mr. Burbank's hybrids have attained. A subscriber at Palo Alto sends us a print of a photograph which he secured of a tree grown by Mr. George Payne near Santa Clara, which we understand was taken in its fourth year and shows a height of about 15 ft. and a spread somewhat greater. It is a very handsome and symmetrical tree. The claims such hybrids make for attention seem to lie in the line of rapid growing and beautiful trees for shade and ornament, for timber and possibly for stocks for the English walnut.

A meeting which should add to the interest at the State Fair and at the same time be itself made more interesting by those who will be present at the Fair is the annual meeting of the California Livestock Breeders' Association which will be held in Sacramento Tuesday, August 28th. The open meeting will be at the State Capitol at 8:00 p. m. A good program is being prepared and every effort will be made to make the evening session one of great interest and value to the livestock men. All interested will be welcome.

QUERIES AND REPLIES.

KILLING TAR WEEDS.

To the Editor: We have a cemetery that is growing up in tar weed. Can you give us an antidote or suggest a means of extermination?—READER, Placer county.

We know of no treatment for tar weed except persistent cutting before the plant has an opportunity to go to seed. Of course, upon land susceptible of cultivation the use of the cultivator to kill young plants early in their growth naturally suggests itself.

SUITABILITY OF SOIL FOR ORANGES.

To the Editor: Will soil analysis show constituents necessary for navel oranges, and those for Valencia oranges? Does each require different soil?—ENQUIRER, San Bernardino county.

There is no essential difference in the soil requirements for the Navel orange and for the Valencia orange, nor does analysis of the soil indicate particular fitness for one or the other. As a matter of fact, both these varieties are propagated upon the same seedling root, whether it be orange seedling, pomelo seedling, etc., and a soil which is satisfactory for one will carry the other. Analyses of soils are chiefly for the purpose of ascertaining whether there is any marked mechanical defect or deficiency of plant food, or any ingredient which is hostile to the satisfactory growth of a fruit tree, and if so analysis will show what it is and in some cases point to a remedy. If, however, you have to deal with land which is known to be productive from an agricultural point of view, yielding good crops of whatever may have been placed upon it hitherto, you may proceed with orange planting without analysis, providing the soil is sufficiently deep and is naturally drained sufficiently to prevent saturation and root injury by standing water. This is the test so far as the soil is concerned. Of course, in orange planting you must also pay attention to the situation with reference to unfavorable temperatures, exposures, etc.

RED-HUMPED CATERPILLAR.

To the Editor: Please identify the worms sent herewith. They work on the leaves of the plum and prune trees, but are not numerous enough to be very destructive.—READER, Vacaville.

The worm is the "red-humped" caterpillar (*Oedemia concuma*), which has long been known in your region of the State but, as you say, seldom occurs in sufficient numbers to do much harm. It can be killed easily with an arsenical spray such as is used for the codlin moth, if it ever becomes numerous enough to warrant treatment.

CULTURES ON PLAINS' LOAM.

To the Editor: What would it cost to get an analysis of soil to determine the value of it for alfalfa, grapes or potatoes. My land is 3½ miles south of Stockton, and is a sandy sediment soil. It has been in grain so long that it is not very good, and I want to put it into grapes and alfalfa and some potatoes. It has not been plowed over 4½ in. deep and I want to plow it about 8 in. deep, but some of them here say it will not produce a good crop the first year after plowing it deep, and that it is not the proper soil for grapes.—FARMER, Stockton.

It is not necessary to make an analysis of the soil to determine what you wish to know. If the land made a fair growth of grain in the past in spite of the slack cultivation which has been given, it may be expected to produce alfalfa well, if wisely irrigated. Deep plowing of such soil always results in a poorer grain crop the first year, because the soil is rendered too loose and evaporation of moisture is increased, but if the soil is irrigated after deep plowing, or if it is given two years' rainfall to restore the soil to a fairly firm condition, the product is better for the deep plowing. Such land ought always to make a good return, after deep plowing and irrigation, for potatoes, providing it carries moisture enough, but not too much. As to its suitability for grapes it is generally wise to take the judgment of experienced people in the vicinity, if they are acquainted with grape growing.

BROWN SPOTS IN LAWNS.

To the Editor: Can you advise me in regard to the culture of Irish rye for a lawn? One planted by me in late March or early April grew rapidly and was really beautiful. In the last few weeks brown patches appear and the grass dies. Now can you tell me what care it needs to prevent all the lawn going? What care should a lawn of the Irish rye receive? Mine has never been neglected and has had an abundance of water.—INTERESTED SUBSCRIBER, Clements.

We are not sure what you mean by Irish rye, unless it be English or perennial rye or ray grass, which is widely distributed and has many names. We are not able to tell what causes all the brown spots in lawns; we have seen instances we could not explain, and others which were plainly due to different causes. Whatever kills grass makes such a spot and we have found it caused sometimes by white grubs, sometimes by the voidings of dogs, sometimes to excess of lime from the presence of a mortar box during building, where subsequently a lawn was made, sometimes to rise of alkali in spots where the soil contained that substance. We shall have to guess that the latter cause may be operating in your case and it acts more disastrously because the grass was sown so late and has presumably not had chance for deep rooting. If we had your problem we should re-sow the lawn this fall, digging very deeply and working in considerable manure to help in loosening the soil and reducing capillarity. This will help the winter rains to carry down the alkali and reduce its tendency to rise again next summer by surface evaporation. Sow the seed in September or October and use plenty of irrigation water if the rains are late or scanty. Apply water in large quantities and not in frequent light sprinklings—this should also be your policy in summer watering. Frequent, light sprinkling gives an appearance of wetness without the substance thereof; the ground beneath may be really dry and if alkali is present it will kill the roots below although the water drops may glisten upon the blades of grass above. Rye grass lawn requires no particular treatment; it usually gives a fair appearance with less water and

mowing than Kentucky blue grass or the lawn mixtures which are often prescribed.

TOO MUCH SHADE AND WATER.

To the Editor: Part of my blue grass lawn which has always done well has this season become infested with angle worms. Their "castings" have been made all over the ground until the grass is nearly all killed out. The ground is only partially shaded part of the day. It cannot well be dug up deeply on account of nearby elm trees. What shall I do to restore it to good health?—GARDENER, Bakersfield.

You are probably drowning out the worms with too much water and perhaps the ground gets too little direct sunshine to promote a vigorous growth of grass which could make good use of the water which you apply. It is pretty hard to get good grass under trees; blue grass is particularly sensitive on that point. We doubt if it is worth while to restore the present stand of grass if it is nearly all killed. We should re-sow, digging as deeply as can be without disturbing large roots of the trees; clearing out small roots will not hurt the trees and it is necessary to get some free ground if you are to have any grass at all. Dig in stable manure and use with it lime at the rate of 500 lb. to the acre. This will help to discourage the worms and improve the soil also. Then do not water too frequently, but keep the grass growing without making the soil soggy with standing water.

The statements are in effect a slander upon California: first, a direct slander by misrepresentation of California conditions; second, an indirect slander by linking California and Florida in such a way that the former is charged with some of the weaknesses of the latter. In truth, it may also be said that Florida stands charged in the statement with one of the disadvantages of California, that is distance from the cities of the Atlantic coast. As a whole the statement is rough and inaccurate, intended merely for advertising effect, should not be made a basis for investment and involves too many considerations for us to undertake a general answer. To answer your specific questions we would say:

It is certainly an exaggeration to claim that \$90 profit per acre can be expected from trees the fourth year in the orchard. It has been done in California and the chances to do it are as good in Cuba, but it is not to be counted upon anywhere.

The main offset to the cost of irrigation is the superior carrying quality and sprightliness of flavor of oranges grown by irrigation in a semi-arid country. Rainfall oranges of the tropics do not compare in commercial value with the California fruit and cannot be used in long-distance trade. It is true, in orange growing as in other agriculture that irrigation is not a drawback, but aside from the character of the product is an advantage because of the possibility of rational control by the grower. Irrigated farming is superior in point of intelligence and surety of success.

There are many places in all the citrus belts of California where the frosts have never been injurious and no methods of frost prevention, expensive or otherwise, have ever been practiced. There are, of course, other places in these belts where frosts do harm. There is little frost injury in the northern and central citrus regions because the fruit is marketed before the frosts come. Northern Glenn county is such a region.

It is true that all land will need fertilizing sooner or later. Tropical soils of light character and under heavy rainfall always show poverty first. California soils are naturally rich and deep and those used for oranges are rather heavy than light and far more enduring than the light loams of Cuba. It is not true that citrus fruit land must be a light loam, a clay loam is vastly better.

We cannot give comparative freight cost and time of travel from Cuba and California, nor does it matter much, for the Cuba fruit does not reach the eastern markets at the same time as California fruit. Cuba may compete with Florida, perhaps, but both are well out of the way before our heavy shipments are made.

Our associations of growers and dealers do very fully regulate distribution so that all markets are served

according to their capacity. The citrus fruit interest is one of the most prosperous and promising of our specialties and it has a great field for expansion. It is a specious argument to measure distance and cost to New York and constitute the difference a great advantage to Cuba. It will not be long before we shall have few oranges to spare for the Atlantic seaboard. The great central west and the farther west and northwest will take all we can produce and only the highest-priced demand on the Atlantic slope will attract the superior California fruit.

And then, who wants to live in Cuba? But that is another story.

EXPERIENCE WITH THE CODLIN MOTH.

To the Editor: In regard to sprays and spraying permit me through your columns to give an account of my experiments and their results. Previous to last year, through a number of years or seasons, we used paris green with lime water, 1 lb. to 200 gal. of lime water, the results of which were unsatisfactory. Fifty to 75% of the fruit was lost. These sprayings were carried out faithfully in compliance with instructions from the department of agriculture. Five sprayings were given at intervals of 20 days. The whole work was a failure. Last season we used Swift's arsenate of lead (a most expensive compound) in the same way that we used paris green and lime, and had we used clear water the results would have been the same—the stuff proving worthless.

Discouraged with our past experiments we decided this season to abandon the apple orchard and treat the pears only, but with a slight variation from our former methods. The formula this year has been 2 lb. of paris green to 200 gal. of bordeaux mixture: one spraying in June and one in July. That seems to be all that is required. The results are all that could be desired. While I have stated that we abandoned the apple orchard, which is true, I did, however, spray a few trees with this last mentioned compound, but only once, and the results are surprising.

My advice, therefore, is: Use bordeaux mixture with 2 lb. of paris green to 200 gal., and give one spraying in June and one in the latter part of July. Do the work thoroughly and see the results.—A. KAMP, Sunol Glen.

We know Mr. Kamp to be a good horticulturist, close and critical in his methods and we accept therefore his statement that the spraying was done. To his conclusions, however, we must demur, although we most sincerely wish that the codlin moth could be so easily handled as he thinks. His account is exceedingly valuable as a record of experience, but the reader must have a care not to draw too wide conclusions from it. For instance, there is ample experience showing that both paris green and lead arsenate are very effective against the codlin moth—the latter being now much preferred because of less injury to foliage, etc. The presumption is that Mr. Kamp used his poison too late. He says he followed the department of agriculture prescription, apparently paying too much attention to the calendar date, which is much too late for California. Our inference is, therefore, that the failure with paris green and arsenate is due to the fact that the moth got its work in before Mr. Kamp spread the poison for the larvae to be killed, for by that time they were well inside. His subsequent sprayings may also have fallen between broods and thus were of little avail.

But why was the spraying with paris green and bordeaux apparently so effective? Possibly because it is an off year for the codlin moth in that locality. It is such a year at Berkeley. Our observation is that the early apples ripened practically free from worms this year, while in most years they are badly affected: no spraying being done in any year. To establish his observation Mr. Kamp must inform us that unsprayed fruit was as badly affected as usual while his sprayed fruit was saved. He does not cover that point in his letter.

PERHAPS FATAL NEGLECT.

To the Editor: I take the liberty of writing you again and explaining herewith more fully the conditions of my trees. It cannot be standing water, as all these trees I mentioned are on high ground and very dry. The blackness of the tree seems to start at the bottom and gradually climbs upward, until the beginning of the branches, then the leaves begin to turn brown and look as if they were dying. On some of the trees that are the worst affected, fruit has formed, of course, very sparsely, but it is drying up. I uncovered the roots of one tree and some of them seemed to be rotten wood or dead, but there is some life in the smaller roots yet. I notice on most of the trees

affected the wood is split, and there is more or less gum, but I have not found any sap to speak of, and that was not sour. I would like to know the remedy and if it is possible to save these trees. The plums, apricots, cherry and apple trees seem to be affected in this manner. Can it be sunburn? and if so, is whitewash a benefit to the trunk?—GROWER, Sonoma county.

We know no use or place for trees as bad as you describe except the woodpile. The wreck may be due to sunburn and neglect, but to reach such condition this must have been going on some time as the splitting of the wood would indicate. Sunburn starts on the southwest side and the tree struggles with its injury, sometimes for years, the north and northeast sides maintaining live bark. Finally the limbs begin to die back and then the tree perishes much as the way you describe. Whitewash will prevent sunburn, not cure the effects of it, though it may help the tree itself to grow over its dead bark and become worth having. We should dig out the trees which are as bad as you describe, plant new ones and protect from sunburn and promote thrift by good culture and care.

CEMENT WATER TANK.

To the Editor: I am building a reservoir 14 ft. wide, 40 ft. long and 6 ft. high and want to put a cement wall all around and cement bottom. What must I do? Put up the sides first, or put in bottom first? Please give me all information you can and also what per cent of cement is best to make it water tight. I dug the above sized hole in the ground.—OLD SUBSCRIBER, Healdsburg.

You will find detailed instructions for making a concrete water trough in the Pacific Rural Press of February 3, 1906. That will answer your questions for your larger structure. A cheaper tank can be made by sloping the sides and plastering on the earth than by making concrete walls, but the concrete wall structure is of course superior and can be built above ground if you need the fall for the water.

THE WHITE ASTRACAN APPLE.

To the Editor: I send a package of apples and would be very much obliged to you if you let me know what variety they are, as they are a good bearer and fine quality. I have three trees of them and want to put out a few acres this year if I can get the name. I picked from the three trees this year 703 lb. of apples and received 2c. per lb. So I am going to try four or five acres.—GROWER, Stanislaus county.

The apple is a very excellent specimen of the White Astracan. It is one of the most available early apples for interior situations in California and wherever the ripening season is early and the fruit free from worms, as yours are, the product is usually very profitable. The White Astracan is, however, rather less hardy and productive than the Red Astracan, and for that reason is not so widely grown.

CUBA VS. CALIFORNIA.

To the Editor: I enclose an advertisement which has appeared for some time in Canadian papers, and which did not call for any remark until now that the promoters of the proposition referred to have begun to depreciate California. The following is what they say:

"The advantages of Cuba over California and Florida may be enumerated briefly as follows: In California the profits of the orange growers are diminished by expensive artificial irrigation, expensive methods of frost protection, frequent losses of fruit and trees from frost, expensive fertilizers to enrich soil, heavy freight rates (by rail) to eastern markets, fourteen days haul to New York. In Cuba the orange grower enjoys copious, but not excessive rainfall, rains well distributed throughout the year, absolute freedom from frost, naturally fertile soil, freight rates 48c. less per box than California, four days by steamer to New York."

They also claim that Cuban orange trees yield a profit of \$90 per acre the fourth year and that "all citrus fruit land must have a light sandy soil."

I am interested in selling lots in Glenn county, near Orland, and have invested there, so I would like to be able to authoritatively contradict what is untrue in the above statements put forth by the Canada-Cuba Land

Company. Would you mind answering them in the Rural Press? particularly the following points:

1. Is it not an exaggeration to say that oranges in the fourth year will yield a profit of \$90 per acre? Four-year-old trees might do this in exceptional cases.
2. What offset is there to the cost of irrigation so as to show that Cuban rains are not better?
3. Are there not places, localities, in California which are free from frosts injurious to citrus trees? Is not northern Glenn county such a region?
4. Is it not true that sooner or later all soils that are cropped will require fertilizers?
5. What are the freight rates on fruit to New York from Sacramento and Los Angeles as compared with the rates from Cuba?
6. How long is the fruit in transit from these places to New York?
7. Is not the organization of the fruit association about perfect so far as apportioning the fruit to the capacity of the eastern markets is concerned?
8. Is it true that "all citrus fruit land must be a light sandy loam soil"? I think at both Riverside and Redlands the soil is a red clay.

Pardon me if I am asking too much. I have no doubt that this company is attracting a good many who would go to California. I enjoy the Rural Press very much, and hope in a year or two to make my home in California.—READER, New Brunswick.

[The reply to this letter appears in the second column of the preceding page.—Ed.]

HORTICULTURE.

CHERRIES IN OREGON.

By Mr. M. McDonald, president of the Oregon Nursery Company at the last meeting of the Oregon Horticultural Society.

In this magnificent display we have an object lesson of what the Oregon cherry is in reality; including, as it does, varieties that originated in other states and countries as well as those of local origin.

There seems to be no question but that all classes and varieties of cherries find here in the State of Oregon, and especially in our fair Willamette Valley, a soil and climate congenial and well adapted to bringing this noble fruit to its highest state of perfection. Here thrives the Napoleon Bigarreau (our Royal Ann), supposed to be a native of France, flourishing as it does in no other country. There are also the Black Tartarian from Russia; Governor Wood from Ohio, and the Deacon from California, besides the numerous other American and foreign varieties in Hearts, Bigarreus, Dukes and Morellos, all of which are admirably adapted to conditions on the Pacific coast.

It is not, however, to the varieties of foreign origin which have adapted themselves so well to our environment that I wish to particularly refer, but rather to the Oregon cherry—varieties which have originated in this State as the progeny of the varieties transported across the plains by early settlers, and which by their adaptability to either home use or sale in foreign markets by far surpass any of the older varieties.

The history of the cherry in Oregon covers but a moment of time as compared with its history since the time when a Roman general introduced it in Italy from Asia in the year 69 B. C. Yet, in the short space of time since the cherry was first introduced in the old Oregon country the varieties which have originated here have practically revolutionized the cherry industry, making it possible for the millions of people living in eastern cities along the Atlantic coast to feast upon these luscious varieties of Oregon origination and production. I refer particularly to the Lambert, Bing and Black Republican, the varieties which have made it possible for the cherry to be grown on the Pacific coast and transported in good condition to the cities on the Atlantic.

Oregon may feel justly proud of its record in the origination of new varieties of cherries, and, I say, all honor to those early pioneers who not only braved the trials and hardships of early pioneer life, but who laid the foundation of this new and grander horticulture upon which we of the present are just entering. Those now engaged in horticultural pursuits might well afford to erect a monument to the memory of such men as Jewelling and Lambert as an incentive to others to emulate them in the origination of still greater varieties, although the fruits these men have originated will be a more lasting monument to their memory than can be erected by man.

In these improved varieties which we have before

us we see what has been accomplished in the improvement of the cherry since the first trees began to bear in Oregon, thus giving us some idea of what might be done to still further improve the commercial qualities of this fruit. Results obtained and improvements made in size and carrying qualities, seen in the Lambert, Bing and Black Republican and Hoskins, surely establish the fact that here in the Willamette Valley conditions are the most favorable in the world for wedding the blossoms; and here the progeny of the mating include varieties superior in size, flavor and all other qualities desired in the commercial cherry to-day.

Notwithstanding our past achievements in the origination of new cherries, there is still room for improvement, and not until Oregon produces a variety as large and fine flavored as the Lambert or Bing with the color and all other good qualities of the Royal Ann, and ripening from two to three weeks later than that variety, shall we approach the high standard we should all be looking for. The Royal Ann stands to-day as the best and in fact the only variety used extensively for canning and for meeting the demands of the manufacturers who place Maraschino cherries upon the market, for which use the highest prices are paid for perfect fruit. But this variety, ripening as it does in most years, just at the close of the rainy season, is too often damaged by climatic conditions to be used for these special purposes, and the profit of a good crop is too often dissipated by a late rain during its ripening time.

A few days ago I read an item in one of the newspapers in which the statement was made that the entire crop of Royal Ann cherries growing in the La Grande, Union and Cove districts had been contracted for by a cannery for a term of five years at 4c. per pound. To be sure, 4c. per pound is not a very high price, but the fact that a cannery is willing to take its chances on the whole crop of the district for a term of five years is proof of the value of this variety for canning purposes when grown in a section where there is no danger of injury from rains at the time of ripening.

In no section of the State does the cherry attain a higher degree of perfection than in the Willamette Valley, nor in any section of the whole State more free from storms during the month of July than is this valley. This being the case, why not originate a variety, or varieties to follow the ripening season of the Lambert, filling all the requirements of the shipper, the canner and the Maraschino manufacturer. That this can be accomplished appears quite feasible for the Lambert—the largest and best variety yet introduced—has extended the cherry season at least two weeks beyond that of the Royal Ann, showing that the season of ripening can be extended by the origination of new varieties. Near the City of Olympia in the State of Washington, there is growing and ripening its fruit a variety of the Heart and Bigarreau class which ripens its fruit during the latter part of September and the first of October, proving conclusively that the time of ripening of the cherry is limited only by the seasons of the year, and that it is within the possibilities that we may originate new varieties of cherries ripening continuously throughout the summer season.

With the object of reaching this higher standard in perfection in cherries it might be within the province of this society to appoint a committee whose business it would be to formulate a standard of the requirements for the Oregon cherry of the future, in order to stimulate the originators of new varieties in approaching this standard.

Perhaps the day may come when this society will have a fund at its disposal for the purpose of rewarding with a medal the originators of new varieties, bestowing the same as a token of appreciation of their efforts toward the improvement of our fruits.

In conclusion, allow me to look forward a few years and describe to you the Oregon cherry of the future: A tree hardy, vigorous and healthy, enduring in both wood and blossom bud the changes of temperature of our worst seasons; a fruit larger and even more beautiful than any growing to-day; delicious in flavor, yet sufficiently firm in flesh to stand in good condition its shipment to our most distant markets, and ripening at a season of the year when there is no danger of injury from storms or rain. Such a cherry can be shipped to foreign markets, sold to local canneries or be used for Maraschino, and a price demanded commensurate with the efforts put forth in producing and bringing to perfection one of the finest fruits God has given for the use of man.

The Commercial Side of the Cherry.—Mr. H. S. Gile, of Salem, read a paper on "The Commercial Side of the Cherry," from which the following extract is taken:

"Cherries for long distance shipment must be packed properly, but before that they must be carefully picked, before they are fully ripe. Every fruit must be handled individually and should be carefully taken from the

trees, handling each fruit by the stem and never severing the fruit from the stem. If possible, they should be picked when cool, or cooled immediately after picking. They should then be packed by skillful packers right in the orchard and always kept cool and as soon as possible after being thus picked and packed should be delivered to the refrigerator car, which should be thoroughly cooled and in waiting to receive the load. The cherries should be packed in the regular 10-lb. flat box for long-distance shipment. The box being so designed that when stacked with ventilation space, stripped and braced, the cool air easily penetrates to every fruit. The carton made to fit these boxes makes a still better pack, though somewhat more expensive, and is in favor with the retailers because of the lack of loss in dealing them out.

"I need say little concerning the method of packing; you have here a practical demonstration of the work. The fruit should be laid so as to avoid any shifting or moving in the box, and the box must be filled. Don't fear to press the bottom down upon the fruit firmly, there is more danger in slack filling and shifting than in squeezing of the bottom fruits.

"Now, then, if you will contrast this method with the manner in which we have in the past literally 'clawed' our fruit from the trees—much of it over-ripe to begin with—and then think of the way it has been dumped into bushel boxes, wash boilers, or any other handy receptacle and hauled to town, perhaps in a wagon without springs, you will be able to find some excuse for the non-keeping quality of the Oregon cherry, and you may, in a very large measure, account for our past unfortunate experiences. These conditions may be well applied to all of the other fruits which are usually packed and shipped green.

"We have never been half careful enough in the handling of our green pears; because they are green and hard does not indicate that they cannot be injured by unreasonable handling.

"I am not willing to concede that we have not as bright and keen business men here as may be found in any other State, and I believe that if the cherry was to be found here in sufficient quantities so that the packer could afford to send his packing crew into the country and gather and pack the fruit in a proper manner and could get it in such quantities that he could load a car or two every two or three days there would be no lack of merchants to buy the crop of cherries on the trees at very profitable prices.

"Concerning varieties for packing purposes and fresh shipment, I should say the Bing, the Lambert, and the Royal Ann are the three best cherries we may expect to do business with, on account of their size. If, for any reason, the market does not justify shipment, these varieties are always in favor with the canners, and perhaps these varieties might also be improved upon. Perhaps the Royal Ann could be brought down to ripen a bit later to avoid the rain which we frequently have about the maturing time; this is one great and good characteristic of the Lambert and Bing.

"The size and appearance is the attractive feature with all of them. Much depends upon the packing of the fruit of any kind; 'handsomely packed means well sold.' Appearance is everything."

Discussion—As reported by the Oregon Agriculturist: In reply to a question, Mr. G. D. Woodworth, of Hood River, said he had never shipped the Royal Ann to London, New York, or other eastern cities, or to Mexico, but did not think it would ship as well as the dark varieties; every touch, no matter how slight, seems to show on the surface of the Royal Ann, which would, of course, detract from the appearance of a box of fruit. He would not recommend the Royal Ann for long-distance shipping. He approved of the use of cartons as shown by his exhibit, for packing cherries.

His exhibit of cherries at the World's Fair at St. Louis brought him communications from all over the country in regard to the Lambert, Bing and Royal Ann cherries. These are the only varieties he raises. The Royal Ann does not ship as well as the other two varieties, but he had observed that the Black Republican is an even better shipper than the Bing. He wished it understood that his observations applied to cherries grown at Hood River and might not be wholly applicable to the same varieties grown elsewhere. They claim at The Dalles to raise better cherries than those grown at Hood River, and it may be that they do. Their climatic conditions and soil are different. They give their cherry orchards thorough cultivation. He had found at Hood River that cherry trees do better without cultivation, but he irrigates judiciously.

To Mr. McDonald it appeared that the best time to pick cherries was from four o'clock in the morning until say seven or eight o'clock. There seems to be some change in the cherry after it has been warmed up by the heat of the day which causes it to deteriorate in

shipping even when well cooled after being packed. This appeared to be a very important point to the growers of cherries. The fact should be kept in mind that cherries should not be picked when heated by the sun.

THE SUGAR PRUNE AND ITS USES.

Mr. Leonard Coates, of Morgan Hill, the well-known fruit grower and nurseryman, gives his conclusions about the sugar prune in this way:

"The fruit known as 'Sugar Prune' should not be classed with what the market knows as 'prunes,' or plums which dry with a sweet flesh. It is sweet enough, but does not possess other qualifications which will place it on the same list with the Imperial prune or with the larger grades of French prune. To make of it a market 'prune' in any sense, will but tend to lower the standard. It has good qualities, however, and as it has been largely planted, and as many trees have been grafted to sugar prune, it becomes necessary to get as much money out of it as is possible in some other way.

"The sugar prune is a great bearer, but the tree must receive very different treatment from that given the French prune, or the fruit will be fit for nothing but hog feed. The annual growth must be shortened in every winter from one-half to two-thirds, and all laterals and fruit spurs must be cut back at every pruning. Of course, judicious thinning out of the wood is also needed. This will result in a very large, showy fruit, and about Vacaville, Sacramento and other places it is being shipped east in a fresh state, packed in the usual manner for long-distance shipments, and has brought satisfactory returns. The other use to which it may be put is to dry it as a pitted plum properly sulphured. This makes a handsome fruit, sweeter than the ordinary dried plum, and is more profitable, its extra sugar giving it more weight. But in this case, as with its shipment in a fresh state, it is absolutely necessary to use none but large fruit, which may easily be obtained if the trees are well pruned. Some of the sugar prune orchards in this neighborhood are sad to look upon, and the product should not be allowed to go on the market to lower the price of good prunes."

THE FIELD.

CEMENT AND LIME MORTAR.

To the Editor: Seeing an article in a recent issue in regard to using cement in mortar, and as it was contrary to what builders are doing here, I will give a few facts: There is a winery here, two stories high, with a very steep roof, which contained a lot of wine during the earthquake. It was built five years ago and the masons used 5% cement with lime. The result is that not even a crack appeared in the whole building. It is a large one, probably 80x100 ft. or larger. It is just as solid as if there never was a 'quake. Eastern masons working in this town reconstructing buildings are using 5% cement, and all buildings wherever there was cement used are a monument of strength after the severe trial, while all straight mortar buildings are a heap of ruins. My advice would be, use cement with mortar, as it has proved to stand earthquakes to perfection.—OLD SUBSCRIBER, Healdsburg.

WOMEN IN AGRICULTURE.

The Women's Agricultural and Horticultural Union, with headquarters in London, is still working at its main problem, the profitable enlistment of women in agriculture. At the annual meeting in June there was a discussion of the main subject, from which we take the following:

Mr. Yerbergh said that the consideration of the pursuit of agriculture in its higher branches as a suitable career for educated women, had been extended pretty well all over Europe, specially in the countries of Germany, Italy and Belgium. But it is satisfactory to know that in this country more than others, a steady increase is being made in the number of those so engaged. In some continental countries only discussion has resulted so far.

To a beginner who desired to work on the land, after obtaining the necessary training in one or more of the many institutions now scattered up and down the kingdom, his first advice would be not to work alone, nor take a place in some isolated district, but to locate herself in a part of the country where the industry she means to follow is carried on by others; then gaining the benefit of advice and experience, and sharing in any existing advantages of reduced railway rates, and so on. If two or three friends can start together, it is pleasant; or again the idea has been mooted of small settlements of women engaging in combined industries.

There were several points the speaker specially wanted to impress on his hearers; first, that owing to increased and increasing foreign competition, prices for home-produce were lower than they used to be, and it was useless to flatter ourselves that they were even likely to reach old levels. Since, therefore, it is hopeless to look for higher prices, the only thing to set before oneself, to achieve success, is to reduce, as low as possible, the cost of production, and in this way equalize matters. The second point is "consider your market"; the third, that your goods must be first rate of their kind; and fourth, they must be "up to sample." One of the surest ways to decrease the cost of production is to produce in large quantities; this can, of course, be best achieved by co-operation.

Miss Turner, M. R. H. S., speaking on "Rose Growing," said she did not think after a life-long experience, that there was any truth in saying that roses could not be grown anywhere if only cost was put out of the question, and all requisite expenses for preparing the beds, could be entered on. Rose-growing for profit was altogether different, and in that case proper site and soil were of first importance, 5 shillings per acre would be dear for poor land, and £5 cheap for that which is suitable. Roses grown on walls are most profitable, excluding of course those from under glass. If no walls were available, wattled screens could be erected to which roses could be tied out. They should always be trained horizontally, and then they break at every node; when trained upright they flower only at the extremity of the boughs. A great deal can be done with roses in unheated houses; the speaker knew of one case where a cottager had made £20 in a season out of a little lean-to house, facing south, in which were nothing but two trees of Devonensis. Where possible to sell your roses to private customers in your own neighborhood it is the most profitable thing to do; if necessary to send them to a distance one point to consider in selecting the kinds to grow is that they shall be of substance to stand the packing and traveling.

Miss P. Vivian then spoke of progress of employment for educated women on the land in South Africa. As we ourselves pointed out some few months ago, she does not consider that in the present or the immediate future, these prospects afford much relief to our crowded labor market here. In the Transvaal there have been two or three applications for dairy-workers. Workers, not superintendents merely: the so-called dairy-maid, who will make butter or cheese, but thinks that washing of bottles, etc., and other apparatus is "Kaffir" work, are not sought after, or likely to succeed. The South African Colonization Society has direct dealings with the Transvaal government, whereby they hear of posts, and correspondents in different districts who compile and report on the nature of the openings offered. The same arrangements hold good in the Orange River Colony; in Natal and in Cape Colony consulting committees perform the same offices. The reason why openings in our newest colony are at present few and far between are these: first, the country is not sufficiently established to allow chance of success in new undertakings; the great distance between the scattered farms and the markets are against the profitable sale of produce at present. Soil and climate are less of difficulties than labor. In Natal, some years back, low-class Hindoos were introduced for farm work; when their indentures expired many of them remained in the colony, and used their knowledge gained from former employers in working for themselves on a co-operative system, by this means, and the cheap way in which they can live—on food which costs very little, and would not afford subsistence for whites, they are rivals with whom we cannot compete. There is a "coolie-ring" in Durban that buys up all the produce of white men, and retails it at great profit. As to Kaffirs, they are not to be depended on when employed out-of-doors, nor can they be managed by women in the fields, as they can in domestic work. Four settlements have been proposed, where women could unite to work together, some attending to the cooking and household duties, and others poultry-keeping, dairying, growing fruit, etc. Of these, three came to nothing, owing to persons on the spot employed to view the sites, etc., reporting drawbacks in each case. The fourth scheme is still being threshed out, and may come to some good; in this case there will be wanted several expert fruit-growers and packers.

The Boers have quickly taken hints gleaned from their new neighbors on the subjects of fruit and vegetable growing, with the result of an improved and cheaper supply. Miss Vivian's own family used to make a good thing of growing cabbages when they fetched 2s. 6d. each; when they dropped to 1s. 6d. it was no longer profitable.

In conclusion Miss Vivian stated that the Interior of South Africa Settlement Association is engaged in

settling on the land both single men and families. There is much better chance of success where the women accompany their mankind, and can carry on dairies, rear poultry, and, if possible, make and tend gardens.

[It must be acknowledged that these statements are not very encouraging. If women can only succeed when two rose trees yield \$100 or cabbage is worth 50c. per head, there cannot be much hope for them. But this, of course, is not true. Our observation is that success for women and for men rests upon about the same basis: viz., knowledge of what they are at and the ability and disposition to work hard. There is no easy road to success in agriculture.—Ed.]

THE MARKETS.

Wheat

The feature of the wheat market this week has been the publication of the government crop report. According to this the total yield of wheat in the United States will amount to 759,000,000 bushels as compared with an actual yield of 962,000,000 bushels last year. This report has naturally tended to weaken prices throughout the country, though the actual declines have been less than might have been expected. It seems that previous reports had already indicated a heavy yield and the government's report was therefore pretty well discounted. Prices are already so low that authorities do not expect them to go much lower. In fact, the latest advices from Europe are so favorable that some are predicting an advance before long. It is claimed that Europe will want more than twice as much American wheat this year as last. In the local market very little has been doing, either in futures or in cash wheat. So far the movement of the new crop has been light and comparatively little has reached tide water. Not much buying of the new crop has been done in San Francisco or Port Costa and advices from the interior indicate that country buyers are doing but little. In the Pacific Northwest the harvest is under way and the field returns show yields from 5 to 20% below last year. So far little buying has been done in Oregon or Washington and buyers there claim to have supplied all their immediate wants. Holders of wheat in those states seem inclined to wait for more favorable offers.

Flour.

The only flour coming into San Francisco at present is from interior mills. The local market is reported steady with a fair demand for all offerings. At present practically no flour is coming in from northern points and with the new wheat harvest at hand little is to be expected. A straggling business with Central and South America is reported though no new orders of consequence have been received. Advices from Portland state that there is a lively inquiry from Japan for American flour, but so far the prices offered are far below what millers can afford to accept at the present prices of wheat. So far there has been no demand from Europe for Pacific coast flour, and generally speaking the foreign trade is in a state of suspended animation pending the outcome of the wheat harvest.

Barley.

The barley situation is strong owing largely to the fact that there is practically no stock on hand in this city and very little arriving at Stockton or Port Costa. Buyers for exports seem to be taking offerings quite freely and while shippers are not openly bidding against each other for attractive lots, they are readily picking up all available barley. A few sales at Port Costa have run as high as \$1.12½, though the ruling price is about 2c. lower. The idea here seems to be that the market may ease off a little after the cargoes now sold are filled. Advices from the country continue to indicate a good yield in nearly all sections. In Portland nothing is doing in barley. Some very large pools have been formed by Oregon and Washington growers and buyers are unwilling to meet the prices demanded by these holders. The barley crop throughout the Pacific Northwest has been greatly damaged by the hot winds.

Oats.

Receipts of oats are running very light, owing probably to the fear of holders that with the limited wharf accommodation here the market may be overcrowded. Some dealers are reported to be gathering up all the choice offerings, probably with the idea of closing them out at higher prices later on. Fancy red oats are selling up to \$1.40 per cental, though no very great quantity has changed hands at that price. A small quantity of Washington white oats is on sale, but no definite price has yet been fixed. White oats are quoted in the Portland market at the equivalent of \$1.25 per cental f. o. b. Portland. Advices from the interior show that the present oat crop is of superior quality.

Corn.

As in the case of wheat, the government crop report is the dominant factor in the corn situation this week. This report places the total corn yield of the country at 2,651,000,000 bushels. This is a larger yield than has been generally figured on and eastern corn markets have weakened to a certain extent, although the September offering has held its own in Chicago. In this city the corn market is quiet, with a very small milling demand and practically no demand for exports. Sales for other purposes are very slow. Local quotations have followed the east in a slight decline.

Millstuffs.

In San Francisco the demand for millstuffs is good and all the leading lines are firm. Rolled barley for feed is in good demand and prices are a shade higher. Owing to a variety of causes the supply of millstuffs in California is limited and even under a light demand the market would hardly show a decline. Some shipping is being done from Portland and, with the weakening of the situation there, it is possible that some heavy shipments will be made. Arrivals from Puget Sound are also increasing, though the sailors' strike is having a tendency to hold back shipments. In both the Portland and Seattle markets increased supplies have forced down prices to a certain extent.

Beans.

Receipts of beans are light and the market is generally quiet at unchanged prices. Pink beans are an exception to a certain extent as there has been some little buying of a speculative character. Small and large whites have been held steady by a small amount of buying for shipping purposes. Limas are particularly weak and are probably a shade lower than a week ago. Kidneys, black eyes and reds are in very scant supply and are no longer accurately quotable.

Bags and Bagging.

Interest in the bag market has dropped since the demand for grain bags has been supplied. A good demand for bean, fruit and wool bags is expected and naturally high prices will be demanded. Otherwise the bag situation is uninteresting.

Seeds.

The principal interest in seeds is now in the buying of the growing crop. The mustard situation is attracting considerable interest, and the competition of buyers to secure the growing crop has forced the price of futures up somewhat, especially in the Lompoc valley. In some cases \$3.50 has been paid for new crop Trieste seed and growers who have not already sold are asking \$4. Advices from the sweet pea districts are that the outlook is good for the full crop.

Hops.

The hop market is firmer and higher with conditions generally in favor of sellers. Reports of serious damage in the growing districts of the United Kingdom seem to have had a stimulating effect. Reports from Washington state that Yakima hops are selling at 15c. with 16c. being paid in exceptional cases. It was reported from London that a prominent California grower now in England had sold his growing crop, aggregating several thousand bales, at prices ranging from 10 to 13c. According to the present outlook the California yield will not begin to move before August 25th. Some estimates place the California output at 90,000 bales, the largest yield in the history of the State. The Oregon output will be approximately 135,000 bales and the Washington output 62,000 bales. The yield of New York, the other chief hop growing State in this country, is placed at 55,000. In this market quotations on the new crop range between 12 and 16c., and the old crop, of which there is but little left, ranges between 10 and 12 cents.

Wool.

The wool market shows very little change, though conditions are generally considered favorable. Transactions are comparatively light here and even at Stockton, where the wool center is located, not much is doing. Eastern conditions continue rather slow, though some little interest is being shown in California wools. Prices are generally unchanged. Telegraphic reports from Helena, Mont., state that the largest clip in that State, aggregating 1,500,000 lb., has changed hands at something over 24c.

Hay.

Total receipts for the past week show an increase of 500 tons over the preceding week. Rail shipments have continued light and water shipments are generally heavy. From present indications the rail shipments should increase from now on as the railroad company is promising better deliveries. The demand for good hay continues active and dealers here look for a strong demand from now on. Owing to the immense amount of heavy work now being done by horses in this city,

the local consumption of hay will be much larger than usual for many months to come. Dealers claim to expect a falling off of interest in the poorer grades, although there is as yet no indication of such a move. Buyers claim that growers in the interior are holding prices at too high a figure, but apparently a good deal of buying is being done on the present basis.

Butter.

The butter market is in decidedly good shape with only light receipts and a brisk demand. During the latter part of the week prices were particularly firm for the best grades. Some cold storage goods have now been added to the list. Supplies now coming in are generally of good quality and the outlook for the coming week is for a brisk trade all along the line.

Eggs

Cold storage eggs have now become an important factor in the local market and are being sold quite largely at ruling quotations. The egg market is generally firm for all desirable lots and quotations are well maintained. Receipts for the week have been about normal.

Cheese.

The receipts of cheese have been fairly heavy, but the demand has been steady and all receipts have moved off in good shape. California cheese is very firm and other lines are steady. Prices show little or no change.

Poultry and Game.

The poultry market continues, on the whole, to show an improvement, notwithstanding the fact that the demand fell off considerably toward the end of the week. Receipts have been diminished until they are now about equal to the requirements on the average and dealers are constantly getting in better shape to care for stock. The week closed with no particular surplus and with prices generally well maintained. Hare and rabbits are again offering and the stocks so far received have found prompt sale.

Vegetables.

The vegetable market shows a number of changes this week. Tomatoes have dropped in price, owing to an over supply of river tomatoes. Green peppers are also weak and several other lines seem to be rather over supplied. Onions are firmer, owing to a demand for shipment to Honolulu. String beans, wax beans and lima beans are firm, with supplies bringing full quotations. Receipts are generally of good quality in most lines.

Potatoes.

The week closes with potatoes in a better position than last week. Receipts have been light and the market has a firmer tone. Local buying is generally confined to small lots, though there is some little call for shipping potatoes. Fancy stock is in demand for local account.

Fresh Fruits.

The fresh fruit situation is satisfactory, with no pronounced changes to report. During the week there has been a number of fluctuations, but no substantial changes. The operations of the canners are now exerting considerable influence on the local market. They are purchasing pears and peaches of canning quality quite freely and have kept the market practically clear of first quality pears. Second grade Bartlett pears are plentiful and are being sold at concessions. Peaches are in moderate supply and are generally held at good figures. Sonoma peaches show a slight falling off in price owing to their coming in in an over-ripe condition. Sonoma figs are arriving and shipments from Auburn are expected in a few days. Grapes are meeting with slow sale and the tone of the market is weaker. Canteloupes and nutmeg melons are in good demand and prices are firm.

Citrus Fruits.

Not much interest is taken in the citrus fruit market owing to the abundance of deciduous fruits. Supplies are limited, though the quality is generally good. Lemons are selling at a wide range of prices, owing to a wide divergence in quality. Grape fruit is firm with very light supplies. Mexican limes and late Valencia oranges are held at high figures.

Dried Fruits.

There seems to have been some little reaction in the buying of dried fruit. The apricot crop has already been largely sold, but it is claimed that prices are weaker than they were about the first of the month. Values are, however, still high. The total yield was about 3,000 tons, or one-sixth of the yield of last year. Only a small portion of the peach crop has been sold and no buying is being done at the present time. The first outputs of the dryers are claimed to indicate a poorer grade than was anticipated. On the whole

prices have dropped about 2c. per pound from the offerings made a month or two ago. Prunes are also on the decline, with Santa Claras selling around the 2c. basis. It is claimed that some Santa Claras have changed hands at even a lower figure. Probably something over one-half of the entire crop has already been sold. Indications are that there will be a scarcity of large and small sizes, with a surplus of medium sizes. But little is being done in other lines and dealers are showing a disposition to await development.

Raisins.

Future bookings of raisins have been exceedingly heavy and the market has remained firm, $3\frac{1}{4}$ c. in the sweat box being offered by packers. Reports are coming in of higher offerings in some cases. Old stock is absolutely cleaned up and notwithstanding the promise of a large crop, continuation of the present firmness is anticipated. - Advices from the southern part of the state are that large quantities of raisin grapes will be sent East this year from that section in a fresh state.

Honey.

The honey situation still seems to be rather uncertain. Advices from some of the producing sections are very pessimistic. It is claimed that the San Diego output will be at least 75% short. In other sections varying shortages are reported. Locally very little interest is being shown by dealers at the present time.

FRUIT PRESERVATION.

SOME POINTS ON CURING PRUNES.

A writer on prunes, who has some features of a dealer therein, writes the following advice for the San Jose Mercury. It may be helpful to some readers:

First, be sure to allow the prunes to obtain all of the sugar they can from the trees, that is, let them hang until they drop of their own accord. Second, do not pick up until the prunes are soft to the touch. If these rules are strictly followed you will get a nice black prune. It may not be black when it gets to the bin, but will color with age, and that without any foreign coloring matter.

Now, picking by contract is the great enemy of the prune grower. In drying be sure that you get all the water from the pit before the prunes go to the bins. If you do not you will have sugared prunes, something that the French do not have, their prunes being dry and free from sugar.

The prunes of Santa Clara valley are superior to the French, and if properly cured—i. e., well dried—will gradually supersede that article the world over, but it is up to the grower to see that it is done.

I received a letter from one of my brokers as to drying and processing, demanding that the prunes be dried well and processed light, and complimenting me on my last year's pack.

You do not need to cut them with lye as much as is the custom. The skin will thin itself if you permit it to do so—i. e., let your prunes get ripe.

Do not be afraid that if they lie on the ground they will sunburn, as the French have to put theirs into spent ovens and partially cook them, and they are withdrawn and returned three or four times until they are well dried.

California's sun is much cheaper than French coke or fagots, so you have a great advantage. Will you take advantage of the situation?

Some parties have been guilty of sprinkling their prunes—i. e., turning the hose on them a few days before delivering their prunes to the buyer, shoveling them over so as, they claim, to get all that is in it. Wet prunes have done more to bankrupt packers and drive them out of business than anything else, and I am sorry to say the valley has been a great loser on this account, and will continue to lose until these defects are remedied.

If the packer over-processes he will not last long, but if he is wise he will buy only dry prunes, process light, make a small profit and continue in the business or go out of his own accord. All of the combinations of growers have run upon this rock of wet prunes and been wrecked.

Then there is the matter of bins. Be sure the boards are dry and well above ground, or you will have trouble.

After you have dried your prunes well and put them away in a dry place where it will not rain on them, do not prevent the air from getting to them. Let the wind have free access to them until the rains set in, then close your doors and make your house as snug as you can. When the market is ready to take the prunes and the price is what you consider fair you can sell, and with the knowledge of putting something on the market that people will eat, and want more of such goods.

Prunes are the cheapest fruit as to quality in the shape of the dried article by 50%, if not more, on the

market, and if the crop is properly harvested and cured and stored I can see no reason why it should not bring a fair price and be all consumed by the time the next crop is ready to market.

Do not let your prunes get damaged by rain. We had some experience with such prunes two years ago, and came very near getting in the red with an eastern house. I do not want any more of it.

Be sure that you do not dump half-cured prunes on your well dried product to even them up. I saw one lot last season that was done that way, which trick cost the owner from \$300 to \$500, enough to pay for his drying and picking. Then he had to redry the goods. Don't forget that wet prunes will hurt the next crop as the retailer will return them to the one he buys them from, and they will be again sold. If this is repeated three or four times they cannot be consumed, but will be traveling all the time, helping to keep the market down. Then when next crop comes they will be still on the market, and in the way of the new crop.

Remember that cold water is not the right way to process prunes, and that it is a damage to them, and that the most of the buyers, in fact all, are competitors; that the more competitors you can keep in the county the better price you are going to get for your prunes and the wider the market is going to extend. To these men you do not or should not sell any damaged prunes, as you should wish them all to get a good market for what you sell them, and if this is done then your market will continue to grow, and as it grows you will prosper in proportion to this growth.

SHEEP AND WOOL.

IMPORTANCE OF THE NATIONAL ASSOCIATION.

The first session of the Fifty-ninth Congress, says a writer in the American Sheep Breeder, was a glorious one for the sheep and wool-growing industry of the United States, and especially for the States west of the Mississippi river, for many measures benefiting the flockmaster and shipper were enacted.

The most important of these measures affecting the sheep and wool industry is the meat inspection law. At first it was supposed the exposures in Packingtown and the legislation would injure the livestock industry, but just the reverse, so far as the sheep industry is concerned at least, will undoubtedly be the result, for while the consumption of beef and mutton has fallen off to a marked degree, and will probably not be up to the standard for many months to come, in the end the confidence of the consumers will be restored, and with the result that the consumption of mutton, beef, pork and all their products will be increased tremendously.

The sharp fight in Congress over the matter of paying for the meat inspection provided for in the law fathered by President Roosevelt developed the growing strength of the National Wool Growers' Association which, headed by Senator Francis E. Warren of Wyoming, the able president of the association, insisted that the expense of the inspection be borne by the government and not by the packers, as was insisted upon by many Senators and Congressmen. Senator Warren argued that if the packers were compelled to pay any portion of the expense of the inspection, the producers would in turn be compelled to foot the bills, for there were many ways by which the packers could bring the expense to bear upon them. In the end, and only a few hours before the adjournment of Congress, the opponents of Senator Warren withdrew their opposition, and now Uncle Sam will pay for the inspection.

Another big fight won by the National Wool Growers' Association was in the passage of the amendment to the 28-hour law, the bill being known as the Heyburn measure, and fathered by the sheep interests. The chief opposition to the bill came from the Humane Society, and it was finally passed by big majorities in both houses in the face of this opposition.

At the annual convention of the National Wool Growers in Denver in January a strong delegation was appointed and sent to Washington to work for the passage of the amendment to the 28-hour law. A similar committee was sent by the American National Livestock Association, the two committees working as one before the Senate and House committees having the bill in charge. Two bills covering the desired changes in the law were introduced, one in the Senate and one in the House, the cattle interests being responsible for the House bill and the sheep interests for the Heyburn bill in the Senate, and it was this bill that is now a law.

Under the provisions of the bill amending the 28-hour law shippers of stock may, upon the written request of the person in charge of the shipment, keep stock in the cars up to 36 hours in cases where such extension of time is deemed necessary.

All shippers of livestock, and especially shippers of

sheep, will deeply appreciate the extension of eight hours' time, for under the provisions of the old 28-hour law stock was frequently unloaded when within a few miles of a market and at great expense to the owner. There was no argument against granting this extension of time, even when viewed from the side of the Humane Society, but the agents of the organization could not see the advantages of the proposed extension or were too stubborn to admit the merit of the shippers' plea.

In the passage of the railroad rate bill, which occupied the attention of Congress from the opening to the closing days, the stockmen scored another big victory, and to President F. E. Warren of the National Wool Growers' Association is much of the credit due. In the abolishment of free transportation no provision was made for shippers of livestock, either in accompanying their shipments to market or in returning home. But the president of the wool growers was alert to the interests of the stockmen, and although the fight appeared to be a hopeless one, he finally succeeded in incorporating an amendment to the rate bill providing for the issuance of free transportation to shippers of livestock accompanying their shipments and also in returning home. This concession will be appreciated by every man who has shipped livestock to market, and the livestock interests of the country owe Senator Warren a deep and lasting debt of gratitude for his splendid work in their behalf.

The Wool Growers' Association was as busy as bees during the last session of Congress and a great mass of letters was sent on to Washington from all parts of the country urging the passage of the bills enumerated above.

The splendid work accomplished by the association has caused a general awakening among the sheep and wool growers and breeders throughout the country, and State and district associations are being formed everywhere. In turn these associations join the national and the great strength is united under one head. In Washington, Oregon, Utah, Idaho, Montana, Arizona, Texas, Wyoming, Colorado, New Mexico, California, Nevada and other western States the old associations are being strengthened and new ones organized, and the movement is extending eastward at a rapid rate. In another 12 months there will not be a State west of the Mississippi river that is not represented in the national organization with a State association of wool growers, or by one or more county or district associations. And it is well that the reorganization is being taken up at this time, for it will not be long now until the free traders will have attained such strength as to be a severe menace to the sheep and wool growing industry of the entire United States. A year ago the enemies of the industry would have found easy picking, but not so now, for already the wool growers have a formidable and growing association to cope with. The national organization now numbers more than 3,000 members, and this growth all in a few months, or since the last annual meeting in Denver in February, when the membership rolls of the organization showed less than three dozen members in good standing.

THE RANGE.

SELECTING STOCK FOR FEEDING.

Mr. A. E. de Ricqlès of Denver, who has had much to do with range stock, gives in the Breeders' Gazette some points upon selecting animals for range or feed lot which our animal industry people will be interested in:

In buying young cattle both the horn and hoof will tell you a lot as to their thriftiness, or whether they have been well nourished. The horn should look soft and growthy and plenty of it—the hard, flinty horn shows hardship. When you find a steer with a good head and turn him around you should find a good square shape—long straight back, a sturdy set of legs with big joints and a thick tail set on smoothly without any rough hair standing up straight on a high tail-bone. You can bet if he has it on his forehead and between his horns he has it on his tail-bone. Do not worry about the color of a steer if he has the good qualities I have here mentioned. A red steer of any breed with a black nose has a bad strain in him somewhere, but his black nose is not always fatal and he may be a very good individual.

In buying steers for the Northwest, where the climate is severe, I do not believe it pays to discriminate too much against those that have been allowed to run four or five or more months without being castrated. In fact, I think such a steer finally will have a good constitution and a little more flank. Do not understand by this that I favor stags, but a little thick horn in a steer is not half as bad a fault as a set of spindle legs. The former he will outgrow, the latter never.

To talk about the color of cattle is dangerous, but I believe the grade Hereford bull is responsible for many of the misfortunes experienced by the pasture men who purchase cattle. These nice red bulls with white faces, that look like race horses, have in a large section of country reproduced their kind in nice red yearlings, with white faces, and that stand high on their legs, split to the limit—no bone, no shape, no future, but all "white-faces." Look out, Mr. Grass Man, when you go up against these chaps. They may have shed off slick and clean and look mighty good from the side view.

In buying Southwestern steers I like those with a Short-horn cross in them; the brockle-faced steer is a good type. Perhaps too much Short-horn makes them rough, just as too much Hereford may result in sacrifice in weight. The Hereford is the rustler for the last blade of grass, and the Short-horn the domestic, hunt-a-stack nature—both good in their way.

But going back to color, there are certain great herds of cattle in the Panhandle of Texas and around the Midland country that run to a yellow brick red—they have not the deep blood red of the cattle from the alfalfa country around Phoenix or from Wilcox, Arizona, yet at four years old from the Kansas pastures or Montana ranges they will outweigh the Arizona steers from 150 to 200 lb. I think feed has something to do with colors and I know that a grade Texas bull will color up a set of southern New Mexico or Arizona stock cattle without cutting off their legs much or adding anything in width to their loins. In buying grazing cattle in the spring, intended to be moved into a new country or climate, I believe that those that are not fully shed off and that complete this operation on their new pastures do better than those that are fully shed off at the time of purchase.

This handling of young living things and watching them develop is an interesting business. Nature has made her scheme of creation along certain lines, and while effort may moderate defects no amount of feed will change types. It must be therefore in the foundation to start with. There are certain people who are great feeders but poor judges of types. They should stay at home and give their buying into the hands of responsible judges. I have seen examples of poor buying in both cattle and sheep transactions that were impossible to overcome with the best efforts of the feeders. "The eye of the master fatteneth the bullock" is all true enough, but he must have something to work on, and it is a fact that there is many a man whose position in livestock circles is of the highest, who for the life of him cannot tell good types when he sees them or class young cattle properly, and whose judgment, perfect in many things, is worthless to send out to select or class steer herds. It is a talent or a gift to be able to tell at a glance what the thousand living forms quietly grazing around you on the prairie will develop into and what ones to reject and what ones to keep.

To those who are producing young steers to sell, especially in the Southwest, I would say look out for the class of bulls you buy above all else. You can never foresee the result of a grade bull. The Southwest needs bone and size above all else, not colors. Furthermore, I have a secret to tell my Texas friends worth just one million dollars cash to them, a very simple thing to do, namely, cut the horns off every one of the million steer calves dropped during 1906 and the buyers will give you not less than \$1 per head more for them as yearlings, and if you have a lot of yearlings on hand now cut their horns off and as twos you will get \$1.50 per head more next spring for all of them. This is sure.

PUBLIC LANDS.

FARMS IN FOREST RESERVES.

Written for the Pacific Rural Press by Mr. Aaron W. Frederick, North Fork, Madera County, Cal.

Agricultural lands within forest reserves may be homesteaded under the act of June 11, 1906. A copy of the law may be had from one's congressman, from forest supervisors, or from the "Forester," Washington, D. C.

Having lived 15 years within the Sierra Forest Reserve, and wishing to be helpful to intending settlers, I venture to tell through the columns of the Pacific Rural Press something of the character of the region now open to home-makers.

And foremost a glance at the valley of California, set like a great gold dish tilted toward the setting sun. First, it has its low alluvial or nearly level tract commonly called "the plain," or valley proper.

Second, it has a brushy-hills zone, rising from a few hundred feet up to the timber line, or forest limit, at an elevation of about 3,000 ft. A part of this brushy-

hills zone has been included within the reserve lines.

Third, it has the mountain timber belt or, properly considered, the forest region. Valuable timber of this region is the yellow pine, the sugar pine, the fir, cedar, and sequoia. At about 3,000 ft. elevation begins the yellow pine as the dominant characteristic. There the chaparral yields to the yellow pine. Below that elevation may occur a few straggling yellow pines, with bull pines, digger pines, stunted oaks, buckeyes, manzanitas, and dwarfs generally; but the dominant characteristic of the hills zone is brush. The pines that grow below the line of the yellow pine are not timber. They are not good for lumber, not even for a good shade where they grow. The gnarled live-oak, mainly growing on rocky land, is too crooked to be of service as a hardwood. One species of oak can, by a Lincoln's strength, be made into posts; but so scarce are they that settlers mostly have to buy cedar posts.

The brushy-hill land is agricultural land or nothing. When it is cleared off good grain or grass grows. When left alone the brush takes the country, growing so dense that no grass lives under it. Hence complaint has often been made that stockmen burn off the range to get feed in future.

There are but two ways to get rid of this blue brush—farming and firing. You clear your fields, and plow them you must, otherwise the blue brush shoots its seeds and hurries up to head off other vegetation. If you burn the blue brush you roast all else with it. The Indians used to burn off this brush to make better hunting grounds. Then rank grass grew abundantly and the hills were unseamed by wash and furrow of water. The policy that crops the grass and raises vast areas of blue brush leaves the hillsides washed into gullies and fit for more blue brush culture. If not cleared off or burnt off it takes precedence of all other vegetation.

It would take an army of rangers to dig and pull out the brush in the brushy-hills zone, and then the merchantable pine would not grow there. The better plan, which the government has adopted, is to enlist an army of settlers to fight down the brush and make this almost useless waste a place of homes.

The fact is that this valley of California indexes all the zones of the earth, and this blue brush belt is a semi-tropic and semi-arid region. It is a land of scrawny vegetation for all else than annuals like grass and grain, unless water be had in summer. Altitude gives the mountain timber belt a temperate-zone climate. There nature does not require man's aid to raise a tree. Leave it unmolested and it grows. Here, near the line of the yellow pine, where water enough may be had to raise an orchard the apple reaches perfection.

Much of this brushy-hills zone may be taken as agricultural land. Much will average from 5 to 30 acres of plow land to each government 40, while as a timber proposition you will not find trees enough to build a log cabin on a quarter section. The trees on 160 acres below the yellow pines would not equal a quarter of an acre of real forest. Grazing land goes as agricultural land generally, and even the best farms have their rough land for pasture lots. Wood that can be made into firewood only is not timber, technically speaking, and allows land to be homesteaded as agricultural land. So the way is open to those willing to work and wait, to chance the building of a home in the Sierra Nevadas.

Throwing open the reserve to settlement will tend to fix the natural boundary between the brushy-hills zone and the true timber belt, the forest reserve proper.

When held in private holdings the brushy-hills zone will cease to pay stock rent, and settle the question whether or not lands not forest lands should be included in a forest reserve to help pay expenses of the forestry interests.

It would be superfluous to add that the climate of the brushy-hills zone is remarkably healthful.

PLANT DISEASES.

PEAR BLIGHT AND ITS OCCURRENCE IN SOUTHERN CALIFORNIA.

By Mr. Henry J. Ramsay, Assistant Pathologist, University Pathological Laboratory, Whittier.

This spring there appeared quite a wide-spread outbreak of the pear blight in the apple orchards, in the mountain district above Redlands in the upper Yucaipe valley and around Oak Glen. When it first appeared this spring the growers thought that it was pear blight but were not certain that it was this dreaded disease. However, all doubts as to its being pear blight have been dispelled. We have made numerous cultures from blighted twigs that I collected when there the first time and examined the same under the microscope and in every case we have found it to be the pear blight germ. While the disease is called the pear blight the

pear tree is by no means the only tree that it attacks. The apple, quince and hawthorn, and other allied species are subject to the disease. Another host for the blight is the loquat tree and it is not uncommon to see loquat trees that are badly attacked with the blight. Since the first appearance of the blight in the apple orchards in this district, a number of questions have come up as to the origin of the blight, its means of spreading, etc.

We have had pear blight in California now for some years and especially in our great interior valleys. The blight completely [that is, largely] destroyed the pear industry in the San Joaquin valley around Fresno, and for the last two or three years it has been making very serious inroads into the great pear growing region of the Sacramento valley. Up to this year the blight has not been so bad on the apple as on the pears, but this year it seems to be worse on the apple all over the State than it has ever been before.

As far as I have been able to learn there has been no blight in the upper Yucaipe before this year, though some say that it has been known in some neglected orchards for some years. It is possible that such is the case and that the blight has existed in these neglected orchards for some time and escaped notice. However, it is well known that blight has been prevalent around San Bernardino and Riverside for a number of years. So it is probable that the first infection came from some neglected orchard in the upper Yucaipe, or from down the valley further, where it has been for some time unnoticed.

SYLVICULTURE.

GROWING TREES ON ALKALI.

To the Editor: Touching the inquiry of your Fresno correspondent about eucalyptus on alkali lands, suffer me to add a word. In Southern California I grew several kinds of eucalyptus on ground quite white with alkali. I think there were neither of our well-known blue gums or red gums in the lot, but I have no reason to doubt the success of these if the conditions below the surface soil are not bad. Because I was afraid of the alkali I took the precaution to furrow the land and irrigate by running water as you suggest, in the furrow; but I did more and better than this: I used land plaster or gypsum freely around each tree at planting, and I did not lose a half dozen trees in the grove. The trees are now 20 years old and vigorous.

The use of plaster is strongly advised wherever there is reason to fear a dangerous per cent of black alkali. If the plot can be irrigated so as to secure a flow the trees will grow. Attention should be given to them at first; once fairly started they will do well. In the south the general opinion is that the rostrata or red gum will do better in alkaline land than the globulus, or blue gum. The rostrata is a trifle slower but quickly makes a forest, and is handsome and a little more tractable under the axe.

But why not utilize some of our waste lands by planting the hardy catalpa? I never pass through out great valley without wishing that avenues and forests of this splendid tree were growing there. The catalpa speciosa grows rapidly, and combines use with beauty. It will prove highly profitable on lands which now are comparatively worthless.—A. J. WELLS, San Francisco.

[This communication is very helpful and suggestive. We have known Mr. Wells for years as a close observer and enthusiastic promoter of improvement. The planter must, of course, remember that the amount of alkali is the measure of possibility and not invest too much without seeing what a few trees will do.—Ed.]

A DURABLE WHITEWASH.

A whitewash that will not rub off or wash off, is something that is a necessity to dairymen, poultrymen and farmers generally. The following formula is said to furnish just the article needed:

Dissolve two pounds ordinary glue in seven pints water, when dissolved add six ounces bichromate of potassium dissolved in pint of hot water. Stir mixture well, then add sufficient whiting to make a usual consistency, and apply in ordinary manner as quickly as possible. This dries in a very short time and, by the action of light, is converted into a perfectly insoluble waterproof substance, which does not wash off even with hot water, and, at the same time, does not give rise to mould growth, as whitewash made up with size often does. It may be colored to any desired shade by the use of a trace of any aniline dye or powdered coloring matter, and, once applied, will last for years, while, by the addition of a small proportion of calcic sulphate, its antiseptic power is much increased. This whitewash will also be found excellent for the poultry house and its appurtenances.

THE DAIRY.

Sanitary Milk.

From an address by Dr. Archibald Ward, bacteriologist of the State Hygienic Laboratory at Berkeley:

"Milk stands unique with human food in that it forms the exclusive diet for one year for children, and for the first few years of life it is almost the exclusive diet of these children. Throughout our life we regard it as a valuable building-up food for those in weak health and besides being an important diet, it is certainly unlike all staple foods—it is consumed in the raw state. About one-third of all the milk sold in the United States is served for direct consumption. Nature never provided that milk should be held any length of time.

"Milk is an opaque fluid, and the serious results that may be possessed by milk are of such a kind that the consumer cannot judge of the quality of the milk by means available.

"Milk is a substance very prone to decomposition and souring, both of which are caused by bacteria. And furthermore it may be infected at various stages of milking and delivery by the germs of disease, which are very small and invisible in milk. All such bacterial contamination is more or less bad, depending on the kind of bacteria and the number present. It is easy to understand that such faults in milk in their early stages are not noticeable to the consumer. In the majority of cases where the infant is fed with cow's milk the health of the child is at the mercy of those engaged in handling the milk in the dairies. The prime requisites for producing milk entirely free of danger of inducing disease, consists of: (a) healthy cows, (b) scrupulous cleanliness in the care of utensils and in freeing the cow from dirt before milking, (c) freedom of the milkers and their families from contagious diseases, (d) coolness of the milk during delivery.

"All of these things cost money, and as a result of competition in the milk business these details are not carried out in correct manner, or they are neglected because all dairymen do not recognize their importance. Emphasis should be laid upon the fact that consumers of milk do not realize the expense of the production of milk of the highest quality, and by the objections to the price that should be legitimately demanded for such milk themselves force the dairyman to produce a cheaper milk. Of the diseases that are commonly transmitted through milk diphtheria is one of the most important.

"The mere existence of a case of that disease in the family of the milker is sufficient to transmit the germs to the milk by the person of the milker.

Bacteriology has developed enough to direct suspicion to the milk supply. In diphtheria epidemics a large number of instances have been recorded where milk was at fault. Typhoid fever is another disease frequently spread by milk. Typhoid is ordinarily carried by water, but as water is so abundantly used in the rinsing of milk utensils and occasionally for dishonest dilution, there are accorded plenty of opportunities for the contamination of milk by polluted water.

"Tuberculosis, commonly known as consumption, is a disease of cattle identical with that in man. There is every reason to believe that the disease is communicable to man. The final proof of this would be the inoculation of the human being with germs of this disease in cattle. An experiment, of course, would be out of the question. The milk of every cow extensively affected with tuberculosis at some time is liable to contain some germs of the disease. The existence of this disease is the greatest

menace to the wholesomeness of the milk in this vicinity. Eighteen per cent of the cows in Berkeley so far tested by me show the existence of this disease.

"In large dairies, where the opportunity to spread the disease is the greatest, we find the most cows affected. Among the cows staked out around town I found only four per cent affected, due to the fact that there is less opportunity to catch the disease by associating with other animals.

"As a remedy for all these evils in the milk supply which I have enumerated, a milk commission, composed of prominent physicians interested in pure milk, affords a solution of the difficulty. The Oakland Home Club appointed such a commission, who drew up a set of rules covering the handling of milk, the health of cows, etc., and appointed inspectors to see that the rules were enforced. The commission offers its inspection to any dairyman who will comply with its regulations and rules."

HOW TO MAKE GOOD VEAL.

Mr. N. A. Clapp of Northville, Mich., gives in the New York Tribune, some helpful hints to those who wish to try what there is in making high class veal for an appreciative market.

If we study carefully the reports of the livestock transactions in our great markets, both East and West, we begin to realize the magnitude of the cattle industry of our great country. If we also consider the great numbers of veal calves that are sold every week, we can see that this branch of the cattle business represents sums of money of considerable proportions. Again, if we notice the difference in values between the well-fattened veals and those that are gathered only partially fattened, handled in a slipshod manner and sold on a par with the inferior classes of other kinds of meats, we can begin to discover the reason why on one hand veal is lauded as a delicious class of food, and on the other it is condemned in a wholesale manner as unwholesome and unprofitable. The breed, feed and management have much to do with the quality of the meat produced, as well as the profits in the business.

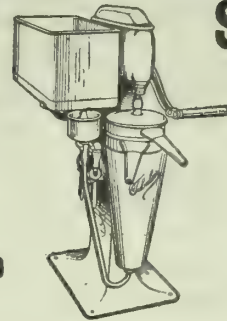
With many who on the average farm have only a few calves to dispose of there is not enough interest taken in the calves to give them a fair chance. It is common to see the young calf following the cow in the field until it is old enough to sell for veal; it is parted with for any price the speculator sees fit to give, the cow is milked until the end of the period of lactation, and nothing more is thought of the matter. Such a method of feeding is faulty for several reasons. In the first place, the calf is allowed to take too much exercise, "running off" some of his meat, and eating some coarse feeds that he cannot properly digest, thereby injuring the quality of the meat produced. In the second place, the cow becomes attached to her calf in the month or six weeks' time the calf is allowed to run with her, and the abrupt change from the calf to the human milker interrupts her, and that, added to her moaning for her calf, reduces her capabilities for producing her maximum amount of milk, and her value as a cow is impaired for a whole season.

If a calf is allowed to run loose in a large stall, where there is an abundance of light, he is very apt to play, and although he may be turned to the cow twice a day and allowed to remain in the stall the balance of the time, there will be a deterioration in the veal quality of the calf to a marked degree.

During my quite extensive travels among the stockmen I have been able to discover where the best results are obtained in feeding and fitting the real calves for our great markets. To secure

A FARMERS' COMMITTEE SAYS
TUBULAR IS WORLD'S BEST
CREAM SEPARATOR

Low Can
Lightest Bowl
Simplest Bowl
QUICKEST CLEANED



The Tubular

Self Oiling
Ball Bearing
Enclosed Gears
CLEANEST SKIMMER

A community of farmers and dairymen recently united and appointed a committee of six wide awake farmers to thoroughly investigate cream separators and decide which is best.

Why? Simply because they were convinced that cream separators pay, and wanted to know the best before buying. The committee requested all leading separator representatives to meet the committee and show their machines.

Why did they do that? Because the committee wanted to find out positively which separator actually is best. They didn't want to take anybody's word for it, but wanted to see all reliable separators side by side and decide for themselves.

When that committee met, many farmers were present waiting the decision. The committee carefully examined the different separators, and unanimously decided that the Sharples Tubular Cream Separator is best, excelling all others in fifteen essential points.

The members of the committee backed up their decision by buying for themselves six No. 6 Sharples Tubular Cream Separators right on the spot—one Tubular for each farmer on the committee.

What did that mean? That this investigation had absolutely satisfied the committee that the Sharples Tubular is the best cream separator built—the best in every way. If you buy a Sharples Tubular, you will get the world's best separator.

It is to your advantage to learn all about this committee—its decision—and the world's best separator. Write for our handsome, complete catalog C 131, with leaflet and the committee's sworn statement telling all about it.

THE SHARPLES SEPARATOR CO.,
Toronto, Can. WEST CHESTER, PA. Chicago, Ill.

the best results a proper equipment is essential. One should feed the calves on a large enough scale to make it an object to give them the needed attention and care.

The cows with which to operate should be of good size and excellent feeders, and should give a large flow of milk, low in butter fat content. Very rich milk the young calf does not digest perfectly, and scours are likely to follow. The professional feeder buys his calves, when first dropped, from the farmers and dairymen who do not care to devote the attention to them that they need to make first-class animals. Anything in the shape of a calf is generally taken, although breed and size are worthy of consideration. Calves carrying a liberal percentage of blood of the best beef breeds are appreciated on account of their capabilities for eating and the superior quality of meat produced.

The calf should be taken to the cow regularly, and, whether it be twice or three times a day, the rule should be strictly observed. As soon as he has finished his meal he should be led to a comfortable stall, well bedded with dry straw, tied to prevent exercise, and most of the light excluded. Let him take all the milk he can hold, allowing the amount to increase as his capabilities increase, and when he is ripened, at from four to six weeks of age, weighing from 150 to 200 lb., he will be in shape to please the most fastidious consumers. Remember that the interstices between the fibres of the muscles must be well filled with an oily substance, which adds not only to the touch of the animal but to the flavor of the different cuts of meat.

Like the meat of the land—pig, chicken and duck—that of the well fed and properly handled veal has become very popular with the best class of private customers, as well as with the great caterers who keep the first-class hotels and boarding houses. The genuine epicure, who feasts on the choice viands and fat of the land can have his well trained and discriminating taste satisfied with the delicious veal potpie, rich stew or roast, that is well flavored.

Robbie—Mamma, why have you got papa's hair in a locket? His Mother—To remind me that he once had some, Robbie.

GLOVE ADVICE.

"Don't buy a glove that is too small," advised a smart assistant in one of the big London shops. "It not only cramps the hand, but it prevents grace of motion and gives poor service. Not one-half the women who come in here know what points to watch out for in buying gloves. I try to instruct my customers, but a woman must be ripe for the knowledge through personal experience or the advice will not be appreciated. Black gloves are generally less elastic than light colors. Dressed kid gloves usually retain their freshness longer and are more durable than suede. Short-fingered gloves give the hand a malformed look and they soon break out at the tips or between the fingers. Putting on a glove for the first time has more to do with the fit and wear than almost anything else. Take time to fit them, and, if possible, wear them a good half hour before closing the fingers. Button the last buttons first, for the greatest strain naturally comes on the first."

HOLSTEIN FRIESIAN SALES.

Mr. F. L. Houghton of Brattleboro, Vt., reports the following transfers of registered stock as follows:

Bulls.

Glenbrook De Kol, Ozro Mitchell to R. F. Guerin, Visalia.

King Philip Netherland, Ozro Mitchell to R. F. Guerin, Visalia.

"But surely you are the man I gave some pie to a fortnight ago." "Yes, liddy; I thought p'raps you'd like to know I'm able to get about again."

Caustic Balsam Cures Lump Jaw

The Lawrence-Williams Co., Cleveland O.:—Among the many ailments which may be cured by Gombaul's Caustic Balsam should be included lump jaw in cattle. One application will cure it. It is the best liniment I have ever seen or used and I would like to see it in the hands of every dairyman.—Daniel Dupertuis, Curtis, Wash., July 24, 1906.

Caustic Balsam Cured Bog Spavin

Prattville, N. Y., Jan. 28 1905.
The Lawrence-Williams Co., Cleveland, O.:—I received a bottle of your GOMBAUL'S CAUSTIC BALSAM and it is all you claim it to be. I had a horse that had a bog spavin started, and it cured it. I let the horse stand for four weeks and he is all right now.

S. H. TOMKINS.

Gartwell, Ga., Feb. 6, 1905.
Dr. B. J. Kendall Co., Enosburg Falls, Vt.
Dear Sirs:—I have been using your remedies over 20 years, and find they are the best on the market.
Yours truly, A. A. Jones.

HOME CIRCLE

THAT WHICH IS BEST IN THE WORLD
Work.

Let me but do my work from day to day
In the field or forest, at the desk or
loom.

In the roaring market place or tranquil
room;

Let me but find it in my heart to say,
When vagrant wishes beckon me astray:
"This is my work; my blessing, not my
doom;

Of all who live I am the one by whom
This work can be best done, in the right
way."

Then shall I see it not too great nor small
To suit my spirit and to prove my
powers;

Then shall I cheerful greet the laboring
hours,

And cheerful turn when the long shadows
fall

At eventide, to play and love and rest,
Because I know for me my work is best.

Life.

Let me but live my life from year to year,
With forward face and reluctant soul,
Not hastening to nor turning from the
goal;

Not mourning for the things that disap-
pear

In the dire past, nor holding back in fear
From what the future veils; but with a
whole

And happy heart that pays its toll
To youth and age, and travels on with
cheer.

So let the way wind up the hill or down,
Though rough or smooth, the journey
will be joy;

Still seeking what I sought when but a
boy,

Friendship, high adventure and a crown,
I shall grow old but never lose life's
zest,

Because the road's last turn will be the
best.

Love.

Let me but love my love without dis-
gulse,

Nor wear a mask of fashion old or new,
Nor wait to speak till I can hear a clew,
Nor play a part to shine in others' eyes,
Nor bow my knee to what my heart
denies;

But what I am, to that let me be true,
And let me worship where my love is
due,

And so through love and worship let me
rise.

For love is but the heart's immortal thirst
To be completely known and all for-
given,

Even as sinful souls that come to
heaven;

So take me, love, and understand my
worst,

And pardon it, for love, because con-
fessed,

And let me find in thee, my love, my
best.

—Henry A. Van Dyke.

SLOW THROUGH THE DARK.

Slow moves the pageant of a climbing
race;

Their footsteps drag far, far below the
height

And, unprevailing by their utmost
might,

Seem faltering downward from each
hard-won place.

No strange, swift sprung exception we;
we trace

A devious way through dim, uncertain
light;

Our hope through the long vistaed
years a sight

Of that our Captain's soul sees face to
face.

Who, faithless, faltering that the road
is steep,

Now raiseth up his drear, insistent
cry?

Who stoppeth here to spend awhile in
sleep

Or curseth that the storm obscures the
sky?

Heed not the darkness round you dull
and deep;

The clouds grow thickest when the
summit's nigh.

—Paul Laurence Dunbar.

DOMESTIC HINTS.

EGG PIES: These are very conven-
ient for school lunches. Roll pie crust
quite thin, cut with biscuit cutter or
tumbler and fit into iron gem pans or
tin patty pans. Beat together one egg,
one-half cupful sugar, and one table-
spoonful butter. Flavor with nutmeg or
lemon and put a spoonful of the mixture
in each crust. Bake until a light brown.

CORN MUFFINS: Buttermilk, or
sour milk assists in making the best muf-
fins. Take two cupfuls of either, one
scant teaspoonful of baking soda, one
tablespoonful of sugar, a little salt, and
add to them cornmeal enough to make
a thin batter, then stir in two tablespo-
onfuls of whole wheat flour. Pour in but-
tered gems pans and bake in moderat-
oven.

TOMATO SALAD: A salad Du Barry
sounds attractive. Peel a good-sized
tomato for each person to be served, cut
a piece from the top and with a tea-
spoon scoop out a portion of the pulp.
Sprinkle inside with salt and set upside
down in the refrigerator. When ready
to serve fill the tomato shells with cold
cooked cauliflower and set on heart
leaves of lettuce. Put a tablespoonful
of mayonnaise on each tomato.

CUCUMBERS, ESPAGNOLE: Neatly
peel and cut into even quarters, length-
wise, three medium sized cucumbers;
carefully suppress all the seeds, then
cut into half inch pieces. Plunge into
a pint of boiling water with half a tea-
spoonful of salt and boil for eight min-
utes. Drain on a sieve. Heat in a small
frying pan a teaspoonful of oil, adding
half a finely minced green pepper and
half a finely minced white onion; gently
toss while cooking for two minutes; add
half a bean, finely chopped garlic and
two peeled, crushed tomatoes; mix well
and let cook for five minutes, pour in
half a gill of tomato sauce, add the cu-
cumbers. Season with half a teaspoon-
ful of salt, a saltspoonful of cayenne
pepper and a half teaspoonful of sugar;
lightly mix the whole together and slow-
ly cook for ten minutes, occasionally
mixing meanwhile. Remove, pour into
a deep dish, sprinkle half a teaspoon-
ful of freshly chopped parsley over it
and serve.

MACARONI WITH CODFISH: Soak
one-half pound of codfish over night;
drain and break in small flakes, remov-
ing any skin and bones, and cook until
tender. On a platter arrange a layer of
the macaroni, then a layer of the fish;
add a few slices of hard boiled egg, then
another layer of macaroni and the fish
and set it, covered, in the oven, while
preparing the sauce. In a saucepan put
one tablespoonful of butter, one table-
spoonful of flour, one-quarter of a tea-
spoonful of salt, a saltspoonful of pep-
per. Stir over the fire until mixed, add
one cupful of milk and stir until it is
smooth and thick. Pour it over the fish
and macaroni, sprinkle with finely
chopped parsley and serve. This is an
excellent way to use macaroni left over.
Or cook half a pound of macaroni in
plenty of boiling water, with a teaspoon-
ful of salt, until tender.

CHEESE FAGOTS: Mix thoroughly
together four ounces of flour, two

BEEF SCRAPS

GUARANTEED: 65 per Cent PROTEIN.

RAW BONE

GUARANTEED: 25 Per Cent Protein and 45 Per Cent Bone Phosphate

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We want you to see the kind of Poultry Foods that are man-
ufactured from CLEAN, RAW MATERIAL. This means HEALTHY
ANIMAL FOODS for your poultry.

WESTERN MEAT COMPANY

SOUTH SAN FRANCISCO,

San Mateo County

ounces of butter, four ounces of grated
cheese, one egg, a little cayenne pepper
and some salt. Roll out very thin, cut
into little strips one and one-half inches
long, put about fourteen in a bundle,
twist another strip around them and
finish as if tied in a knot. Place them
on a baking tin and bake in a hot oven
to a golden brown. Dish them on a nap-
kin and serve very hot. These are very
nice with the salad course.

HINTS TO HOUSEKEEPERS.

If you dread a sea voyage because of
sickness, try taking cathartic medicine
two days before you sail. If you are sea-
sick and want something to stow into
the emptiness after "coming round,"
start in on hardtack and a good apple.
They will go to the right spot and stay
there.

A grandmother who has had a life-
time of experience in household matters
says that tansy is an excellent preven-
tative of moths. Sprinkle the leaves
freely among the woollens and furs. It
is convenient for a country housewife,
who generally lives within easy reach
of a wild tansy bed.

For warts on the hands an infallible
home remedy is washing soda. Prick
the skin at the root of the wart, and
each time you wash your hands rub
the wart while wet with a piece of wash-
ing soda. This remedy is slow but pain-
less and leaves no scar.

An authority on cooking says that a
tumbler of red currant jelly turned into
a pint of ice cream is delicious and im-
parts an attractive pink tint to the
cream.

If a napkin is wrung out of hot water
and wrapped around sandwiches and
they are put into a cool storeroom they
will remain as moist as when first
spread.

To make a low room look higher, let
the curtains hang to the floor. To make
a high ceiling look lower use short cur-
tains that hang only to the window sill.

To make a tough piece of steak tender
put three tablespoonfuls of salad oil and
one tablespoonful of vinegar on a large
flat dish. Lay the steak on the mixture,
and let it rest in this way for half an
hour. Then turn it over and let it rest
another half hour in the same quantity
of vinegar and oil. It is said that the
toughest steak will yield to this treat-
ment and be tender when served.

In making bedroom slippers, instead
of buying soles, cut them from the dis-
carded hot-water bags. On the rubber
sole lay an inner sole of soft flannel and
bind them together; on this foundation
sew the knitted uppers. You will like
the result.

The following way to reheat a roast

of beef is given by a European cook.
By it the roast will be to all appear-
ances and flavor a first service, unless
it has been marred by the marks of the
carving knife. Wrap the roast in tough
battered paper and put it in the oven.
Let it stay until it is thoroughly heated,
but do not allow it to cook. Reheat the
gravy and serve beside the meat in a
hot gravy boat.

For stings or bites from any kind of
insect apply dampened salt, bound
tightly over the spot. It will relieve and
usually cure very quickly.

Fashions in note paper are as arbi-
trary as all other fashions, and it is
now decreed that thick note paper is
back again, and those who always know
the latest things are asking for the
square envelope.

Always keep the lid of the cold cream
jar tightly closed when not in use. The
purpose of cold cream is to remove impur-
ities from the skin and, of course, unless
the cream is perfectly pure it will do
more harm than good.

A few grains of cayenne pepper in a
little milk will relieve that tickling in the
throat which causes one to cough the
minute they lie down. Place near the bed
and sip occasionally until the tickling
ceases.

The days will soon be at hand when a
few drops of sassafras oil will need to be
sprinkled about the house to keep the
flies away.

Vaseline stains can be removed by
washing the article in warm water and
soap, rinsing and applying chlorinated
soda to the stain.

After cleansing and polishing brass or
copper articles brush them over with the
beaten white of an egg to keep them
bright for some time.

FRECKLES.

There is nothing that equals fresh but-
termilk for removing freckles or sun-
burn. It has the great advantage that it
does not injure the skin, but renders it
soft. Take a soft cloth or sponge, and
bathe the face thoroughly with butter-
milk before retiring for the night; then
wipe off the drops lightly. In the morn-
ing wash it well off and wipe dry with
a rough towel. A few such baths will
take off all tan or freckles. The follow-
ing is a very good recipe: One ounce
of lemon juice, a quarter of a dram of
powdered borax, and half a dram of
sugar; mix, and let them stand a few
days in a glass bottle till the liquor is
fit for use.

"Yes," said she thoughtfully, "my hus-
band is the best man in the world. But,"
she added still more thoughtfully, "that
isn't saying much."

FORESTRY.

Replanting On Forest Reserves.

The reforestation policy of the forest service of the United States government is to be greatly broadened during the coming year, according to the plans outlined to a Santa Barbara exchange by George W. Peavy, the forester who has recently been promoted to an important post in the technical management of the reforestation work of the department throughout the country. Mr. Peavy will represent the forest extension branch of the Washington office, under E. A. Sterling, who is expected to visit California in August to personally inspect the field, and to consult with Mr. Peavy and other foresters. With his coming the plans of the department with reference to tree planting in the west are expected to take definite shape.

It is well known, however, that reforestation efforts are to be redoubled, and there is considerable encouragement among the foresters who have actual experience in the field as to the outcome of this line of endeavor. At Pasadena, where the first efforts were made in California toward tree planting on the mountains, there has been variable success, the greatest hindrance being the native rabbits, for the eradication of which pest the officers of the biological survey are now devoting their attention. The pest has not appeared in the young forests planted in this country, and at last reports the little pines on the north slope of the Santa Ynez were making a very good growth.

T. P. Lukens, the veteran tree planting enthusiast, and the father of the Pasadena nurseries, will take up a branch of the work under the federal bureau. This will be the extension of the tree planting campaign into the rangers' camps. It is proposed to give the forest rangers practical instruction in the planting and caring for young spruce and pine. Just to what extent this innovation will be carried is not yet plain; but it is supposed that there must be some provision for shelter for the young trees from the heat and cold, and a regular nursery, on a small scale, will probably be provided at each of the rangers' camps. This will give the boys who ride the trails and fight fires a change of occupation, and may make the camp more attractive. At the same time it is expected to more rapidly increase the reforested area.

Good progress is being made at the nursery near San Marcos pass. Some of the trees transplanted from the lath house to the open ground last spring are now two feet high, and all are growing nicely. The latest planting in the green houses is also making good development.

State Forestry Work.

State Forester G. B. Lull arrived in Fresno last week, after having convinced the supervisors of Tulare county of the great benefits that would accrue to the county by providing means for the protection of the forests, for which an appropriation of \$500 will be made. The supervisors of Kern county made an appropriation of \$750. For some time past Mr. Lull has been traveling in the southern part of the state, and visiting the Board of Supervisors of each county. His work has been eminently successful, having succeeded in getting an appropriation from practically all the counties south of Fresno. Santa Cruz, on the coast, and also Colusa county, north of Sacramento, are also included in the list of counties that have provided means for forest protection.

In speaking of what the appropriation would be used for if granted by the Board of Supervisors, Mr. Lull told the Fresno Republican that it would be ex-

pected for the most part in paying salaries to fire wardens. In explaining the matter, he said: "These wardens do not receive a monthly or yearly compensation, but are paid only for services actually rendered. The state law authorizes the appointment of these wardens, but does not provide for their payment. Since this is the case the burden must naturally be borne by the different counties. The duties of the firewardens are not merely fighting forest fires, as many sometimes suppose. Instead they act in the same capacity as a peace officer, and are vested with power to make arrests.

"A great many of the most ravaging forest fires that California has ever had have been caused by the carelessness of campers in starting fires in the summer time on dry grass plains. The fire warden must keep a sharp lookout for such persons and warn them of the penalties that will follow the starting of a fire in such a dry place. If the parties resist he can place them under arrest.

"In addition to being empowered to make arrests," said the state forester, "the fire warden is invested with the authority to compel assistance from any male between the ages of 16 and 50 in fighting fires. Then again, he must be appealed to by any person who wishes to burn brush between May 15th and the first soaking rains of winter. The law provides that it is unlawful for any persons to burn brush near the forests between the above dates unless he has secured a permit from the fire warden of that district. Before granting such a permit the warden must make a thorough inspection of the place where the brush is to be burned before he can grant the permit. Posters on which are printed the forest laws will be supplied to these wardens and they must tack them up in the most conspicuous places. A handbook containing the state laws about the starting of fires in the forests will also be supplied to the wardens for distribution to whomever may apply. As a sign of the authority invested in them the wardens are provided with badges.

"As regards the appointment of these wardens," said Mr. Lull, "the law of California provides that the state forester shall appoint the wardens. It is my custom, however, to allow the Board of Supervisors to recommend to me certain men whom they want appointed and then I appoint them."

A GREAT COMB HONEY DEAL.

Mr. E. R. Root tells in Gleanings, the story of the greatest comb honey deal on record which extended to California not only in its influence, but in its actual operation.

It will be remembered that, during the early part of 1905, the condition of the honey market, so far as prices were concerned, was anything but satisfactory. Had the season of 1905 been an extraordinarily good one, or even an average one, there is no knowing where prices would have gone. Whether fortunately or otherwise, the season proved to be the shortest ever known in the experience of beekeepers, and the actual returns showed that the crop was a very light one. In the Western States the amount of honey secured was unusually light. In the East no honey of any account found its way into the markets except from Michigan, where the season proved to be good. When it became evident that the crop would be short, prices began to tone up.

But there was another factor at work stiffening the prices that had already slumped to a low level—a factor that the general beekeeping world knew nothing about, and we bumped up against it only

incidentally a short time ago.

Thos C. Stanley & Son, formerly of Dixon, Ill., now of Manzanola, Col., learning from Gleanings that the crop was a very short one, conceived the idea of buying up all the western car lots of comb honey in sight. This would seem impossible if not foolhardy. But the junior member of the firm, Thos. J. Stanley, relying on the reports in Gleanings, traveled extensively through the West; and where the honey had not already been sold he bought it up until he had actually cornered some 35 carloads of honey. He bought in Arizona, California, and Nevada, as well as in his own State, Colorado, until he had all the available supply of table honey. Wherever he could hear of another carload he bought that up; for it would not have done to let a stray carload get into the Eastern markets and knock the price away down, even below some of the prices he had already paid. It was, therefore, necessary to get into the position where he could "bull" the market. He was, therefore, forced to put out an investment of between \$90,000 and \$100,000, trusting to luck to come out whole, and, if possible, to make a little profit. This took "nerve" to go in that deep when it is remembered that comb honey rapidly depreciates in value, and that the selling season would soon be gone.

The junior Mr. Stanley figures that if 35 carloads had been allowed to break loose on the Eastern market, depressed as it was early in the season, prices would never have advanced. But he held it until they began to tone up, now and then letting loose a carload as the market would stand it, never letting it be known, of course, the big reserve he was holding. After a little the buyers were forced to come to him as he was the only man who had any supply. He kept selling until he had got down to about 20 carloads. This was as late as Thanksgiving Day. Things began to look a little dubious to him, especially when he heard that Cuban honey was being shipped into New York. But this, fortunately for Mr. Stanley, proved to be a mistake. He held the prices up, selling a carload here and there, until at the close of the selling season he had disposed of practically the entire lot.

When asked as to whether he had made any money out of the deal he merely remarked that, while he advanced and held up prices, he was not sure that he had cleaned up any very big profit. When I ventured to inquire whether he would try it again or not he gave his head a doubtful shake, saying it took too much nerve and worry to handle such a lot of honey; that if the season should be at all favorable with an output of between 600 and 700 carloads of comb and extracted honey—well, he just would not try it.

Probably this feat of Mr. Stanley could not be duplicated except in a like season of scarcity of honey. It is doubtful whether any one else will ever have the nerve to buy up \$90,000 or \$100,000 worth of honey and trust to luck to get out whole. The very great danger of damage in shipment to comb honey would necessarily make capital very slow about laying in a big store of it.

KILLING SQUASH BUGS.

F. D. Wells of Michigan, gives the Orange Judd Farmer an account of the squash bug—the flat, rusty-black creature with its vile odor. In spring or early summer the eggs are laid on the leaves and stems of plants, sometimes singly, but usually in groups of from 12 to 50. They are brownish-yellow and easily found. Fortunately the insect confines its attention almost entirely to cucurbitaceous plants.

As the bugs grow they scatter over the leaves, molting five times before they

I started out to make the best lamp-chimney in the world—I have stuck to it all my life.

My name is on the chimney if it's a MACBETH.

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reach maturity. Naturally the plant is weakened by such attentions. A leaf that has nourished many bugs will turn yellow and if the pests are numerous enough the whole plant may be killed. It is sometimes claimed that the bug stings the leaf and kills it, but it would be more to the point to say that the leaf is tapped and its life-blood sucked out. In autumn the adult bug crawls under a board, stone or rubbish and remains till spring.

The nymphs, or young insects, may be killed by a spray of kerosene emulsion or tobacco water, as their bodies are soft and unprotected. But the old bugs are proof against this kind of treatment. Their hard shelled backs protect them.

The most practical remedy thus far seems to be hand picking. It should begin with the first bug and be repeated at short intervals. The best time for it is in the morning while it is cool and the bugs sluggish. A convenient way is to drop the bugs into a can containing water with a little kerosene. The bugs will swim in clear water, but the film of oil on the surface is sure death. Boards or shingles placed on the ground are an assistance in gathering the bugs. They will seek these shelters in mid-afternoon and remain dormant till it is warm in the morning, when they can easily be gathered. Crushing the eggs on the leaves is a preventive measure that should not be neglected.

So far as my experience goes, the best way to guard against the bug is to plant the vines among potatoes. It has rarely found them there. I have grown good crops of squashes in this way and found few or none of the insects, though in other places they were numerous.

HANGING PICTURES.

Does anybody still hang pictures at an angle to the wall? Has it not been impressed on everybody that a picture to show to the best advantage should hang flat against the wall?

It was not long ago that every picture dipped at an angle, maybe of thirty degrees. The grouping of pictures was, of course, impossible when this practice was followed, because no two could ever be made to hang at the same angle. Now pictures are hung flat.

The tendency to put as little furniture as possible into rooms has had its effect on the walls. One picture is now hung in the center of each wall. Broad ribbonlike hangings are frequently used instead of wires—at least the wires are hidden by these ribbons, which fall from a rosette at the ceiling. Sometimes a very heavy silk cord conceals the wire and the cord is tied in a flat bow at the ceiling line.

Small pictures are hardest to arrange in accordance with present styles. The best treatment of them is to make a mass effect by hanging them all together.

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AGRICULTURAL REVIEW

Alameda.

BEES DIE ON LONG VOYAGE.—Contra Costa Gazette, Aug. 4: If the efforts of the entomologists of the University of California do not miscarry, in the course of several seasons there will be settled in America a colony of bees which in their own country is feared more than the tiger. This is the famous Indian bee mentioned in Kipling's "Jungle Book." A shipment of these green bees fertilized in their native wilds arrived at the University recently, but they were dead. This is the second shipment of the kind, with like results. It was sent by Frank Benton, United States expert in bee keeping. It was determined that if the present attempt to land the Indian bee alive in the United States failed, it should be brought here in easy stages in the course of several seasons. It will first be established in the Philippine islands. Then a number of fertilized queens will be taken to the Hawaiian islands, whence they will be brought to this city. The value of the Indian bee lies in its immense wax production. It has a longer tongue than any other member of the bee family, by means of which it can reach more blossoms. It is a stronger flier than any bee known and works later. Several weeks ago Ralph Benton was instrumental in introducing into the University hives three Carnolian queens which were fertilized in Asia Minor. This is the first time a Carnolian bee ever reached America alive.

Butte.

TO STUDY GRAPE DISEASES AND CURES.—Sacramento Bee, August 2: Professor Frederic T. Bioletti, head of the department of viticulture of the State University, accompanied by Alfred Tournier, a French student specializing on the Anaheim and other grape diseases, spent yesterday and today in Chico investigating viticultural conditions in this vicinity and at the National Plant Introduction Garden. Regarding the Anaheim grape disease, Professor Bioletti states that it is the worst enemy of the viticulturists, and that it has been unsuccessfully fought in this State for the last twenty years, the only result obtained being the production of a vine free from the disease, but not a producer of good grapes. He favors Federal or State aid for the work of at least \$10,000 annually. In southern California and in Santa Clara fully 50,000 acres of vineyards have been affected by the disease. Professor Bioletti is endeavoring to induce Mr. Tournier to make the study his life work, as Mr. Pierce, of southern California, has done. The two will go to Vina from here to make a study of conditions in the Stanford vineyards.

Fresno.

Selma Irrigator, August 4: Adam Bixler brought in two large sugar beets Tuesday. One weighed eight pounds two ounces, and the other six pounds and five ounces. He has one acre of them on his strongest alkali land and says they are the finest kind of hog feed.

Horse Owners! Use
GOMBAULT'S
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A Safe, Speedy, and Positive Cure
The safest, Best BLISTER ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Blisters from Horses and Cattle. SUPERSEDES ALL CAUTERIZING OR FIRING. Impossible to produce scar or bluish. Every bottle sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars.
THE LAWRENCE-WILLIAMS CO., Cleveland, O.

Kings.

SIX HEAD OF HORSES DEAD.—Hanford Journal, Aug. 7: Six horses belonging to Jas. M. Clark, of Corcoran, have died recently of cerebral spinal meningitis. County Live Stock Inspector Dr. Frank Griffith visited the Clark ranch Thursday, and after disinfecting the premises directed the removal of all other horses on the place.

Lake.

WINERY MEETING.—Clear Lake Press, August 4: At a meeting of those interested in grape growing a committee was appointed to investigate the proposition of establishing a winery in the county. The secretary was instructed to invite P. C. Rossi of Sonoma county, to visit Lake county. Mr. Rossi's offer was to establish a winery here if 400 to 500 acres of grapes would be available and if growers would contract to sell to him at a minimum price of \$15 per ton, also he wanted the grant of 10 acres of land for the location of the winery. There are about 450 acres of vines now bearing, 150 acres more of young vines, and plenty of land available for this purpose.

Mendocino.

PICKERS WILL GET ONE DOLLAR.—Ukiah Republican, August 3: The hopgrowers met in this city last Saturday and decided to pay \$1 a hundred this season for picking hops. Owing to the poor prices received during the past two years the growers are to be commended for keeping up the prices for picking. They have decided to make no settlements until the crop is harvested.

Nevada.

BUYERS COMBINE AND PEAR PRICES GO DOWN.—Sacramento Bee, August 7: The fruit growers of Grass Valley will not receive as much for their pears this season as they did last year. No competition between buyers is the reason for the lower prices, and as a result not over 85c. per box will be offered and the price may drop as low as 50c. Some of the growers in the Chicago Park section claim that the crop is plentiful, while growers in other parts of the county declare that there will only be half a crop. As a result of probable low prices the agitation for a fruit canery has been revived.

Nevada.

BUYING HONEY CROP.—Sacramento Bee, August 6: J. S. Armstrong, agent for large commission houses, is negotiating for the purchase of the entire honey crop of Mason valley. The crop this year will amount to 120 tons—four carloads—for which an average price of 9c. and 10c. per lb. is being paid. A part of it will probably be exported, as it is a pure white product of the highest grade. Armstrong is from Colton, California. He says he has already bought up 60 tons.

Riverside.

SALE OF VALENCIAS.—Riverside Press, August 7: Two cars of oranges were sold at auction at New York Monday. The market is very strong. The weather is favorable. Valencias averaged: Independent, Highland, \$6.00; Independent, Highland, \$5.40; Signet, Redlands, \$6.70; Colonel, xc, O. G. C. A., Redlands, \$5.65.

San Bernardino.

GREAT DAIRY FARM.—San Bernardino Index, Aug. 6: One of the greatest dairy farms in the world is destined for this county by a deal made in the southwest corner, by which Frank H. Rowley and James W. McAllister have purchas-

ed from Daniel Durkee of San Dimas 3000 acres of land lying about ten miles southwest of Pomona, but in San Bernardino county, and adjoining the celebrated Chino ranch. The Durkee ranch is abundantly watered and is part hill and part valley land, and is now used as a dairy ranch, but only partially developed. Hundreds of cows will be placed on the ranch to graze and the intention is to develop milk and butter products for the Los Angeles market. The consideration in the deal was \$150,000 and the new owners are now in possession and working out the details of plans for the great improvement.

SHIP GREEN GRAPES.—San Bernardino Index, Aug. 6: This year there will be attempted an experiment for this section of the state in grape marketing never before tried. Heretofore the growers of the big raisin grapes have marketed their grapes dried, but this year the fruit will be shipped to the far eastern market green. Most of the grapes to be shipped this year will go to Chicago, where it is claimed \$20,000 worth of the small boxes have already been engaged. Green grapes have been shipped to the eastern market from San Joaquin valley points in the past few years, and it has been a success. It is claimed that the profit on green shipments is much larger than on the dried fruit.

San Luis Obispo.

BIG WALNUT YIELD.—San Luis Obispo Tribune, August 7: There will be a heavy yield of English walnuts in the Arroyo Grande valley this year. The trees are loaded down with nuts and the harvest will be big. The bean crop promises to be the heaviest in years.

Solano.

GOOD CROPS OF WHEAT AND BARLEY.—Sacramento Bee, August 1: Harvesting in Dixon is almost finished, and the yield of both wheat and barley has been far beyond expectations. The yield of barley has in many instances been over 30 sacks per acre, and a few places have averaged 35 sacks for the entire field, which is excellent for winter sown grain. The grain is plump and of a good grade, but some of it is colored from the late spring rains. Wheat is also of a good quality and has yielded in many places 20 sacks per acre. Alfalfa growers are also reaping a rich harvest this year. The third crop is now being taken off, and the average is about three tons per acre. It is selling for \$8 per ton in the field.

San Joaquin.

LODI MELONS IN A WRECK.—Lodi Sentinel, August 7: An open switch on the line of the Southern Pacific at Stockton, at 10:15 Saturday night was the cause of a wreck. The overland hit the switch and before the engineer could control the motion of the train two cars loaded with Lodi watermelons received the force of the terrible blow.

POULTRYMEN IN SESSION.—Petaluma Argus, July 31: A meeting of the Petaluma Poultry Dealers Protective Association was held in Petaluma on Saturday. Time was granted the committee appointed to fix a standard weight for eggs with the idea of having said standard adopted. Nearly all were enthusiastic over the Hogan system and were decidedly optimistic. They believe that it augurs much for the future success of the poultry industry, and firmly believe that the Hogan system will ere long be in general use wherever fowls are raised. Several of the speakers pronounced it an unqualified success. It was

stated that poultry brings a better price in Oakland at present than San Francisco, and it was suggested that arrangements be made for a direct steamer to Oakland once or twice each week.

Shasta.

FRUIT SELLS WELL.—Sacramento Bee, August 8: Packing and canning companies are offering \$30 a ton for pears which are yet green, in the Anderson orchards. Prunes are selling high, and almost the entire crop has been sold, though the harvest has not begun. Anderson valley will produce more fruit this season than ever before. There are two reasons for this. First, the season has been extraordinarily favorable; and, second, several large orchards are coming into bearing this year.

Sonoma.

HOPS GOING UP.—Ukiah Press, August 3: A telegram was received from Santa Rosa this week that 200 bales of hops had been contracted for at 15½c. As the crop is very heavy this year the price quoted would be better than several cents higher on an ordinary year. Philip Wolf & Co. and C. C. Donovan are the buyers who are reported to have made the contracts.

Stanislaus.

A HELPFUL INVENTION.—Modesto Herald, August 2: Oscar Halverson, of Modesto, has patented a ditch and leveling staff which promises to be of great value to irrigators in checking their lands and building ditches. The new level obviates the complicated figuring attendant upon the use of the regular transit used by surveyors.

PROFITABLE HALF ACRE.—"A small farm, well tilled," is a paying proposition here in Stanislaus. Item: I. B. Ferris of Ceres has among other products half an acre in strawberries. He has received for berries from this patch this season to date \$264, as evidenced by his books. It is often stated that strawberry culture and marketing involve a cost equal to 50% of the receipts. Mr. Ferris' accounts show that the item of expense is not to exceed 25%.

ALFALFA PAYS.—Modesto Herald: As an instance of what can be done by

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A Cure for Spavin. Washington Quilt, Mont. June 3, 1906.
Dr. B. J. Kendall Co., Dear Sir:—Enclosed find a 2 cent stamp for your book, "A Treatise on the Horse and His Diseases."
I have used your spavin cure and found it a sure cure for spavin.
Yours respectfully, W. James Fitzpatrick.

Price \$1.00 for \$5.00. Greatest known liniment for family use. All druggists. Accept no substitute. Treatise on the Horse, free from druggists or
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Best Prune and Olive Dip
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applying to the alfalfa industry the ordinary business principles, we cite the following: W. P. Stephenson of the Stephenson dairy of Ceres has since April 1 fed 37 head of stock upon 28 acres of alfalfa, and at the same time put up 80 tons of hay. He has at this time 15 acres of alfalfa (third crop) ready for cutting, which will add 20 tons to the 80 tons stacked. He attributes this fine yield to disposing in the fall and to the application of gypsum as a fertilizer. It is his observation that the gypsum should be applied just before the first rains. He is confident that he will shortly bring his alfalfa yield up to an average of 10 tons an acre, which, at dairy value (\$10 per ton), means \$100 per acre annually.

Tulare.

CANTALOUPE SHIPMENTS.—Lindsay Gazette, Aug. 3: The cantaloupe harvest in this district is about over for this season and the output thus far is reported to have been twelve cars. The most of our growers were late in planting this year, which fact is responsible for loss sustained by melons coming in too late.

Yolo.

MAKES GOOD RUN.—Winters' Express: The Winters' cannery made a record for speed work this week that probably marks the limit. A hurry order was received for tomatoes in the morning, and the tomatoes were in the field. About 4 o'clock in the afternoon the tomatoes arrived at the cannery and all the force there was room for went at them. The next day at 11 o'clock 200 cases of the goods were delivered in Sacramento, put up in gilt-edge shape. That was less than twenty hours from the field to the consumer, and the tomatoes hardly had time to get cold after canning. Muir peaches are coming in now and are pretty good. This is early for Muirs to be coming on in quantity.

FARMERS' TELEPHONE.—Davis Enterprise, Aug. 4: James Irvine, telephone engineer of the Electric Appliance Co. of San Francisco, arrived in the city last night to arrange for the new switchboard to be installed by the Farmers' line in this city. The board to be installed is of the latest approved type and will give a very prompt service. Its capacity is 1000 phones. It is intended to connect with Sacramento as soon as the water is out of the tules.

WIDE-AWAKE GRANGERS.

To the Editor: Sacramento County Pomona Grange has in hand the Sacramento county exhibit at the State Fair. It made application to the Board of Supervisors for \$500 and it was, by the aid of Supervisor Doty, a Granger, they got it. When you visit the pavilion, brother Grangers, come and see us.—THOS. WAITE, Perkins.

FASHION NOTES.

It is pleasant to note that satin foulard is again popular, for no other material can take its place for an all around frock. None other lends itself quite so adaptably to the frock which is suitable for any and all occasions. The pin-dotted pattern, black on a white ground, is one of the prime favorites, and, made with separate yokes, may be utilized for both afternoon and evening wear.

A Valuable Free Book For The Dairyman

A new 24-page book is being given away by the Sharples Separator Co., of West Chester, Pa., which takes up the subject of business dairying and the science of making cows pay. It tells in a practical way what foods are best for the dairyman to feed and why. It also touches on the care of milk and cream, butter making, churning, working and packing, as well as how much milk for a pound of butter. The selling value of cream is another point taken up, and how wastes can be turned to profit. A close study of "Business Dairying" will reveal many ways to the intelligent dairyman for cutting off losses and improving every opportunity to save. Another feature of the book is "Stable Hints and Suggestions," and the value of manures.

With the plain linen shirt suits, black belts and girdles are considered smart, and with this combination, long black gloves and a white sailor with black quills are worn.

In the way of out-door wraps nothing is more generally serviceable for the girl who can have but one, than the long, semi-box coat of light shadow-plaid in English cheviot, with collar, cuffs and revers showing a contrasting note of color. These are always nicely tailored, stylish in cut and inexpensive.

Some of the pongee coats are exceedingly chic, but they are scarcely warm enough to be of general use.

Pongee is one of the most satisfactory of summer materials, because it is not injured if wet, presses out as easily as it crushes, and possesses wearing qualities scarcely to be found in any other material. There have been plain pongees for many years, but the pongee of this season has polka dots or tiny crescents or disks scattered over, usually in black or white, but always in a contrasting color. These pongees make up into fetching frocks, either for reception or ordinary wear, according to the degree of elaboration shown in the design.

The big hat is to the hat of the season, and it is to be an extraordinarily big hat, too, if all accounts are true. It will be trimmed in regular picture style, and many will rejoice, for there is, after all, no hat that is quite as becoming to the average woman.

A French idea introduced this season is the wearing of a bright scarlet or white pique vest inside one's coat, no matter what the form, color or texture of the coat may be. Sometimes this effect is obtained by a shaped piece sewed inside the coat, and it may be either plain or as elaborately embroidered as one chooses.

Earrings have been a good deal in evidence of late and to some faces have proved charmingly becoming. The English woman undoubtedly looks at her best in the single stud fitting neatly to the ear, while the pendant earrings become the more piquant features of her French sister. Like all other articles of

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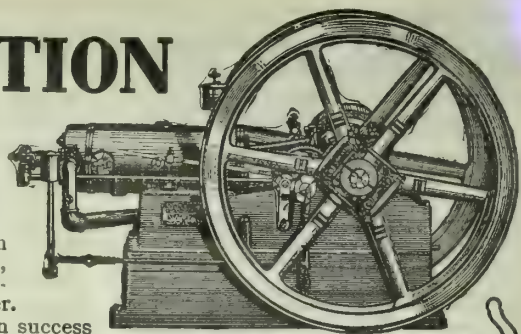
We do this so that we can explain to these farmers how they can buy a seeding machine that cannot be clogged in mud, gumbo, adobe, cornstalk or trashy ground; that is 13 lighter draught than any other; that takes 1-5 less seed; that increases the yield of wheat from 3 to 7 bu. per acre over others. Ask for 1906 catalog M and mention this paper.

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Sixty-nine acres fine fruit and vegetable land in the early fruit and vegetable belt, three miles southwest of Winters and one mile from Putah Creek; 25 acres are in fruit trees, apricots, peaches, and plums; 5 acres of grape vines, principally Tokays. On the place there is a fine well equipped with a good pumping plant from which the greater portion of the place can be irrigated. There is a good plain house of four rooms; wind mill and well finished tank house, barn 40x50 feet, including granary, packing shed and all other necessary out-buildings. There is also about 250 feet of hot beds, and water is piped where needed on the place. Terms of Sale: One-half cash, balance in one and two years, at 7%. Address, Box 907, Winters, Cal.

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They take the least fuel and convert it into the most power.

They are unequalled when put against a steady load as in pumping, and sustain their full rated power with persistency and regularity.

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jewelry, the dainty adornments for the ear may cost any sum from a fortune to a trifling amount.

Next to taffeta, linen makes up into the smartest coats, even for dressy occasions and for wear with silk or fine muslin frocks. They are newer than the lace coats. Because they are linen it is not to be supposed they are simple or inexpensive. On the contrary, none of the coat materials allows of more elaboration than linen, even as none is more adaptable to tailor-made effects. In fact, it may as well be said that linen in its various weaves might easily form the sum and substance of an entire summer outfit.

Long gloves are still worn, but as the warm weather has come one does not see as many of those in kid, as silk and lisle are taking their places. A new fad is the glove-garter, which is a novel idea for keeping them in place—a circle of fine silk rubber, edged on either side with a narrow frill of lace; and many of them are covered with pretty gold and silver designs or buckles or embroidery, and so well are they fitted that they seem to be a part of the sleeve.

The chiffon veil is becoming more popular every day. For the newest

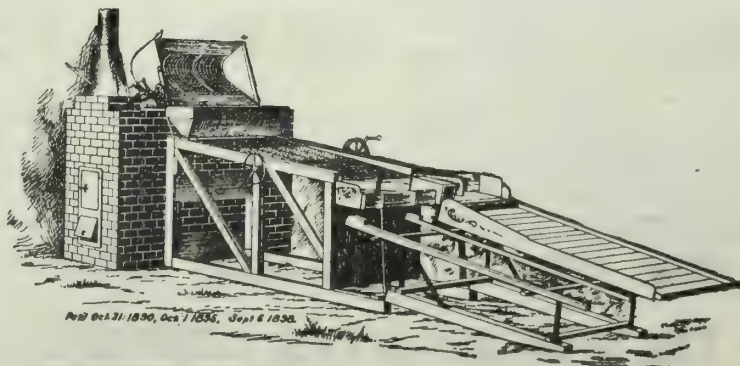
method in adjustment there should be two and a half or three yards. This is gathered at the back of the hat and then brought over the top and over the face, the long point ends so formed are brought around the chin, though sometimes these ends are used to make a chic little bow at the back of the hat. Very thin veils are used for the face in motoring, traveling or any other outdoor sport where one must contend with wind or breeze, but on ordinary occasions they are seldom worn.

There are at least three new skirt models which are sure to hold over for fall and winter, and all of them are long. It is evident that the trailing skirt is going to have its innings again, in spite of all our protestations and lamentations, and we may as well submit with a good grace. The new models show each a distinctive feature, the panel effect, the overskirt suggestion, and the combination of plaits and gathers which has not been seen for some years. There is more fullness around the hips and even the heavier materials will fall in gathers from the waist line.

Proud of His English.—"Ah, ma foi!

how he is like his father! A chip of the old blockhead, is he not?"

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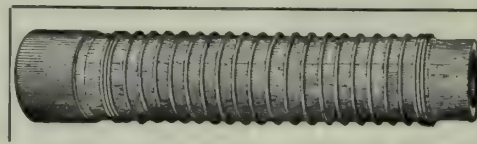
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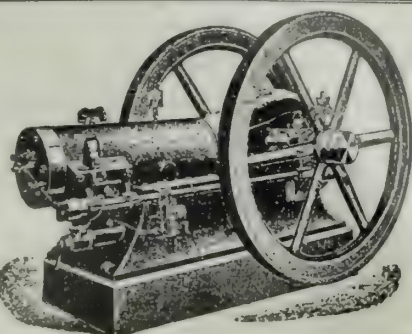
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SAN FRANCISCO, SATURDAY, AUGUST 25, 1906.

THIRTY-SIXTH YEAR

MEASURING IRRIGATION WATER

Among our readers who are new to California and to irrigation there is inquiry as to methods of measuring water from ditch or pipe-line and a little discourse on that subject may be helpful. Fortunately Mr. G. E. P. Smith of the University of Arizona Agricultural Experiment Station, has recently prepared a statement on the subject which is quite available for the purpose indicated.

There are at least two strong reasons which should urge the owner or user of an irrigating stream to make frequent measurements of the quantity of water carried in his ditches. First, without such measurements the appropriator of water can never make any definite assertion as to how much water he actually uses and in the event of question he can furnish no satisfactory proof as to his established appropriation. Irrigating waters often are of far greater value than the land upon which they are used, and it is indeed strange that while land is measured with precision, the quantity of water used upon it should for the most part be only roughly estimated. In legal cases involving water rights the evidence is usually of the most chaotic and contradictory character, composed of much prejudiced speculation with little or no real evidence.

The second reason why an irrigator should know the amount of water received through his ditch is because of the advantages offered in the management of his property. The duty of water, that is, the amount required per acre per year or, preferably, per month, should be determined. The duty of water varies greatly on different kinds of soil and with different crops, and information regarding it will assist in determining the more profitable course of farming to be followed. This argument should appeal especially to those who pump water for irrigation, for the cost of pumping often leaves a very small net profit. In many instances, also, measurements have proven the existence of an excessive loss by seepage from ditches, and the loss, once discovered, has been properly remedied. Other advantages of equal value will result from a careful record of the ditch waters.

It is usually assumed that water measurements are too difficult for the rancher and that the task must be left to an engineer. This feeling is unwarranted. It is possible for the rancher, with proper directions, to make his own measurements with little outlay of time and expense.

Of the various methods of measuring water, the miner's inch box has long since fallen into disrepute, and for good reasons. The use of current meters is too expensive for general use, and rating flumes are open to the same objection, as the rating itself is difficult and expensive. But in weirs we have a method which is both cheap and simple.

Briefly, a weir is a notch cut in the side of a wide board which is then set on edge in the channel so that the stream of water passes through it and falls into the ditch again on the lower side. Of several forms of notches the trapezoidal is to be preferred. It has a level crest and the sides are inclined to the vertical with a slope of one to four. For example, a twelve-inch weir is twelve inches wide on the crest and if it be eight inches deep, the width at the top is sixteen inches. This gives the correct side slopes. An eighteen-inch weir ten inches deep is eighteen inches wide on the crest and twenty-three inches wide at the top of the notch.

For measuring a small stream, such a weir can be made of a redwood or a pine board eighteen inches wide and six feet long. The board must then be placed crosswise of the stream with its ends held in place by earth and boulders or by stakes. The following precautions should be observed:

First—The weir must be set high enough to give a free fall of several inches on the downstream side. This will back the water upstream for a short distance. It is best, therefore, to select a point on the ditch which has considerable grade.

Second—The notch should be beveled away from the inner edge so that the water shall touch along that edge and no more. The inner edge should be carefully laid out and cut with a sharp tool so as to be smooth and true to the intended dimensions.



Cippolletti Weir, Measuring Water from a Pipe Line.

Third—The crest of the weir, that is, the bottom of the notch, must be laid level. This can be accomplished with the aid of a spirit level.

Fourth—If the approaching waters are turbulent, they must be made calm and free from waves and eddies by laying brush or a board on the water surface ten or twelve feet above the weir.

Fifth—The stream should be broader and deeper for a few feet on the upstream side, that is, it should form there a miniature lake. Otherwise the water approaches the weir with so great a velocity as to increase the flow. This increase may be computed for any particular case, but it is not worth while to do so, when a little shovelling will usually suffice to form the quiet pool, as is desired.

Sixth—Leakage under the weir board must be prevented. This is sometimes best accomplished by packing sods, weeds, or straw around the board. These substances are easily held in place by banking up with earth.

Briefly, the conditions are these. The water must approach the weir calmly and slowly, must touch the notch on the inner edge only, and must have a free fall on the downstream side.

Such a weir is not recommended to be left permanently in place, though it might be so fixed that it would not be washed out in a long time. But it can be put in place for a half hour, long enough to determine the discharge, and then carried to another portion of the ranch and used again, or stored to be used at another time.

If a daily record of the flow is desired, then a permanent weir box should be constructed. The weir board may be blocked between the first and second panels. The sides and bottom of the weir box are built of two inch rough plank, and the yokes or frames are cut from two inch by four inch sticks. The distances from the sides of the notch to the sides of the main box should be about three times the probable depth of water on the crest, and the depth of the box below the crest should be an equal amount.

The dimensions for a given case are to be determined from the following table:

Quantity of water in miners' inches (40 inches equal one cubic foot of flow per second)	Width of notch	Depth of notch	Length of box	Width of box
Between 15 and 50....	1	7	8	3
Between 30 and 180....	2	10	10	5
Between 40 and 360....	3	12	16	7
Between 60 and 550....	4	13	16	8
Between 80 and 750....	5	14	18	10
Between 100 and 1000....	6	15	18	11

Thus, for thirty miners' inches the smallest size is the best. For one hundred and eighty miners' inches the three foot weir is preferable though the two foot size will suffice.

The same precautions in setting are to be observed as for the simple weir board described above.

(Continued on Page 116.)



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THE WEEK

The whole west coast of the American continents seems to be unfinished, for the readjustment which produced the California earthquake of April is supplemented by similar movement in Chile and adjacent countries, and Valparaiso has reproduced the casualty of San Francisco. So far as reports go thus far, there seems to be much similarity in the earth disturbance and the ensuing conflagration, and there has been great loss of life and property and an outflow of the world's sympathy and generosity. There is no comfort in knowing that others suffer, but there should be a strengthening and confidence in the knowledge that one's own region is not particularly dangerous, and that to live calls for heroism and sublime trust everywhere. Naturally, California feels specially drawn to her far southern sister in the sympathy which comes from sharing in affliction, and the warmest expression of such feeling is heard everywhere in the State.

The State Fair at Sacramento is naturally the great agricultural event of the week as the display will open on Saturday and continue for a week, as we have previously stated. All indications are for a notable exposition in truly agricultural lines. Some intimation of the breadth of interest may be found in the fact that San Diego is to take part in the county displays and it is a long time since the ends of the State have embraced their opportunities in this way. It will have the effect, not only of making the Fair more interesting and representative, but it will unify the State itself, which is a very desirable thing.

The State Fair will evidently have a better set of agricultural assemblies than usual, and this is a good thing, also. On another page we have a ringing exhortation to pear growers to participate in a mass convention against the pear blight and we advise all fruit growers to read the call for assembly. There will also be the annual convention of the California Cattlemen's Association, which will be held in the Pavilion, Sacramento, at 10 A. M., August 28th. Business of vital importance to the cattle men of this State will come before the meeting. All cattlemen are invited to attend and join the association. This organization, as we have previously explained, has certain important protective undertakings in hand and there should be a representative attendance from all parts of the State.

Somewhat different from the above is the third annual convention of the California Livestock Breeders' Association, which will hold its open meeting at the Union Republican Club, 10th and K streets, on Tuesday evening, August 28th. The following attractive announcements are made for that evening: "Why a Breeder Should Practice Rigorous Selection," C. W. Rubel, California Polytechnic School; "Re-Creation as Recreation," Hon. Carroll Cook; "Dairy Possibilities in California," W. C. Hunt; "Reminiscences of Shorthorn Breeders and Breeding in California," Robert Ashburner; "Methods of Eradication of Tuberculosis," Dr. C. M. Haring, University of California; "Utility of Hereford Cattle for Farmers," Col. J. J. Steadman, Los Angeles. These names should attract a large assembly.

Californians should not forget the Irrigation Congress at Boise, Idaho, from September 3rd to 8th. One fare for the round trip has been decided upon. The Sacramento Valley Development Association has arranged

for special Pullman cars to carry the California delegation. These cars will leave San Francisco attached to train No. 16 August 30th and pass through Sacramento at midnight of that day. It is expected that all the delegates from the State, including members of the executive committee of the Congress, will travel on this train. The last National Congress had important results to the State, and the forthcoming representative meeting ought to be no less fruitful. The Federal Government will be well represented, the engineers in charge of the great works now in progress in various parts of the country will be present, and we may reasonably expect some indication as to future enterprises. The Congress will be of importance from the educational as well as from the executive point of view. There will be comprehensive exhibits of everything pertaining to irrigation, stimulated by the prizes that have been offered, and nothing has been left undone to extract the fullest amount of benefit from the occasion. California is too vitally interested in irrigation to be indifferent to such an opportunity of advancing her claims.

We conceive it to be important that there shall be a good California representation. We take it that California's position will be to strenuously insist that the law for which President Roosevelt is largely responsible shall be allowed fair trial without diversion or distraction. There are likely to be at least three wild movements which amount to attacks on the law, or which seem to us to be of that nature: (a) a disgruntled impeachment by regions not included in the projects now authorized; (b) a wild outcry for appropriations (supplementary to the funds available under the law) amounting even to one hundred million; (c) a movement to include drainage of immeasurable swamps with a part of the funds provided by the law for irrigation of arid lands. We believe that California should vigorously oppose all these movements. The National Irrigation Law is a grand experiment, and we should urge the importance of trying out an experiment without distracting and diverting additions which will give the whole undertaking a visionary aspect and a bad name.

What a difference there is in tastes! From time immemorial the yellow-legged chicken has been the acme of hospitable sacrifice and the peculiar perquisite of the visiting preacher. But what a change on the other side of the world! According to reports received at Melbourne, Consul-General Bray states that recent shipments of chickens from Australia to England have been quite successful. Size and uniformity must be adhered to, and white-legged fowls are most acceptable in London, being worth 6 pence (12c.) per head more than others. Chickens weighing 3 to 4 lb. sell best, and it is said that 5,000 cases could be taken next season if received at the proper time and in good condition. It is also stated that there is an excellent market for ducklings in London. And this is not only an important commercial item, but an advanced note of the fashions in chickens' legs.

Have Californians not been contending long for the position of California products in the eyes of the world under their own names! and now comes France and gives us an important push in that direction. Consul A. Gaulin of Havre, advises that the French Congress has passed a law prohibiting the importation of prunes into France whenever the country of their origin is not plainly designated. The principal provision of the law reads as follows: "The words indicating the country of origin shall be stamped, either in relief or cut in, in easily legible Latin figures of at least 4 millimeters (0.16 in.) height, in the center of the cover or of the bottom of the receptacle containing the merchandise, and in a place where there is no other imprint. The same words shall be marked with adhesive letters on the cases and the packing material used to ship the goods." Violations of any provision of the law shall be punished by a fine of not less than 100 francs, and

not more than 2,000 francs. Second offenses, however, are punishable by a double fine and imprisonment. It is aimed chiefly at domestic fraud, it being claimed that unscrupulous dealers have of late years sold both in France and abroad in considerable quantities foreign products as French. In the case of prunes, it appears that the smaller the yield in France the lower was the price of the so-called French prunes. This has been demonstrated time and time again, and it is held as conclusive proof that the California prunes, which are sold for much less than the French prunes, have been clandestinely naturalized and presented to the public as the genuine domestic article. Good for the French Congress. We earnestly desire the sunshine product of California to be recognized and distinguished from the French for cooking purposes. Let the French protect their light grade dessert prunes. They are a good thing of their kind, but when French cooks learn of the peculiar piquancy and flavor of our sun dried prunes they will find other uses for them and plenty of them. Let every prune stand for itself. California has nothing to fear from such requirement.

QUERIES AND REPLIES.

PRUNE RUST ON THE ALMOND.

To the Editor: I am sending you a few almond leaves. For two months the leaves have been falling from my 10-acre orchard until they look about dead. They are well irrigated and cultivated. Can you tell me what ails them and what remedy to use?—SUBSCRIBER, Banning.

The disease is caused by the fungus known as "prune rust." It is not a common trouble of the almond, nor of the prune, either, though it appears chiefly in the coast region south of San Francisco and in Southern California and seems to do most harm in nurseries. It is not the leaf disease of the almond known as "shot hole." The fungus can be checked by spraying with Bordeaux and this should be applied as a preventative a little in advance of the time when the rust usually appears in the early part of the summer.

ONION GROWING.

To the Editor: Why were new onions quoted at only 85c. per sack last June while old onions from Oregon and Australia are quoted at from \$2.50 to \$4? Are the new onions from sets and do such onions always bring a less price than those grown from seed? Is it possible in this locality to have onions, grown from seed or by transplanting, ripe in May when the price is usually good. I have a half acre transplanted in February from beds sown in October. They will not be ripe before August.—BEGINNER, Turlock.

The first of the new crop onions sell well because old onions are scarce and high. The remainder of the old crop bring much higher rates than the new because the new crop is scantily mature and the old onions are better for cooking purposes. The varieties which are held over are also better, for the Red Wethersfield is rather a coarse onion and would be little grown were it not so early. How early you can get mature onions depends upon the variety you sow and the growing conditions you work under. So far as starting and transplanting go you seem to have done the best you can.

PEANUT GROWING.

To the Editor: Will you kindly tell me in the columns of your paper if it is possible to raise peanuts in this locality and the treatment necessary for their growth?—READER, Corona, Riverside county.

Peanuts do best on rich light loams in valley floors and river bottoms. They do not do so well on upland loams even with irrigation, because it is almost impossible to maintain such uniformly good moisture conditions as in the low lands. On heavy loams, such as suit the orange, the peanut will not do well, and a peanut plant out of a good place for it, is a distressing and unprofitable object. The methods of peanut growing have been frequently described in our columns.

WEIGHT OF MEASURED HAY.

To the Editor: Can you publish a good rule for estimating hay tonnage in the stack. One rule that I have says from 132 to 154 lb. per cubic yard, according to

how long it has been in stack. Another rule says 512 cubic ft. per ton, which would be about 105 lb. per cubic yard. Of course hay differs very much.—SUBSCRIBER, Placer county.

Your first figures must be for very heavy and closely packed hay. It is common to count a cube of 8 ft. from a stack, say two months after stacking, as weighing one ton. An 8 ft. cube has 512 cubic feet. The prevalence of this measure in California is presumptive evidence of its local accuracy. As you say, however, hay differs very much, but we do not know any better rule than this.

WINTER GROWING LEGUMES FOR SOUTHERN CALIFORNIA.

To the Editor: Has your experience with the horse bean shown that they are good winter growers and not affected by frost? And can you recommend me to a vetch that is a vigorous winter grower and heavy yielder besides? We are looking for something in legumes that will grow rapidly so as to hold the soil of a washy sloping orchard together, and that can be used in April and May for field forage for swine—something thriftier than the Canadian field peas.—EXPERIMENTER, San Diego.

The common horse bean is a very good winter grower in this part of the State and presumably would be with you, providing there is moisture enough present. It is not sensitive to such frosts as we have. There are two vetches which are making a good record in Southern California—one the hairy vetch, the other the winter vetch. We presume seed of these can be furnished by the Los Angeles seedsmen. They are now being grown to a considerable extent in the Riverside district, and Mr. E. L. Koethen, who has given much attention to the subject, gives in the Fruit World, the following interesting observations: Canadian field peas root deepest, grow quicker and are easier turned under. On the other hand vetch germinates easier, stands tramping better, prevents washing best and does best in the shade of large trees. From this it must be deduced that both have come to stay, until we find a plant that will combine the good qualities of both, and perhaps improve on them in other ways.

Other things being equal, the deep rooting quality of the Canadian field pea is in our estimation the most important element to be considered, and puts it in the lead in the race, though the vetch seems to be the most popular, for the reason that commercial interests have pushed it to the front, and drawn popular attention away from the pea, we think to the disadvantage of the grower.

Deep rooting means a more thorough breaking of plow sole, better ventilation of the sub-soil, better percolation of water, and deep deposits of plant food from the decaying roots. This, in turn, means deeper rooting orange trees, larger supplies of plant food, and less difficulty in maintaining moisture condition in the root bed.

Again the quick growth of the pea is another great consideration. Where a maximum growth can be obtained in a minimum time, there is no doubt of being able to get the crop worked under early, and the orchard cleaned up before the irrigation season sets in in the spring. These two points in favor of the pea are sufficient to outweigh any general advantages that vetch may possess, except in special cases. The special cases apply where the orchard is liable to winter washing, shade from large trees, or where there is liable to be much early tramping in the orchard. The vetch might be called a "Lazy Man's Crop," as the careless manipulator of the soil is less liable to fail of obtaining good results. But to the intelligent orchardist, this ought to be little of an inducement, as with proper care there is no need of a failure to obtain a good stand of peas.

In absence of any definite measurement data in regard to the relative amount of green stuff produced by each we would say that if there is any difference it would be in favor of the pea, but there is no great evidence to prove it.

ALMOND GROWING.

To the Editor: Will you give data about growing almonds in California, especially referring to locality

necessary, and kind of nut suitable to locality? What is the best soil and about how much water is necessary?—NEW COMER, Los Angeles.

The commercial product of almonds is chiefly made in the central parts of the San Joaquin and Sacramento Valleys, and most of the trees are not irrigated. The best soil for the almond is a deep, sandy loam naturally well drained. The chief difficulty in the way of successful production of almonds is the occurrence of frost. The almond tree is very susceptible to high winter temperatures and starts in to bloom and fruit while other deciduous trees are dormant. As a result it is subject to frost injury during a long period, and the tree is often rendered unprofitable in this way. Commercial almond growing in Southern California has been largely indulged in, and as a rule without profit, as the high winter temperature makes the trees too restless.

To the Editor: I am looking for a substitute for common alfalfa. Turkestan alfalfa is said to be very hardy, resisting both cold and drouth. Arabian alfalfa, I am told, does well without irrigation. Is that true?—ENQUIRER, Sunnyvale.

Our observations thus far do not show any very marked differences between the Turkestan and Arabian alfalfa and the variety commonly grown in this State. Any alfalfa will grow without irrigation, providing it can root down through a free soil to moisture below, and it will go not less than 12 or 15 ft., if the soil is free and loose enough for deep root penetration. Non-irrigated alfalfa is, however, seriously subject to injury by gophers, which are readily kept down by flooding for irrigation, and for these reasons also the stand without irrigation is not so good, nor so long-lived. On shallow soil overlying a dense clay, or hard-pan, no permanent satisfaction can be expected. It is probable that the announcements of new kinds of alfalfa as suited for trying situations have been exaggerated, and have caused people to expect too much.

MR. BURBANK'S TIMBER WALNUT.

To the Editor: In regard to Mr. Burbank's timber walnuts mentioned in the RURAL PRESS of the 4th, which I understand to be those growing in front of his residence, I asked him some time ago if they were cut back to cause them to fork, and if they would throw up straight stems if grown for timber. He said those specimens showed the natural habit of the tree, but that he had a cross between the California and the eastern black walnuts that threw up a straight central stem, and would outgrow either parent two to one, a very valuable timber tree. Perhaps Mr. Burbank would give you an interesting item about it. I believe that judicious timber culture is today one of the most promising lines of agricultural investment possible in this land of wonderful forests.—G. H. DWINELLE, Fulton.

Thank you for the suggestion. Mr. Burbank is, however, so overcrowded with work that we do not appeal to him for writing. He has just issued a circular of things he has to dispose of this year. It does not mention walnuts. Probably they will come later.

POLLINATING ALMONDS.

To the Editor: I have almonds, Nonpareil and I. X. L. varieties. The latter were topped last spring and grafted to Texas Prolific, but did not grow. I would like your opinion. Will the Texas pollinize the Nonpareils, or is there a better variety to graft them to? I find in Farmer's Bulletin No. 103, Washington, D. C., an article on "Cross-Pollination of Plums." Do you know of something similar on almonds?—READER, San Joaquin county.

We regret to say that we know too little about the Texas Prolific almond to know whether it will pollenate the Nonpareils or not. There is in fact no definite information as to which varieties can be counted on to bloom together and favorably influence each other, but the common conclusion is that there is advantage in associating varieties and that is about as far as public information goes at the present time, a fact which we much regret. It will be a contribution to a general understanding of the matter if almond growing readers would give us their observations on the point and what association of almond varieties they find promotive of bearing.

HORTICULTURE.

EXPERIENCE WITH WALNUTS.

To the Editor: As walnut growing seems to be a popular subject of discussion, I write to give my limited experience with second generation seedlings of the French walnuts. I regret I cannot corroborate the claims of others on this subject.

Some nine or ten years ago I planted at Forestville several acres of second generation seedling Mayette, Franquette, and Parissienne walnut trees. These trees vary in time of starting to leaf out in spring from the latter part of March to the latter part of June and there is nearly as great variation in the size and quality of nuts. From one quarter to one fifth of these trees start so late that they have a very short growing season, and make a poor growth and do not begin to leaf out until after June 1st. Some of the trees, perhaps about one quarter of them, produce a very superior quality of nuts, while the balance range from good to small and inferior nuts. The present owner does not consider the average of the nuts equal to the Santa Rosa soft shell, although some are much better and they are free or nearly free from blight. The Santa Rosas are more uniform in size and quality, but subject to blight, and, starting earlier, more susceptible to spring frosts.

If seeds were saved from seedling trees, producing the best nuts and when these bear the best selected again, and this continued for generations, the type would doubtless become fixed to a great extent just the same as some breeds of stock such as the Percheron horse or Jersey cow, having been bred to a certain type for hundreds of years, reproduce themselves almost exactly, while newer or cross breeds, the type of which has not become fixed, show a great variation in their progeny.

There is a variety of peaches, the Wiley cling, raised considerably in this country, and in much demand at the canneries. The first orchard was planted in Green Valley by an early settler, Mr. John Wiley. The orchard was composed entirely of seedling trees, having been propagated in his former home in Virginia, for generations by continued selection of the best seed. By this means the type became so fixed that there was only slight variations in the fruit from the different trees and all were acceptable to the canneries.

It is probable that the original Franquette or Mayette were sports and being propagated by grafting, the type did not become fixed by continued selection of seeds, and consequently the French seedlings show such a great tendency to variation. When planters of French walnuts cannot secure or cannot afford to purchase all grafted trees, it would be much better to plant some grafted trees, to cut scions from, and plant balance to black walnuts to be grafted later in the orchard, than to risk the uncertainty of quality of nuts from seedling trees.—T. J. TRUE, Forestville, Sonoma county.

[This is very interesting.—Ed.]

A FINE HYBRID WALNUT.

To the Editor: I send you by this mail a photograph of a hybrid walnut tree grown by Mr. Geo. C. Payne of Campbell, Cal. It is the tree of which I spoke in a recent conversation with you, and is the largest tree of its age I have ever measured.

This photograph was taken July 6, 1906, and the age of the tree at that date was four years and three months from seed. At a height of one foot above the ground line the circumference was 21½ in. The nut which produced this tree is a cross between the California black and the Santa Rosa soft shell, consequently might be very much like what Mr. Burbank terms "Paradox."

Mr. Payne planted about three acres in walnuts and this is the fastest growing individual tree of all, so he has decided not to graft this, but to allow it to grow a few years longer to see what size it will attain. The other parts of the orchard he grafted this spring to Franquette and Santa Rosa soft shell.

This tree has had no fertilization nor irrigation, and no special care of any kind, except that the whole orchard has been cultivated a few times each season to keep down the weeds.

If any reader of this knows of any tree of whatever species growing in any place in the United States, which has attained a larger size than this in the same length of time, he will confer a favor by making it known.—CHARLES MOORE, Palo Alto.

[This is the tree to which we referred last week—the photograph arriving in advance of his communication. We shall be glad to receive measurements of other trees believed to be of hybrid parentage.—Ed.]

PLANT DISEASES

PEAR BLIGHT AND ITS OCCURRENCE IN SOUTHERN CALIFORNIA.

(By Mr. Henry J. Ramsay, Assistant Pathologist, University Pathology Laboratory, Whittier.)

[Concluded from page 104 of last week's issue.]

The Blight and Its Distribution.—The blight is a bacterial disease and works in the living bark and wood of the tree and because of the vessels in the bark it works downward and upward faster than it does to the sides, as it can more readily run down the fibers than it can transversely across the fibers and the vessels. The pear blight germs multiply very fast simply by division and this process has been observed to take place inside of half an hour. The germs are very sensitive to drying and die very soon on being exposed to sunlight or the dry air. It also dies out very soon in the blighted bark and wood, in fact, it keeps alive as long as there is any live bark or wood for it to feed on. The live blight, then, is found along the advancing margin of the blight on the branch or limb.

A question very often asked is this: How is the blight carried from blossom to blossom, and from tree to tree, or from orchard to orchard? The pear blight germs are carried from blossom to blossom chiefly by insects and principal among these are the honey bees. A number of our common insects are agents in bringing about the twig infection of which we find so much in our apple and pear orchards. But as far as the blossom infection is concerned the honey bee is usually the one that carries the most of the blight for the reason that it is the most frequent visitor of the blossoms in search of nectar. In some cases the wasps, wild bees, and other insects are greater carriers of the blight than the honey bee.

How Blight Gets Entrance.—The whole tree is covered with a sort of cuticle which serves to keep out the pear blight germs and other diseases, but the nectar of the blossoms is not covered with a cuticle or covering of any kind and so furnishes the means of entrance for the blight germs. They develop very rapidly in the nectar of the flower and it does not take very long for the blight to work down to the spur or twig. The nectar of the blossom is the more liable to infection than is any other part of the tree for two reasons: First, the insects are visiting the flowers in search of nectar and are means of carrying the blight to the blossoms, having previously visited some blossom that was infected with the blight and was exuding a gummy virus teeming with millions of bacterial germs. Or the insect may have visited some branch that was gumming and in that way become covered with the virus. In the second place the nectar of the blossom, having no cuticle, is the easiest place for the blight to get a start in, and it soon runs down the twig, and if the conditions are favorable it does not take it long to get down to the main branches and limbs. The carrying of the blight by insects was first demonstrated by Prof. M. B. Waite of the Department of Agriculture, Washington, D. C. He has been working on this problem for the last 15 years, and he has worked out the life history of the pear blight germ and by carefully conducted experiments have proved beyond a doubt that the blight is carried by insects.

Bees have been carefully watched as they have gone from blossom to blossom after having first visited a blighted one, and these blossoms visited have been marked and found to develop the blight. The bee which was doing the carrying also produced the blight in cultures. On the other hand bees have been taken and made to feed on the nectar of a blighted blossom and then transferred to the healthy blossoms and these in turn have contracted the blight. Likewise the insects have been made to carry the blight from artificial cultures also. Flowers covered with mosquito netting remained free from blight, while the ones that were free to be visited by insects were blighted.

A series of careful experiments extending over a number of years have conclusively proved that insects carry the blight and are the chief means of its distribution. We have found that we can get the walnut blight also from insects that have visited blighted portions. Bacterial diseases of the nature of pear and walnut blight lend themselves very readily to insect distribution, especially the pear blight. The blight can sometimes be carried very long distances by birds and even by man.

The Treatment.—The only known remedy for blight is the careful cutting out of the blighted portions of the trees to prevent its further spread. Fall and winter cutting is the most effective, but that does not necessarily mean that one should not cut during the

growing season or summer. A great deal of good can be accomplished by careful cutting during the summer. As the blight runs very fast during the spring and at times during the summer it is much more difficult to get below it in every case. Sometimes it may run away below where there are any signs of it and in that way can very easily be missed. So at this season one should try and cut at least a foot below where there are any signs of it in the bark or wood.

Never leave any of the blight in the tree when cutting and be sure to disinfect both the cut and the tools used after each cut, otherwise you may spread the blight with every cut that is made, as it is easily carried on the saw, shears or knife, if not disinfected. We find that the best disinfectant to use is corrosive sublimate. This can easily be obtained at any drug store in the form of tablets about a third of an inch across. Use one of these, the large size, to a pint of water. It is most conveniently applied to the cuts and the tools by means of a sponge fastened to some part of your clothing either by a string or a rubber band. The cuttings should be burned at the end of each day's work.

Though the blight is found in a good many orchards in the apple district in the upper Yucaipa valley it is not so bad in any of them at present but that it can be very easily and thoroughly cut out. The growers are at present doing very good work in cutting the blight out of their orchards and it looks as if they may be able to stamp it out before it gets any further foothold. However, the orchards should be very carefully looked after during the rest of the summer and should be most thoroughly inspected in the fall and winter so as to get out the holdover cases of blight. Especially should the neglected orchards be looked after and something be done to remove that source of infection. As long as any pear blight exists in these neglected orchards the whole district is in constant danger of a new invasion. In view of the energetic and business-like manner in which the horticultural commissioners and growers are going after the blight, the outlook is good for the stamping out of the blight in the district, or at least an efficient control of the dread disease. It is of the utmost importance that every case of blight in the district be found and done away with and for that purpose will a thorough inspection be made next fall and winter.

FOR A GREAT FIGHT AGAINST PEAR BLIGHT.

A meeting of Pear Growers will be held in Sacramento on Thursday, August 30, for the purpose of discussing the pear blight situation and deciding what measures shall be taken to prevent the destruction of the pear orchards of this State by this dread disease.

The call for the meeting is issued by the Sacramento Valley Development Association after consultation with pear growers and with the approval expressed by letter of more than one hundred growers, including many of the most prominent orchardists of the State.

The pear blight is comparatively new in California but it is an old disease and its ravages have left a trail of ruined pear and apple orchards from the Atlantic to the Pacific. The pear orchards of the Southern States are all destroyed and unless strenuous measures are adopted California pear orchards will soon be a thing of the past. Fortunately there is a remedy. Professor Waite of the United States Department of Agriculture, one of the leading plant bacteriologists of this country, has studied pear blight for nearly twenty years. He has developed the bacteria under the microscope, has created the disease by inoculating healthy trees and by a long series of patient investigations he has acquired a thorough knowledge of the disease and means of controlling it.

Professor Waite recommends cutting out diseased portions of the trees and declares that where this is properly done the practical control of the disease is certain. In his own practice Professor Waite demonstrates the correctness of this statement for he is himself a pear grower, and maintains a large orchard in Maryland despite the ravages of blight there.

The success of this method has been demonstrated in California and when the meeting of pear growers is held some of the best orchardists in this State will tell of successes attained in protecting their orchards by proper cutting.

There have been failures and will continue to be failures until men learn to do the work properly, but successes achieved in the Sacramento valley this year prove conclusively that the remedy is all right and needs only to be properly applied.

Success depends upon uniform work throughout the pear district. Concerted effort is absolutely necessary to success and the meeting is called in order that the growers may have an opportunity to make plans for

such an effort.

The pear crop brings into this State approximately two million dollars annually. Pears are today one of the most valuable of fruit crops and the interest already shown in the proposed meeting indicates that active steps to save the pear orchards will be made.

The meeting will convene early in the morning of August 30. Professor Waite of the Department of Agriculture, and Professor Smith of the University of California have approved the meeting and will be present. The State Horticultural Commissioner also approves the plan, and with one hundred orchardists already behind the movement there is no doubt that this will be one of the most notable meetings of fruit growers ever held in the State of California.

MEASURING IRRIGATION WATER.

(Continued from Front Page.)

After the weir has been properly placed, the only measurement required to be made is the depth or head of water on the crest. It can be measured with a foot rule reading to sixteenths of an inch.

The "head" may be defined as the height of the free water surface above the crest of the weir. Since the surface is lowered considerably near the weir notch, this measurement should be made about two feet up stream from the notch. In the case of a weir board, a stake should be driven in the bottom of the ditch at this point until its top is just level with the crest, and the foot rule held upon it to measure the depth of water. In case a weir box is used a strip may be nailed to the side of the box two feet back from the notch and level with it, and the depth of water determined by resting the rule upon this strip.

The formula for computing the discharge is:

The discharge in cubic feet per second is equal to 3.367 times the width of the bottom of the notch, times the head, times the square root of the head. If this product be now multiplied by forty it will give the discharge in miner's inches.

To avoid the necessity of making this computation each time, a table has been prepared giving the discharge over a one foot crest for heads varying from one inch to nine inches. The discharges are given in cubic feet per second, but are easily reduced to other units. If the discharge in miner's inches is desired, multiply the quantities in the table by forty. If the number of acre-feet per day is desired, multiply by two, if gallons per hour, multiply by 26,930.

The discharges for any larger weir may also be easily computed from the same table. The discharges over a two foot weir are twice those given in the table, those for a three foot weir are three times those in the table, and so on for other sizes.

Table of Discharge for a One Foot Weir.

Head Inches	Discharge Cubic feet per sec.	Head Inches	Discharge Cubic feet per sec.	Head Inches	Discharge Cubic feet per sec.
1	.081	3	.421	5	.906
1 1/8	.097	3 1/8	.447	5 1/8	.940
1 1/4	.113	3 1/4	.474	5 1/4	.974
1 3/8	.130	3 3/8	.501	5 3/8	1.009
1 1/2	.148	3 1/2	.529	5 1/2	1.044
1 5/8	.167	3 5/8	.557	5 5/8	1.080
1 3/4	.187	3 3/4	.587	5 3/4	1.116
1 7/8	.208	3 7/8	.617	5 7/8	1.153
2	.229	4	.648	6	1.190
2 1/8	.251	4 1/8	.679	6 1/8	1.227
2 1/4	.274	4 1/4	.710	6 1/4	1.265
2 3/8	.297	4 3/8	.742	6 3/8	1.303
2 1/2	.321	4 1/2	.774	6 1/2	1.342
2 5/8	.345	4 5/8	.806	6 5/8	1.381
2 3/4	.370	4 3/4	.839	6 3/4	1.420
2 7/8	.395	4 7/8	.872	6 7/8	1.460
3	.421	5	.906	7	1.500

The use of the table may be illustrated as follows:

Suppose that in a measurement on a three-foot weir the depth of water on the crest is found to be 5 and 3-16 inches. What is the discharge in miner's inches, and how many acres can be irrigated by the continuous flow of the stream for 24 hours? Referring to the table we find the discharges given for heads of 5 and 1-8 and 5 and 1-4 inches and the discharge for 5 and 3-16 can be taken as the average between them. The average between .940 and .974 is .957. This is, however, the discharge over a one-foot weir and hence, multiplying by three, we obtain 2.87 cubic feet per second as the discharge over the assumed three-foot weir. Multiplying 2.87 by 40, the discharge in miner's inches is found to be 115. Multiplying 2.87 by two gives 5.74 as the discharge in acre feet per day, and we know thereby that the stream is sufficient to give 11 and 1-2 acres a six-inch irrigation or 17 and 1-4 acres a four inch irrigation, in twenty-four hours.

MARKETS.

Wheat.

Some buying of new crop wheat is being done in California, as well as in Oregon and Washington. As a rule, however, the offerings have been small and receipts at tide water are light. The railroad blockade may have some influence upon holding back shipments, but it is not understood that this is the real cause of the light arrivals. Considerable tonnage is on the way to the coast and by the early part of September the shipping season should be under way. On or before that time heavy purchases should be made if there is to be any great amount of grain exported. Conservative estimates place the maximum yield of wheat in California at 500,000 tons, of which probably 320,000 tons will be required for local consumption, leaving not over 180,000 tons for export. The quality is generally up to the average and the yield in Southern California is excellent. In Oregon and Washington the yield is below the average and in many places the wheat is not as heavy as could be wished. Advices from Portland state that the Oregon yield of wheat will be about 25,000,000 bu. Prices for wheat continue to be a little uncertain, with good prospects for a firm market later on. December wheat eased off a little early in the week, but is again firm.

Flour.

The flour situation is a little better from the selling point of view. California mills continue busy supplying the local demand. The demand for flour for early loading for export has improved and buyers are reported in the northern market, where they are taking flour at ruling quotations for prompt shipment. Most foreign buyers are still holding off, waiting for the new crop, but the fact that many more inquiries are coming in seems to indicate that buyers have about given up the hope of securing better figures. Orders from China are improving and some orders have been placed from Japan. At the present time California is not drawing on Portland or Seattle to any great extent, as the California mills are now able to supply the State's needs.

Barley.

The situation in barley has hardly changed since last week. Arrivals are increasing, though the receipts are unusually small, considering the lateness of the season and the large crop which is known to have been harvested. One cargo of barley has cleared for Cork and considerable exporting is expected in the near future. The fact that buyers are already taking the new crop for export at present prices seems to indicate that exporters do not anticipate a drop even when the bulk of the State's output is thrown on the market. Spot barley is very high in Oregon and Washington, owing to the fact that the new crop has not yet appeared on the markets of those States. There is some talk of shipping barley from San Francisco to Portland and Seattle, and it is possible that some trading of this sort may be done.

Oats.

Oats continue quiet at unchanged prices. The prospect is for a large oat crop throughout the Pacific Northwest and an average yield in California. The idea seems to prevail that with the approach of harvest the market will collapse, and, in fact, prices have already weakened considerably in the North. A good many contracts are being made in Oregon at \$22 and \$22.50 per ton for oats for early delivery. Spot oats, however, are still scarce and high in price.

Corn.

Corn is very scarce and high as regards spot stock. There is no particular interest in futures and the prospect of a big yield throughout the Mississippi valley seems to indicate lower prices when the new crop comes on the market.

Millstuffs.

The feature of the week has been the heavy arrivals of bran from Puget Sound, 25,869 sacks coming in in one day. Most of this was, however, sold prior to arrival and did not have any particular depressing effect on the market. Bran is very dull in Oregon and Washington and unless the shipping facilities are still further tied up by strikes a considerable movement from the north to California should be noted. Owing to the improvement in the demand for flour and to the greater activity of the larger mills on the Columbia river and Puget Sound, millstuffs are very plentiful in Oregon and Washington, and bran and other millstuffs may find their way here. The large quantity of low grade wheat in Oregon and Washington will also tend to increase the output of millstuffs in the north. In Portland bran is quoted at \$15 and shorts at \$16 per ton, with every indication of a further decline.

Seeds.

The traffic in seeds seems to be up to its usual standard and is constantly improving. The crop of seeds throughout the State is good and the people, as a rule, seem to be giving San Francisco the preference. This

is appreciated greatly by merchants and the same good spirit will be shown by the local dealers at any appropriate time. There seems to be no great shortage in any line of seeds.

Hops.

Hop prices continue very firm, numerous sales at high figures being reported from the interior. Claims are made by Sonoma county growers that they have effected sales at 20c., and there is some talk of still higher figures. Hop picking is just beginning throughout California and there is some fear of a scarcity of help. In Oregon and Washington the situation is also very firm. Reports on the size of the Oregon crop are conflicting, though the general idea is that the output of that State will be less than was anticipated earlier in the year. Portland dealers estimate the crop at from 100,000 to 120,000 bales. Of this amount probably 80,000 bales is already contracted for.

Wool.

With very little animation in the California wool markets at present, holders of wool are keeping a keen eye on Boston. There the market is showing decidedly more animation and a confident feeling prevails. Reports from Boston state that consumers have begun taking on some good sized lines. One large Boston house reports that there are lots of sample bales out on California wools, including Red Bluffs, which are now worth 28c. California southern spring wools are held in Boston at about 22c., and a few average northern wools have just been sold at from 25 to 26c. Some defective stock has been taken at 40 and 41c. scoured.

Beans.

The bean market is in fairly good condition, prices are steady, but the stock is very light and this has brought on a temporary lull. The new crop is expected to be in in about a month, and pending the new arrivals the interest in spot stocks is confined largely to immediate needs. Considerable interest is taken in futures, and it is claimed that a good deal of the coming crop has already been sold. From all appearances the yield in the principal bean growing sections will be heavy. Harvesting is expected to begin about a month later than usual.

Bags and Bagging.

The bag situation locally is unchanged since last week. All of the grain bags that are needed have been purchased and there is as yet but little inquiry for other varieties of bags. The scarcity of jute and the continued high prices are now being considered seriously by the burlap mills of Calcutta, and the leading mills have now arranged to run their mills only five days per week, turning out only as much burlap as is needed for immediate use. The idea is to buy no more jute than can be avoided at the present high prices, and to postpone manufacturing for future needs until a larger supply of jute is to be had.

Hay.

The receipts of hay in San Francisco for the past week has amounted to 4,213 tons. The Southern Pacific Railroad is still refusing to receive any hay for shipment over its line to San Francisco, and the cars which have come in this week with hay were loaded many weeks ago. Practically the entire market is at the hay wharf, where arrivals are daily handled. At present just about enough hay is being brought into San Francisco to supply the city's daily requirements. No stock is being piled up for future use and the matter of a city supply for winter is becoming serious. Owing to restricted arrivals, the market has remained steady under unchanged prices. The export demand continues fairly good, though not particularly active. Alfalfa hay is in moderate supply with a demand about equal to the stocks offering. During the week only one schooner load of straw came in and the market is practically bare. Bedding hay is being used in place of straw.

Butter.

Butter is firm in the local market and during the last few days it has been selling at 26½c. for the best grades. The supply seems to be less than usual and, notwithstanding the high prices, the market is continually on the verge of a shortage. Ladle butter from the east is selling at 19c., with the prospect of going higher later on as the eastern supply is short. Considerable trading in ladle butter is reported, the bakers and large users having been in the market for considerable quantities.

Eggs.

Eggs are steady, both supply and demand being fairly even. A good many eastern eggs are coming in and cold storage stock is being drawn on quite heavily. In fact, the cold storage supply is very limited. Owing to the big fire, and the unusual conditions which followed it, dealers failed to place the usual quantity of eggs in cold storage, and even the small quantity so placed has already been largely drawn out. Eastern seconds, now quoted at 19c., are being largely traded in by bakers and other large users.

Cheese.

Cheese is steady this week, notwithstanding the fact that the supply is quite large. Dealers are doing a good business in all favorite lines, notwithstanding the unusual conditions.

Poultry.

The poultry business seems to be thriving, with large hens and large roosters in demand. There is practically no demand for turkeys and consequently the receipts are small. There is scarcely any demand for old roosters. Large hens are selling at \$5 to \$6 per doz., small hens at \$4.50 to \$5, young grown roosters at \$6 to \$7.50, small at \$5 to \$6, fryers at \$3.50 to \$4.50. Ducks at from \$3.50 to \$5, and geese \$1.25 to \$1.50 per pair.

Fresh Fruits.

The demand for fresh fruit is good. The supply is, however, constant and large even to a surplus. In fact, the main question at present is to get the perishable fruits out of stock before they are unmarketable. The peach and pear crops are light throughout the State, and as a general thing the bulk of both is going to the canneries, and consequently it is difficult to get peaches and pears enough to supply the local demand. There is some talk of shipping peaches in from Colorado as the crop in that State seems to be very good. The pear and peach crops in California are much less than in former years and, owing to the apricot failure, the canneries are anxious for them. This leaves the peach market in San Francisco steady. Grapes are coming in well and are generally selling at about \$1 per crate. The grape crop in California is fair, but the late rains and the hot weather have made it much less than it would have been otherwise. Figs are in good demand, the supply is short on account of this being just between crops. Plums are plentiful and in good demand. Prunes are plentiful this year, but as the demand continues good the market is firm. Apples are in good demand and are selling as a rule at about \$1 per box.

Vegetables.

The arrival of river potatoes has not been so great this week, and the constant demand has made the potato market firm. Onions, on the contrary, are plentiful and weaker. As a rule, vegetables are plentiful in San Francisco, with no extraordinary demand and consequently not so strong as they might be. Cucumbers are in good demand and are selling at a good price. Beans are plentiful and the demand is not so good as in some other lines. Green peas are in large demand, but the supply on hand seems to be great enough to supply it. The crop of potatoes is fair this year and heavier shipments are expected in next week. Salinas potatoes are arriving daily and are quoted at \$1.25 per sack. Green corn, summer squash, tomatoes, peppers, etc., are plentiful in the market and are weak.

Dried Fruits.

The dried peach market is exceedingly good this year. Peaches are selling at 9c. choice, 9½c. extra choice and 10c. for fancy. The peach crop is light and, on account of the hot weather, a little earlier than usual. The recent drop in the price of green fruit has resulted in many rejections at the canneries and this is increasing the output of dried fruit. Apricots are very scarce, but the prices are excellent. Choice apricots are selling at 19c. Dried fruits are coming in slowly and the demand on the whole is increasing. The nectarine crop is short and the market is steady. Prunes in California are abundant and the price is accordingly weak. Prunes are expected to begin to arrive in San Francisco by the last of the month. The apple crop is good throughout the State, but the prices are only fair. The pear crop is almost a failure and consequently these will be in demand.

Raisins.

The raisin crop is fair and somewhat earlier than usual. The demand is good and the prices are fair and firm. The quality promises to be a little above the average.

GENERAL FARMING HOLDS NITROGEN.

The loss of nitrogen from these grain farms was years amounted to from three to five times more than was removed by the crops, says Professor Harry Snyder, of Minnesota, in summarizing "The Loss of Nitrogen From Soils," being a portion of bulletin No. 94. This loss was due to the rapid decay of the humus and the liberation of the nitrogen, which forms an essential part of the humus.

The loss of nitrogen from these grain farms were practically the same as from the experimental plots at the University farm. The results of the tests on the small plots are in accord with the field tests in different parts of the State.

Where clover was grown, crops rotated, livestock kept and farm manure used, an equilibrium as to nitrogen content of the soil was maintained, the mineral plant food was kept in the most available condition and maximum yields were secured.

THE STOCKYARD

COMMERCIAL FROG FARMING.

We recently undertook to answer questions about frog farming by citing conclusions reached by the United States Fish Commission. These conclusions were rather discouraging, and enlarged upon the difficulties attending such ventures. There is much interest in the subject in California and a certain demand for the product in the larger towns where restaurants, hotels and clubs have French cooks and epicurean customers. It is only fair therefore to pursue the subject upon a more optimistic line, that our readers may have both sides of it.

Mr. Fred O. Sibley of Otsego county, N. Y., writes a very alluring article on frog farming for the Massachusetts Ploughman, basing his account upon observation at Meadow Brook Farm at Allendale, N. J., where the rearing of frogs for market has been taken up scientifically, and to this plant the writer is indebted for the facts herewith presented.

The Charms of the Business.—According to what has been accomplished there the occupation is within the reach of nearly everybody. The chief requisite is to have a piece of ground which is swampy, and that can be found on most any farm. It is claimed, in fact, that more money can be made from an acre of swamp land, converted into a froggery and properly managed than from ten acres of wheat, and with not nearly so much expense.

Best of all, it is light work—just the sort for people who are not strong enough to endure one of the heavier occupations; for those who are sickly it is beneficial, too, as being in the open air tends to health. Even for the city man who owns a country home it is recommended in that, aside from the interest and novelty there is in growing frogs, he as well as his friends who come from the city to see him will greatly relish the meat, the more because it is one of the natural products of the country. Compared with the investment, it is considered, where the ponds can be easily built, a much more profitable industry than poultry raising, and one that will work together well with poultry; especially so if the plant is located near some large town or city where its proprietor has individual customers to whom he sells his products direct. He would then be likely to have a steady market for more frogs than he could supply, and at paying prices, as the meat is a luxury that most people of such a class indulge in, and would to a much greater extent if they only knew where to get it.

Small Beginnings.—Be the prospects ever so bright, however, a small beginning is always advisable. This enables one to feel his way into the occupation, as it were, and if he does not like it, or it proves a failure, not be out a fortune. Early in the spring is the time to begin active work, and it is cheapest in the end to start with no frogs under four years old. There are various species of frogs, but the edible one known as *Rana esculenta* is the kind kept on Meadow Brook Farm, where a specialty is made in raising breeding stock. This is the variety that every frog pond should be stocked with, and the sooner in the spring it is done the better, as the frogs then have a chance to become familiar with their new quarters before the breeding season sets in.

A Froggery.—It is important to have at least four ponds, one in which to breed, one in which to hatch, one in which to raise the frogs, and one in which to keep the stock. The last should be the largest, permitting plenty of room for growing and opportunities for getting food. Ponds of not less than one-half acre in area, with the inlet at one end and the outlet at the other, in a line of its longest axis, generally give the best results; smaller ponds, however, can be successfully operated, and their size, anyway, has got to depend chiefly on the amount of land available, its topography and the water supply. In other words, if the ground one has will not permit of the construction shown, such an arrangement as it is best adapted to should be carried out. In a swamp, for instance, a portion 15x50 feet, and another part 15x20 feet, excavated so as to hold water, will usually suffice. The breeding frogs may be put in the larger pond, and the spawn hatched out in the smaller ones; the tadpoles, upon developing into young frogs, may then be turned loose in the swamp to grow until they attain marketable size, which, if there is a small stream or ditch running through the swamp, as is very often the case, they will readily do. Indeed, where such a course is feasible, frog raising can be carried on more profitably and economically than in any other way.

The Smaller Pond.—The one in which the spawn is hatching must be fenced in with one-half inch mesh wire fence from two to three feet high; otherwise snakes and the like will get in and devour the spawn of which they are very fond. Outside of a swamp, all the ponds in fact, should have a protection of this kind, for then the frogs can be confined where intended, and rats, cats, turtles, water centipedes, water beetles, coons, leeches

and snakes debarred from getting to them.

It is not necessary to make the ponds very deep; three feet is ample, and they can be less where there is a good bottom to hold water. Near the banks, of course, they want to be the most shallow and if one-fourth of each pond is not over a foot deep, it will do; this portion should be planted with pond weed (*Potamogeton*) and water weed (*Elodia*, or *Anacharis*) to facilitate the production and growth of the minute animals which furnish so large a part of the food for frogs at all stages of their development. The rest of the pond should have a gradually sloping bottom, with consequent increase of depth to the outlet, the water at that point being at least 5 feet deep; by drawing off the ponds, the stock can be assembled in a small area for sorting and the like. Soft muck, in which the frogs can bury themselves in cold weather and so escape freezing, should constitute the bottom of the ponds. In the middle of them, except the spawn hatching pond, water lilies—the large pads, such as *Nymphaea alba*—should be planted; these furnish hiding places from fish hawks, as well as perches on which to bask in the sun and catch insects. For, truth to tell, a plant that will grow on top of the water furnishes many insects, which can also be attracted to the vicinity and within reach of the frogs by soaking a number of grain sacks with molasses and fastening them up around the ponds just above the ground. To guard against leeches, which are very destructive to frogs, acting the same as hen lice do on chickens, whatever vegetable matter is grown in the ponds should be planted from seed.

The Spawn.—As already stated, the nursery ponds should have adequate means of protecting the young from their natural enemies, and, also, of producing the greatest quantity of insect life suited for their sustenance possible. In the first place, however, the spawn of frogs, which looks like a gelatine mass in the shape of a bunch of grapes, will be found attached to some vegetation in the breeding pond near the surface of the water. As impregnation takes place immediately after it is deposited there, every "bunch" should, on discovery, be taken out at once with a large, long-handled dipper and placed in the hatching pond. Otherwise the spawn will be destroyed by the frogs jumping into the pond and coming in contact with it, for anything that separates or breaks it up will cause it to sink to the bottom of the pond, where, failing to get the proper action of the sun, the eggs cannot hatch.

On the Bottom of the Hatching Pond.—Some skeleton frames should be set that come within a few inches of the top of the water; weights or stakes into the ground may be employed to keep them in place. Over them some fine netting—either cotton or flax, such as is used on windows to keep out flies—should next be fastened, and on this the eggs or spawn, taken from the breeding pond, deposited. In this way it will be undisturbed, and the sun, provided the netting is always kept covered with water, do its part toward hatching the eggs. Furthermore, when the spawn does hatch into tadpoles the frogs will have no chance to eat them as fast as they wiggle out of the eggs, as they will do if they can get them, until the young frogs are large enough to protect themselves.

The Tadpoles.—It takes from four to six weeks for the spawn to hatch to the shape of tadpoles, and these, in turn, from four to five months to develop into small frogs; up to which time they are fish in a sense and will eat almost anything, either vegetable or animal matter. They are, in truth, scavengers, and will clean out the ponds. Hence, if these are not connected with a running stream, which will bring to them insect life, chopped meats and food of that character should be presented sparingly, because if they do not eat it up clean, there will be an accumulation to decay and cause a stifling stench to follow. But as soon as they turn into frogs they become amphibious animals, and require then a different class of food; they want the live food, and animal food, only. Failure to keep them well supplied with this will result in their turning to and eating each other even, whereupon much frog meat, that is worth "one dollar a pound" or more, will be destroyed. As tadpoles hatch out prolifically, one bunch of spawn from large, well-developed frogs of five years of age or over, producing or hatching over a thousand, it is policy to keep a large quantity of these, including small frogs, on hand to feed the larger ones which are being gotten ready for market. This can be done by having a number of smaller ponds.

No Obstructions.—No large boulders or the like should ever be placed in the ponds, as these furnish an acceptable resort for crawfish, which are enemies of frogs when large; such obstructions are also in the way of seining or netting and of cleaning the ponds. The frequency of the last will depend, of course, on the character of the water supply, the amount of silt it brings into the ponds, the nature of the soil, and on the thoroughness of the yearly removal of the surplus vegetation. It will not do, however, for them to become

offensive with stagnant water and rotten vegetation; and though an abundant pond vegetation is favorable to a large production of fry, too luxuriant a growth will settle down in a blanket-like mass, and smother and pen in many of the young frogs. Under such conditions it should be removed often. With the ponds so constructed, where the topography of the land will permit that they can be drawn off, this can be done at any time by lowering them. A strong, flat-bottom boat is needed in which to take and carry off the surplus matter vegetation, which should be raked from the water in small lots, and care must be exercised not to bring up any of the small frogs and tadpoles with it. As it will rot very fast, it wants to be removed from the banks of the ponds at once.

Owing to the fact that from two to three years are required for frogs to grow to marketable size, this discourages many from entering into the business. No one should let such a thing deter them, however. Once a plant is equipped and the three years gone over, the revenue from that time on is continuous and the profit large; the yearly income is equalled, in fact, by no other line of business, as one always has some frogs, then, that are coming into marketable size. And conducted on a big scale, as it may be in the right locality, the income, once the "knack" has been thoroughly acquired, cannot help but be large. There is a profit, too, to be made by raising and selling frogs to beginners. The prices for these range according to age, it taking from four to five years to get the best breeders. Indeed, the older and larger they are, the heavier and larger will be the spawn, and the more eggs hatch and produce stronger and sturdier tadpoles; and from such mates the frogs will grow more quickly. In starting, it is always better, therefore, to pay a little more for breeding stock and get "good, old settlers," as the saying is. Six pairs of such frogs are enough for any one to start in with.

SHEEP AND WOOL.

HINTS ON THE CARE OF LAMBS.

It is quite out of the season for this work, and yet readers may enjoy some hints now of what they may do when the time comes some months hence. Ancient Shepherd gives the American Sheep Breeder some points which may be on the whole more applicable to small flocks than large, but are interesting nevertheless.

The early lambs will need to be looked after lest one may be missed and lost by chilling. A chilled lamb, however, is by no means a dead lamb necessarily. Lambs are very much harder than they look to be. Nevertheless they should not be neglected for this reason. But as the ewes are careless and may drop their lambs in some out-of-the-way place where they may not otherwise be found, the closest possible watch must be kept over them. It is best to keep them all close together in such a way that they cannot go astray. In fact, at this time of the year, the ewes should be kept under the closest scrutiny and carefully shut up at night in a convenient shed. There is not much else to do just now but this, and along with the other live stock, to keep a careful eye where it will do the most good.

But a shepherd of any experience will know how much there may be done at this time to keep the ewes out of danger, due to their careless habits. Of all our domestic animals sheep are the least sagacious. They do things that they should not, and neglect things, many of them in fact, that they should do. It is an old but true saying that of all men the shepherd should most often sleep with his eyes open. Indeed, there is much truth in this, which is due to the fact that a sheep is the most foolish animal ever made. And the result is that the shepherd's life is a constant worry over the delinquencies of his sheep. And this is more true at this special time because there are two to look after, the ewe and her lamb. And the lamb especially, for these need constant and close care to keep them out of trouble.

The worst danger is that of getting chilled, and then left by the ewe to perish. Indeed, in every flock there will be lambs in this condition. There are two ways of caring for lambs in such trouble. One is the hot bath—that is, hot water in which one's hand may be dipped with a little inconvenience from the heat, but it will not hurt a lamb. A cold lamb will take up a good amount of heat, and will, very soon cool a pailful of water, and in every flock this recourse should be ready for use at the first opportunity. Then, when apparently dead, the lamb may be restored to life, and should be kept near the fire until quite recovered. A mouthful of ewe's milk will furnish the business.

There is an ancient by-word to the effect that nature tempers the wind to the shorn lamb. But the careful shepherd will not leave his most important work to this mere chance, but will be on the careful lookout for whatever may happen to make his attention necessary.

A flock running at large should be frequently counted to be sure none are missing; and if any should be missing they should be hunted up at once, for the chances will be that the ewe missing, has a lamb somewhere and will not leave it. This natural disposition of a ewe should be understood, for it will help very much in the care of a flock. In fact, there is no necessity that a single lamb may be lost out of a hundred or more, and any out of the way troublesome supervision over a flock may be called for if only a rule is made on that good old plan to see your sheep, if it is possible, every day, and count them every time they are seen. Then if one is missed at this time when the lambs are coming we may be sure there is a lamb to be looked after, and then what is to be done needs no thinking over. The missing ewe and the lamb found, one may go with an easy mind; and when found, if at all chilled, the hot water bath will save the weak, helpless little thing and pay for a day's work. It will be always desirable to keep the needed bath in readiness for use, for quite often it has been found necessary to save a lamb. Of course, this applies especially to the small flocks on farms.

Early lambs are quite often objected to for the reason that there is so much care needed to save them. But, as a rule, we have noticed that the shepherd who does not think it to be too much trouble to save his lambs is notably successful in his business and has everything comfortable and looking prosperous about him. There is plenty of time at this season to do everything that may be necessary, and the early lamb saved will be a mother herself next year, and so paying well for the thought and care bestowed on her.

For emergencies every one having a small flock only, should have a fresh cow and a small spouted can holding a pint or quart, by which to feed the helpless lambs. With this a lamb may be fed very conveniently and so saved in any emergency. It will be a convenience to have a separate shed in which to care for such lambs or ewes which may need help. For the rule in every well cared for flock will be that to lose a lamb is a misfortune, and something to be avoided by every precaution possible to be taken.

ANCIENT SHEPHERD.

QUERIES AND REPLIES.

ROOTS FOR FRUIT TREES.

To the Editor: I want to find out something about roots of trees. I am going to plant cherry and peach trees, some say peach root, others say almond, others say cherry plum root, so I was told to write to you and I could get the necessary information. I have deep sediment soil, it is along the bank of the creek. The ground is light and I can give the trees plenty of water if necessary. I want to know what root would raise the largest trees, give the most fruit, and also large fruit, if there is a difference that way.—PLANTER, Santa Clara valley.

You should have the cherry on the Mazzard root and the peach on the peach root. The peach works well on the almond root, but the almond does not usually do well in the place where there is likely to be much water. Neither the cherry nor the peach should be worked on the cherry plum root, which is another name for the myrabolan. The myrabolan takes all the plums and is sometimes desirable for the apricot, but not for the peach.

COLD PROCESS CANNING.

To the Editor: Can you give me information on canning fruit by the cold process? I do not know what it is, but have heard about it some.—READER, Greenfield.

We cannot tell you anything on canning by the "cold process." There was a rank fake put out under that name a few years ago, but we do not know whether that is what you have heard of or not. Theoretically, canning by cold process would be using some chemical antiseptic to kill the germs which in ordinary canning is accomplished by the use of heat, but any such process is probably unwholesome, because the materials which prevent the fermentation of the fruit in the can also would prevent the digestion of it in the stomach. If any one has succeeded in overcoming this objection we have not heard of it.

THE IRRIGATOR.

HINTS ON WELLS AND PUMPING.

By Mr. F. H. Newell, Chief Engineer of the United States Reclamation Service.

The most economical well for securing water in the quantities needed for irrigation is a well from 12 to 15 in. in diameter, extending into the water-bearing gravels 30 to 60 ft., according to the thickness of the gravels at the place where the well is drilled. Strainers for these wells can be made of slotted galvanized iron. The perforated metal should be placed opposite all the coarse gravels, or at a depth of 10 ft. below the surface of the water. These strainers can be made by any mechanic by punching $\frac{1}{8}$ x 1 in. slots into heavy galvanized iron and then riveting the sheets into cylinders of the proper diameter. The cylinders should be rolled in such a way that the burr made by punching the slots will come on the outside of the finished casing, and so that the slots will be vertical.

A much better strainer can be made by purchasing the metal in sheets already perforated. For this purpose steel sheets 48x120 in. in dimensions, perforated with hit and miss slots, 3-16x1 in., and galvanized after the perforations are made, will make ideal strainers. When rolled into cylinders these sheets form a casing about 15 in. in diameter. In constructing the well the perforated sections should be put in place, one above another, to within about 10 feet of the water level; from this depth upward the casing should not be perforated.

Distance Between Wells.—If it is necessary to construct several wells in order to secure the amount of water required for an irrigation plant, it becomes important to consider the best and most economical arrangement of the wells. Two different methods will be found available for this purpose. If the amount of water required is not greatly in excess of that which can be supplied by a single tubular well, it is often found practicable to construct a large dug well, 6 to 10 ft. in diameter, to a depth of 5 to 10 ft. below the water level, inserting in the bottom of the dug well several feeders of perforated galvanized iron, as described above. This method has the advantage of permitting the pump that is to recover the water to be submerged in the water of the well.

In order to sink a dug well the proper distance below the water level, it is necessary to construct a wooden, brick or concrete crib that will sink as the material is removed from its interior.

Another method of recovering a large quantity of water is to sink a battery of wells and connect them by suction pipes to the pump. This method is adapted to secure a larger supply than the method just mentioned. Three or four, or more wells, can be arranged in a straight line, 20 to 30 ft. apart, and connected to a pump placed near the center of the row of wells. Probably the most satisfactory pump for use in irrigation is the centrifugal pump.

A popular source of power for small pumping plants is the gasoline engine. Where the price of gasoline is high, it is very easy to make the cost of water prohibitive by the use of such power. Whether or not it pays to pump water by gasoline is a matter which depends very largely upon the distance the water must be lifted, but also upon the kind of crop that is to be irrigated. Gasoline, even at a high price, is usually a cheaper fuel than coal in an ordinary steam engine of small horse-power, such as a common traction engine. For plants requiring from 20 to 30-horse-power, producer gas generators can be installed which will keep the cost of pumping down to a minimum. A suction gas producer, using anthracite pea coal for fuel, should furnish power at the rate of one horse-power per hour for each pound and a half of coal consumed. At \$8 per ton, the cost of coal should be equivalent to gasoline at 4 to 6c. per gallon.

How High Water May Be Lifted.—It is very unlikely that it will pay to pump water, under present conditions in the valleys of the western plains, to a total height of more than 30 ft., including the suction lift of the pump. If the pump lower the water in the wells 10 ft., and if the distance to water be 10 ft. below the ground, and the discharge pipe be brought into a reservoir or flume 5 ft. above the surface of the ground, the total lift will be 30 ft., if 5 ft. be added to cover loss of head due to friction in suction and discharge pipe.

In order to irrigate economically from pumping plants it is usually desirable to pump the water into a reservoir having a capacity equal to the amount of water the plant can furnish in six to eight hours. Such a reservoir is absolutely necessary for best results with small pumping plants. If the supply of water exceeds 500 gal. per minute it is possible to dispense with the reservoir, especially if the supply greatly exceeds this amount. Plants furnishing over 1,000 gal. per minute can usually be best operated without the use of a reservoir.

THE FIELD.

SWEET PEA SEED GROWING IN LOS ANGELES COUNTY.

A writer for the Pacific Fruit World gives an interesting account of sweet pea seed growing by Mr. John Bodger & Sons at Gardena, Los Angeles county, on 160 acres of land; some 120 varieties being grown. These varieties are commented upon as follows:

Here is a bed of Mont Blancs, a paper-white flower of early blooming habit; there a Dorothy Eckford, another pure white with a shell-shaped bloom. There is the black-seeded Sadie Burpee and the white-seeded Sadie Burpee, both with white blossoms. In the creams or light yellows there is the fetching Coquette, with flowers of a deep primrose shaded with lavender, and the stately Hon. Mrs. E. Kenyon, a primrose of large size.

Modesty is a light blush that at first sight seems to be a silvery white, but which is suffused with a pink tint. Sensation gives Modesty a close run—a silky white with a faint blush pink.

Appropriately named is America, whose resemblance to the stripes of the national emblem is strikingly shown in streaks of a rich blood red on a ground of silver white. Aurora is another beauty in the striped and variegated list, its large blooms being flaked with bright orange-salmon on a creamy-white ground.

Senator is another in the same class that has great and striking beauty, bearing heavy stripes of maroon on a white ground; Juanita, striped with light lavender on a creamy-white ground, and Ramona, creamy-white splashed with pink, are two beauties, while Lottie Hutchins and the Princess of Wales are two of a large number of other variegated blooms.

Captain of the Blues shimmers in his great field like the surface of the vast depths of the ocean, while Navy Blue, Captivation, Fascination and Countess Cadogan, are some of the others of the blue flowers that are rare in nature.

A fine showing in lavenders is made by Lady Grisel Hamilton, Lady Nina Balfour, Admiration, New Countess, Princess May and several others, some of them being of the purest azure, while all are most entrancing in their wonderful profusion.

Apple Blossom, truly named for its resemblance to the bursting bud of an apple tree, is considered by some to be the most attractive of all, its heavy shading of soft rose on silvery white making a combination that would be hard to excel.

King Edward VII is a magnificent scarlet, while Mars, Prince Edward of York, and Salopian are among other reds and scarlets.

Scores of other varieties of rare form and beauty are classified under as many names, and an appreciation of their beauties can be had only through inspection.

Seed Harvest Nigh.—For two weeks now the peas have been in profuse bloom, seed pods are forming on some of the earlier kinds, and in a short time the mowers will be sent through the fields, ruthlessly to cut down every vine. Then the vines with the clinging pods will be stacked in the field, to dry out in the sun prior to being run through the thresher, and then sorted, cleaned and sacked for shipment to all parts of the world, the buyers being wholesale dealers in seeds.

Ever since the flowering of the peas, gangs of Japanese have been engaged with the owners of the ranch, John Bodger and his sons, William and John Charles in "roguing" out the false colors, for every bed must be kept true to its name in order that the buyer of seed may know just what he is getting.

Away from the beauty and the fragrance of it all, the commercial side of the venture is one of no mean account. In sweet pea seeds alone many tons are shipped. There will be several carloads, probably from this one ranch, seemingly enough to plant a sweet pea vine in front of every cot and mansion in the civilized world.

The Commercial Side.—In rough figures, it is estimated that seventy-five tons of the seeds will go forward this season. This means 150,000 pounds or 2,400,000 ounces. Retailers get 10 cents an ounce for choice seeds, which would give a total value of \$240,000 to this great crop.

But peas are not the only thing raised on the ranch. Lettuce of many varieties, radishes, tomatoes and many other flowers and vegetables are grown for the seeds. There are giant radishes kicking about the ranch that in less than three months have attained a length of fifteen inches or more and a weight of two or three pounds.

The soil of the ranch is adobe and two years ago the place was but a barley field. Experienced ranchers chuckled in derision when Bodger and his sons came down from Ventura county and said they intended to raise flower and vegetable seeds on the place. The success of their venture is declared to have been proven and they expect within a short time to have an entire section devoted to the business.

THE VINEYARD.

WINTER TREATMENT OF VINES FOR MILDEW.

(By Professor F. T. Bioletti of the University of California.)

The large amount of damage done to the grape crop of California this year and last by mildew (*Oidium*) makes it desirable that no method of control that offers to be effective should be neglected.

Dry sulphur dusted over the vines with effective blowers at the right time and in the right way has been proved a sure specific in all cases investigated. While the trouble and expense of this method are slight compared to those attending the treatment of many plant diseases, it would be desirable to decrease them if possible.

This consideration has led some growers to try swabbing or spraying the dormant vines with various mixtures after pruning. Some have swabbed the vines with a strong acid solution of iron sulfate, others have sprayed with lime, salt and sulphur, blue-stone or bordeaux mixture. Some have combined two or three of these sprays and have even gone to the expense of removing the dry bark from the vine before treatment. These methods are all more or less troublesome, and costly and are only justifiable if there is reason to suppose that they are cheaper or more effective than the dry application of sulphur in spring and summer.

In order to throw light on this question we may examine some theoretical or a priori considerations and some practical tests.

The theory of winter treatment is that the fungus which causes the mildew passes the winter in a resting or dormant state on the canes and body of the vine and that if this resting form can be destroyed, the destructive form of the fungus will be eliminated or at least very much decreased in quantity.

The winter form of the fungus so far as we know consists of resting spores enclosed in thick highly resistant spore cases called *perithecia*, which can be plainly seen in the autumn on leaves and canes as minute black dots. Under some conditions the summer or mycelial form may persist through the winter, protected under the scales of the buds; but this is not certain.

The *perithecia* are formed only in cool weather and in most parts of the State not until the months of October or November. Near the coast, as at Berkeley, they may be formed at any time after June. In some localities they are produced sparingly; in others in immense numbers. Over 100,000 have been counted on a single leaf at Berkeley, and as each *perithecium* contains 50 or more spores, the number produced on one vine may be hundreds of millions.

These spores serve to infect the young growth of the vine the following spring. When the temperature and

moisture conditions become suitable they are ejected forcibly from the *perithecia*. This throwing out of the spores enables many of them to reach the young vine leaves, or the bodies of insects by which they are transported to the leaves. When these spores reach the leaves they commence to multiply with great rapidity and it is only necessary for a few to find lodgment on a few vines to completely infest every leaf and cane in the vineyard in a few weeks if the weather conditions are favorable to the growth of the fungus. Any winter treatment, therefore, which does not destroy the greater part of the winter spores can be of little use in preventing the spring attacks of mildew and of none whatever in preventing the attacks in June and July which follow, and are derived from the spring attacks.

With these facts in mind it is easy to show that winter spraying for *Oidium* is in all probability both unnecessary and ineffective.

It is unnecessary in the great majority of California vineyards because one, two, or three proper sulphurings in April, May and June will completely prevent any damage from mildew. This is true for all localities except those exposed to a great deal of summer fog and for all seasons, except those exceptionally favorable to *Oidium*, and would be true for them if sulphuring were practiced every year in every vineyard. In any case one or two extra sulphurings will give perfect control. This means that one proper sulphuring in the interior and three near the coast will give perfect control in the ordinary years, and in bad years three in the former and five in the latter will be effective. The average will be less than four in the worst localities and two in the best. Now a thorough winter treatment will cost as much, or more, than four sulphurings.

It is unnecessary because if we control the *Oidium* in the summer, as we must do to save our crop entirely, there will be no winter spores formed and, therefore, no use in spraying for them.

Winter treatment is not completely effective because, however well done, it cannot destroy all the resting spores, and if but a few escape they are capable of infecting the whole vineyard when the weather conditions are favorable. Sulphuring, therefore, is necessary even when winter spraying is practiced.

There is reason to believe, moreover, that winter treatment is completely ineffective. Every other vine in a small patch of vines at Berkeley was treated last winter with blue-stone, iron sulphate or bordeaux mixture. In the spring just as much mildew was found, on its first appearance, on the treated as on the untreated vines.

A still more convincing experiment is described in the "Revue de Viticulture," No. 655, page 12. This seems to prove as well as a single experiment can: First, that the fungus does not pass the winter to any extent in the

summer condition under the bud scales, and, second, that the most thorough winter treatment is useless if no winter spores are formed, and completely ineffective if they are.

Mr. Pacottet says in the article quoted: "In 1904 we observed that the spring attack of *Oidium* occurred first precisely in those hothouses of Nanterre where *perithecia* had been found in the autumn of the previous year. The same fact was observed in 1905. This led us to make careful observations the following year on the manner and time of the appearance of the *Oidium*."

"*Oidium* appeared at the end of March, 1906, and only in those grape houses, to the number of 20, where the presence of winter spores had been noted in November of the previous year. In these houses the fungus appeared with such intensity that nearly every leaf showed simultaneously several patches."

"These observations acquire especial importance when considered in connection with the various hypotheses which have been advanced regarding the modes in which the *Oidium* passes the winter, especially as regards the hibernating of fragments of mycelium (summer form) adhering to the canes and capable of vegetating anew in the spring."

"At Nanterre the disinfection of the vines is as complete as it is possible to make it. After removing the old bark they are treated with boiling water and swabbed with a 30% solution of iron sulphate. They are then covered with a paste of lime and sulphur. Before the starting of the buds the walls, glass and casings are disinfected with strong washes and the air with the fumes of burning sulphur."

Now even with such thorough winter treatment as this which it would be quite impracticable to apply in a vineyard, no apparent effect was obtained in the control of the spring infection. The spring infection was due, therefore, practically, wholly to spores which were not on any part of the vine, and from which no kind of spraying or swabbing of the vine would be any protection whatever.

Pacottet concludes, therefore, that practically all the spring infection is due to spores which have passed the winter in the soil. These are the spores contained in the *perithecia* which have dropped in the autumn with the leaves on which they were formed. His advice for hot-house treatment is to gather all these leaves before they fall and to burn them.

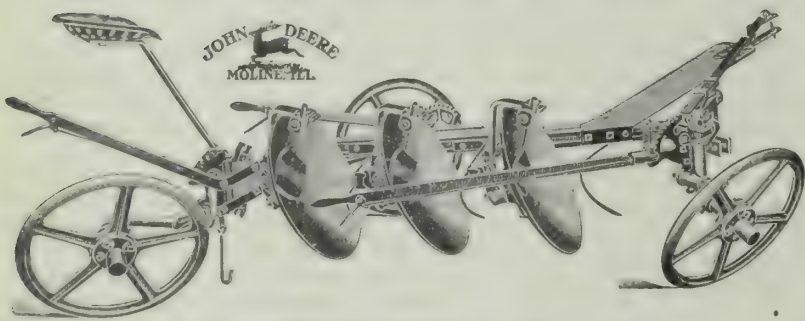
This again is impracticable in a vineyard and we are forced again to the conclusion that no form of winter treatment is of any use in the control of *Oidium* in vineyards, and that the only practicable method is proper sulphuring of the vines in spring and summer. This will prevent injury to the vines and if thorough will prevent the formation of winter spores.

Berkeley, Aug. 15, 1906.

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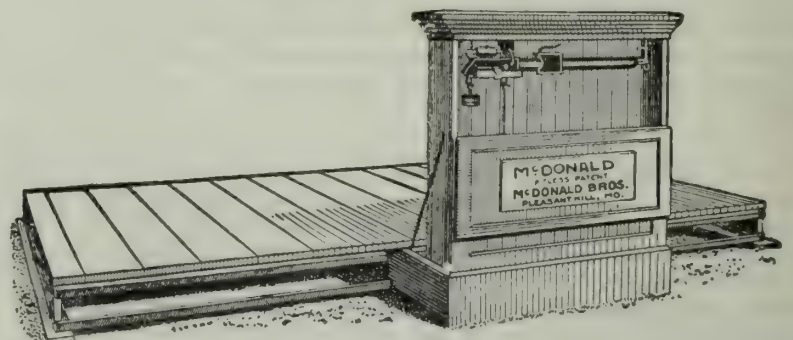
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Not a cheap article, but a high-grade government standard article, tested and sealed to a series of United States Government weights. The frame and joists are of steel. Knife-edge bearings of the very best of rod steel give free leverage to the working parts.

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The scale is sold complete except the plank for platform. It can be set on a barn or warehouse floor or level ground. By using our pitless scale the entire expense of digging the pit and framing it up, which amounts to about 50c., is saved.

THE DAIRY.

IMPROVEMENT OF THE HOLSTEIN-FRIESIANS.

Those interested in this breed will be gratified with the following facts and claims for it which appear in an address at a recent convention of breeders:

It is gratifying to note that a large percentage of our breeding herds contain an ever-increasing number of Advanced Register cows and that in the selection of animals for foundation stock and for greater development it is deemed essential that such shall consist of officially tested cows for several generations of ancestry.

I am especially impressed with the great and apparently increasing capacity of the younger classes of Advanced Register cows. I recall particularly the report from February 8 to 16 last, in which an aggregate of 32 2-year-olds show an average of 280.5 lb. of 3.30% milk showing a yield of 9.24 lb. of fat in 7 days; adding to this the cows of various other ages which were tested during this period, we find an essentially young herd consisting of 82 head which produced in 7 consecutive days 29,453 lb. of milk, showing an average of 3.4% fat and containing a total of 1004 lb. of butterfat. This is equivalent to an average yield for each animal of over 14 lb. of the best creamery butter per week and 25 quarts of milk per day.

It would appear that we are breeding Holsteins to-day of a greatly increased capacity in both butter and milk. The records made not less than eight months after calving are very numerous and are absolutely convincing to the dairy world of the staying qualities of the Holstein cows.

Among many I recall one or two instances. A 2-year-old, Pontiac Columbo, who in her first test produced 15.56 lb. of fat from 444 lb. of milk in 7 days and 61 lb. of fat in 30 days, eight months after calving produced 10 1-3 lb. of fat from 300 lb. of milk and in the 14 days of this test a total of 20.54 lb. of fat from 600 lb. of milk; while another heifer 345 days after calving actually increased her

first test by over 1 lb. of fat. It would gratify me to repeat to you other equally fine results, but I wish to go on to other subjects of even greater interest.

Under all conditions the Holstein cow shows a remarkable profit and in the Advanced Register reports the test of a cow owned by a public institution in Michigan and cared for by insane attendants among a hundred other cows surrounded by exactly similar conditions, yielded 23.38 lb. of fat from 663 lb. of milk.

The money-making ability of any breed will determine the question of its general use by practical men and upon this point evidence of unmistakable character has for years been accumulating to such an extent that it is the common expression in dairy sections that the Holstein cow is the money-maker, the greatest for yield of milk, greatest for fine quality of milk, greatest for fine butter production, greatest for prepotency, greatest for prolificacy, greatest in ability to thrive under varying conditions, and greatest for longevity and general utility.

The cow that is the money-maker to-day must make milk in quantity far above the average yield; she must be a large eater and a perfect assimilator of her food, and readily transform it into good milk. In the Holstein breed the large milkers are plenty and the small milkers few. The large milker makes milk at a lower cost than the small milker, both are practically equal at the manger, but at the milk pail the large yielder has double the advantage over the small yield cow. Dairy men have found in the Holstein a cow of most vigorous constitution that can consume large quantities of feed and convert it into large quantities of fine milk and a cow that milks long, breeds regularly and throws calves that are rugged, thrifty and easily reared.

The Holstein cow, while the most highly specialized milk cow, is also a beef producer of high quality. Her large size gives her this character and the quality of her beef is very high. The fat is deposited in the muscular tissue to almost the same extent that it is in the beef breeds. It is this wonderful blending of

qualities which will make the Holstein the cow of the future, the cow for the Western farmer who must make beef as well as dairy products. This point should always be kept in mind by the dairyman, and the Holstein-Friesian cow correctly bred to the standard type is an animal that will produce the largest quantity of fine milk during her life, and when she meets her final disposition at the shambles will yield a carcass nearly the equal of the special beef breeds in size, weight, quality and market value.

HOLSTEIN-FRIESIAN SALES IN CALIFORNIA.

Mr. F. L. Houghton, secretary of the Association, sends us the following transfers in California:

Cows.

Artis Carisa Lady 2d, Astrea Johanna, Avon Dare Cloverdale, Bakker Belle Pietertje, Heil Dir Licht, Petra, Pietertje Bloom, Salambo, Tease Lyons 3d, Walhalla, R. M. Hotaling to L. A. Hall, Modesto.

Lady Arcturas Kathleen, M. D. E. Sherman to J. L. Kinnear, Newman.

Victoria Blanco, M. D. E. Sherman to J. L. Kinnear, Newman.

Lady Rea of Vendome Farm, James W. Rea to Santa Clara College, Santa Clara.

Bulls.

General Maxima, Peter Nye to Rasmus Anderson, Arcata.

Nero Bonita, M. D. E. Sherman to J. L. Kinnear, Newman.

Pacific Chief, R. F. Guerin to Emmett Barber, Tulare.

Artis Dairy Prince, Wm. Niles to Read & Bennett, Los Angeles.

VETERINARIAN.

HOW TO GET RID OF CATTLE TICKS.

In view of the fact that California is reducing her area which is under quarantine for Texas fever, and it is very desirable that the whole State should be made clean as soon as possible, we take from a circular just issued by the Bureau of Animal Industry of the U. S. Department of Agriculture, the following brief directions on the subject of ridding cattle and premises of the Texas-fever tick:

Mr. A. D. Melvin, Chief of the Bureau, says that if the farmers will but make a united effort along the lines indicated and thus co-operate with the local officials and this Bureau in attacking the tick problem, much headway will be made, and our ultimate aim—namely, the entire eradication of the tick and its direful consequences will be within measurable distance of accomplishment.

HOW TO GET RID OF CATTLE TICKS.—The destruction of ticks which are on cattle and premises is the first step in procuring a free cattle traffic. The following suggestions are therefore made for the purpose of assisting owners of small numbers of ticky cattle to get rid of the fever ticks:

The term "ticks" as here used is especially applied to the fever tick (*Boophilus annulatus*). These ticks are the more abundant in the latter part of summer and fall, the other kinds being rarely present after the month of July. All ticks are harmful, however, and should be destroyed. The term "cattle" should be understood to include all cows, steers, bulls, heifers, yearlings, calves and oxen. Tick-free premises are those in which there have been no ticky animals for nine months previously.

THE HAND PICKING AND GREASING METHOD.—Cattle and premises may be freed from ticks by hand picking the cattle even though they are allowed to run on ticky premises, provided they

are controlled and no other animals are permitted on the premises. The method of hand picking and greasing is most suitable in cases where there are but few animals or for small herds where the conditions for grazing can not be changed. The method consists in carefully examining all the cattle daily and picking or scraping off the ticks. In this connection it must be remembered that horses and mules sometimes carry ticks, and therefore these animals must also be thoroughly and frequently examined and the ticks removed. The greatest care must be exercised to collect and destroy all of the ticks removed. It is true that while this process is going on the animals will get more ticks on them if the premises are ticky, but by diligently destroying all the larger ticks the supply finally gives out on account of the seed ticks having perished. Arrange to examine all the cattle and pick the ticks at least every other day. All parts of the animals, especially the inside and back part of the thighs, should be examined for ticks. If any of the cattle are difficult to handle, they should be driven into a chute or narrow pen made for the purpose, where good light is afforded. Ticks can be seen best in sunlight. Ticks must not be thrown on the ground, but should be placed in tin cans or other convenient vessels and carried to a suitable place and burned or otherwise totally destroyed, or they will lay eggs, and seed ticks will hatch in countless numbers. Begin now to pick ticks and be sure that not a single tick matures on your cattle after September 1. As a result of your trouble in observing the precautions herein indicated during this summer and fall, the cattle and premises should be free from ticks by April 1.

To assist in preventing ticks from getting on cattle the cattle may be greased at the time of picking or as often as may seem to be necessary. The greasy solution is obnoxious to the ticks, and if the legs and sides of the animals are treated in this manner, the ticks will be less apt to crawl on them.

In greasing cattle, use Beaumont crude petroleum or any crude oil, cotton-seed oil, fish oil or lard. The following mixture will be found useful for this purpose: One gallon of kerosene, one gallon of cotton-seed oil and one pound of flowers of sulphur. Any of the above may be applied with a sponge, swab or brush, and should be thoroughly rubbed on all the lower parts of the cattle and at least half way up their bodies.

THE TIE-ROPE OR PICKETING METHOD.—This method is practicable where there are only a few head of cattle. It consists merely in picketing the cattle out on tick-free pasturage. The cattle must be occasionally moved and the places where they have been must be carefully avoided for some nine months thereafter.

THE TWO-FIELD METHOD.—On or before September 1 remove all cattle (including young stock and calves) from the pasture or range where they are to

(Continued to Page 123.)

VETERINARY ADVICE FREE

Dr. S. A. Tuttle, a veterinary surgeon of long experience has written a book entitled "Veterinary Experience" on the diseases of horses, giving symptoms and treatment in plain terms. It is fully illustrated with diagrams showing the skeleton and circulatory and digestive systems with references that make them plain. Tells how to buy a horse and know whether it is sound or not. Every horse owner should have one. It is sent to any one.

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is the only guaranteed cure for Colic, Curb, recent Shoe Bolls and Calicous. It locates lameness, relieves and cures Spavins, Ring Bone, Cockle Joints, Grease Heel, Scratches, Cataracts, etc. Send today and get the book free and information about Dr. Tuttle's specifics. Tuttle's Elixir Co., 33 Beverly St., Boston, Mass. Mack & Co., San Francisco and F. W. Braun, Los Angeles, California Agents.

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All parts of the machine are strong, simple and easy to get at. The gears being entirely enclosed are protected from dirt and dust. The bowl having only two simple parts inside is easily and quickly washed. The whole machine is very light running because the working parts run in oil, and are accurately made and fitted. No other separator has all these advantages. The U. S. is the cream separator for you to buy.

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Prompt delivery assured to California customers from San Francisco warehouse. No delays. Address all letters, BELLOWS FALLS, VT.

HOME CIRCLE

AT A WESTERN WINDOW.

I gaze from the western window,
 Athwart the narrowing day,
 Where the sunshine and the shadows
 In parting glory play.
 To violet isles enchanted
 That smile at the open door
 As the argosies of evening
 Sail through to a fairer shore.

The day is long behind me,
 The night is coming on;
 But I hear a robin singing;
 The song he sang at dawn;
 Now one with the morn is evening,
 And one are the earth and sky,
 The blossoms in the meadow
 With the stars that breathe on high.

And youth is young forever,
 And love is never old,
 Though masks of age are breaking
 Back to the primal mold,
 So here, from my western window,
 I gaze, as the stars increase,
 And the mortal and immortal
 Are one in this blessed peace.
 —Benjamin S. Parker, in *The Reader*.

A DAUGHTER OF THE FOREST.

Half-breed Joe's daughter was not listening, but as she passed the open shutter she heard a few detached words, and they were enough. Taking her rifle from its pegs, she slipped in a fresh cartridge and went quietly from the cabin, leaving her father and his beady-eyed partner talking earnestly as they sat upon the bench behind the cabin.

Joe was not an agriculturist or clearer of land, and the unbroken forest crowded so close as to lend two of its trees to the upholding of the home as corner posts, their untrimmed branches spreading about and over it in effectual screening. The cabin was like a rough-sticked hawk's nest, but clinging to the base of the tree instead of its top. Two days' journey to the south was a trading post, with its stockade and store-houses; to the north was forest. The girl turned to the north and in a few minutes had disappeared among the trees.

Three days she journeyed, steadily, untiringly, the Saxon blood showing in her eager eyes and the Indian in her endurance and fearlessness. At night she slept on the leaves wherever darkness overtook her, unmindful of solitude or prowling animals, and when hungry there was always something in reach of her rifle, and her hands were deft and quick in its preparation. As the third twilight was thickening into darkness, she came to a ridge overlooking a broad valley, with water glimmering in the distance. It was the end of her journey, a region prolific in fur game, and she waited on the ridge with her eyes searching the valley as the night thickened, until at last the bright twinkle of a camp-fire suddenly shot toward her from the far side of the lake, miles away. Then she sped on. Every year, in season, the trading post sent men in all directions, and of this valley the factor's son himself was in charge.

They were sitting about the camp-fire eating the supper which their cook had just distributed, when she appeared noiselessly from the darkness. The men sprang to their feet, instinctively grasping their rifles. Then the weapons were lowered, and Henri Lavand, the factor's son, sprang toward her, his face radiant, his arms extended.

"Aline," he cried joyously, "you have relented at last and come to me. We shall now be happy."

But her hand was upraised, her face pale.

"Stop!" she ordered, "there is no time

to waste in words. My father and the chief will be here soon. I heard them talking. They only go to the camp for the chief's men, and then will come straight here. I have been swift, but they will be swift, too. It is known that you have many pelts. They will surprise you and take them, and if you resist in the least, they will—"

"Bah!" contemptuously, "they will not dare. We have too many men scattered through the country."

"They will dare," sternly, "I know my father and I know the chief. My father says that as agent for the great company you have tried to drive him from woods that are free to all, and now he will drive you away, or kill you and be revenged. There are but six here and they will be twenty. And you know how the chief hates you."

"Yes," smilingly, "I know, and why. But the trading post is only five days' journey, with a hundred men. Your father and the chief are not fools, you must remember that."

"They hate you and can bring twenty to your six," she repeated impatiently. "And they are as good fighters as you, and as strong, I know. My father says he has laughed at the trading post's hunters before, and can do it again. It is a big country, and he and the chief know it better than you. Be wise in time and hide yourselves and the furs. They will be here soon."

Henri looked at her sharply, his smile vanishing. The girl's earnestness carried with it conviction, and she had come nearly a hundred miles to warn him. His gaze became more grave.

"Yes, I know," he said thoughtfully, "they are good fighters, and though we do not mind odds, perhaps twenty to six, and from ambush—" He turned suddenly to his comrades.

"Men," he said, his voice dropping a little instead of rising, "you may take your longest-range rifles and twenty-five cartridges. We will go to the ledge on top of the ridge and wait for them there. It will be moonlight in an hour, and we can see them for some distance. We will be able to pick off half their number before they get our range, and can then manage the others. If they arrive sooner we will ambush them on the way, as they intend to us, and make the result the same. Aline, you—"

"I shall go back to my people," the girl interrupted coldly, "to warn them."

"What!" in astonishment, "after coming here to warn us?"

I came to save your lives and the season's work, not to start you on the warpath. You speak of ambushing my people, so I must go now and give them warning."

"But they will kill you, girl," hoarsely. "You know the chief and his influence over your father. After this act their one thought will be revenge, and it will fall on you."

The girl retreated a few steps toward the forest darkness.

"I am not afraid," she said calmly. "My father is my father, and I shall not let him come to harm."

"He means for you to marry that viper, the chief," desperately. "If they do not punish you in any other way, they will force you to that at once. It would be worse than death, Aline, a white girl like you in the power of the most despicable Indian that ever lived."

"I am Indian, too," proudly.

"But not like the others. Oh, Aline!" for she had turned suddenly and disappeared in the darkness of the night. He sprang forward.

"You shall not go," he cried wildly. "Oh, Aline, don't you suppose I understand what this coming to warn us means? It is the answer I have been seeking for a year, and you would not

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 We want you to see the kind of Poultry Foods that are manufactured from CLEAN, RAW MATERIAL. This means HEALTHY ANIMAL FOODS for your poultry.

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give. You do love me, sweetheart, and you shall never go away from me any more. There is a priest down at the trading post, and we will go straight there and be married. Aline! Aline!"

He waited a moment, then:

"Aline, do you hear me, sweetheart? I will do everything you wish. We will not harm your father or the Indians. We will take the furs away and hide them, as you say, and will conceal ourselves. Only come back. Aline, come back!"

But there was only silence. Her moccasined feet were too light to send back a sound of the course taken. For a moment he felt a wild impulse to follow, to set his men to scouring the woods; but he did not yield. Aline knew the forest better than any of them, and she was as fleet. In the darkness it would be impossible to find her. Moreover, she never could be brought to him by force. As he realized this and his powerlessness to avert the fate which threatened her, he groaned aloud. There was but one thing he could do. He turned suddenly, his voice ringing sharp in its agony.

"Men," he cried, "you will take all the furs you can and carry them to the big bateau. Four trips will be sufficient. Then pole the bateau to the little island in the lake. We can hold that against almost any number of assailants. Leave all your rifles except the Winchesters. I'll remain here and watch, and will look out for the others. Hurry!"

"But why not go back to the ridge, Henri, as you first planned?" expostulated one of the men. "There are six of us, and we are not afraid. With the chief and his renegades out of the way, the air will be easier to breathe. It will be worth the fight."

"No, no," said Henri sternly. "You all heard, and it is no longer a secret. I would give my life to please that girl, and she does not want her father or kinsfolk harmed. If you like me, bear with me in this."

Without a word the men turned to the bales of furs. But as the last one staggered toward the lake under his burden he glanced back.

"You should not remain here, Henri," he warned. "It may mean your life. At least go with us to the boat, and when the furs are removed we will come back and watch with you."

"I wish to watch alone, Marcel, and have my reasons. Now hurry."

In ten minutes they were back for another load. Before the hour was up Henri could hear the low ripple of the bateau as it was being pushed into the water, and then the soft dip of the poles. The bateau was on its way to the island.

But he had not been idle. With the disappearance of the first load he had commenced gathering up the rifles and

carrying them to the dense mass of broad-leaved laurels which they had selected as a windbreak for the camp. In the flickering light of the fire the laurels looked like a solid wall which wavered backward and forward.

Henri worked swiftly but methodically. Each man had several rifles, for large and small game, and all these were carried into the thicket. Then he gathered up an armful of straight sticks, about the size and length of a rifle barrel, and carried them into the thicket also. By the time the bateau poled from shore his work was finished. Then he threw more fuel upon the fire, so that when it flared up the light should fall clearly upon the laurels.

That done he threw himself upon the ground with his feet to the fire and anxiously waited.

It was not long, and he was conscious of the stealthy forms as they slipped from the darkness and surrounded him. But he made no effort to rise until the exultant voice of Half-breed Joe hissed in his ear:

"Caught at last, Henri Lavand. Now git up."

Henri did so slowly.

"What do you want," he demanded.

Half-breed Joe chuckled viciously.

"Heap," he answered. "Fust we take your furs, then we carry you two, t'ree days north an' take away all your guns an' t'ings an' let you go. Maybe you git to coast an' be save, but most likely not. I been prentis kill you many times, but this be more fun. Now where t'udder men—out huntin'? We wait here an' trap when they come back."

"A cleverly arranged plan," commented Henri. He stepped a little closer to the fire and gave it a vigorous kick, which sent the flames shooting upward. "But unfortunately for you we were prepared. See!"

He threw his arm toward the wall of laurels, where, in the strong light, their blanching faces saw a long line of rifles covering them, a dozen, twenty, forty—they could not tell how many, for the motionless, implacable barrels, extended entirely along the wall and back into the semi-obscurity.

"The—trading-post men," faltered Joe. "How they come here? I thought you only six."

"We had a warning in time," easily, "and were prepared."

"What you do with us?" sullenly.

"Why, just pull your teeth a little. I think," smilingly. "You know I want to marry your daughter, Aline, and for her sake I shall let you go, you and the chief and all his men. But for precautionary reasons you must leave your weapons here, guns, knives, hatchets—everything. I shall not confiscate the firearms,

but will leave them at the big rock two thirds of the way from here to the trading post. You may send some of your men there one week from today. Now," his voice suddenly became stern, and his hand rising significantly toward the thicket, "you may as well drop the weapons at once. Quick!"

They did so, scowling but hurriedly. With that line of rifles covering them they could do nothing less. But Joe's face had grown dark.

"So it my girl who warn you," he hissed. "I goin' make her suffer for it. I—"

"You will do nothing of the kind, Joe," sternly. "If you punish Aline in any way I shall hear of it, and—"

"Huh! I no punish myself," vindictively. "Soon's we catch I give to chief. He her master then, an' know how fix 'bout this all right."

Henri took a step nearer.

"Listen to me Joe," he warned, his voice low, but cutting like a knife. "You see the number of men I have ambushed here, and you know I make no promises I cannot fulfil. Now if you or the chief lay so much as a hand upon Aline, if you offer her to him, or even do not protect her in case he seeks her, I will hunt you both from the big river to the ocean, and the punishment will be something for the whole country to remember. Now go, and remember what I have told you."

They shrank away with furtive, baleful glances, but cowed by the line of rifles. As the last one disappeared in the darkness the sternness left his face. What would their temporary fear amount to when back in the fastnesses of the great forest? Once in their clutches, what would Aline's fate be? It was not conjecture but certainty, and he groaned again. It was horrible to think of. He must do something to forestall any harm to the girl, and do it quickly.

He did not hear the swift approach of light, mocassined feet, and was only aroused by the soft touch on his arm. Aline was at his side, but not the Aline he had known. This one did not hold her head scornfully erect and regard him coldly. Instead, she was leaning forward a little, and in her eyes was an unfathomable gladness, and trust and love.

"Henri," she whispered happily, "I only went a few steps into the forest, and have heard everything. You are brave and tender and true—all that a woman could ask. I did not know that there was a man who would do so much for love of me. Now I am ready to go with you to the priest at the trading post."

DOMESTIC HINTS.

Eggplant Fritters.—Boil the eggplant till tender in water having in it a little lemon juice and salt. When done, drain well and mash to a pulp. Add to it pepper and salt to taste, three beaten eggs and bread-crumbs, if necessary, to make it of the right consistency to shape. Pat into flat cutlets, dip in egg and in crumbs, and fry in boiling fat.

Tapioca Soup with Tomatoes.—Have six ounces of tapioca and put into a saucepan with two quarts of fairly rich white stock. Let boil up for a minute, then simmer for two hours. In another saucepan cook half a dozen large tomatoes, an onion, a small bay leaf and salt and pepper. When the tomatoes are quite cooked, strain through a fine sieve and add to the tapioca. Strain all then through a sieve, set over the fire to re-heat and add two ounces of melted butter.

Lamb Cutlets, Jardiniere.—Have the cutlets of uniform size and thickness, and broil, seasoning with pepper and

salt. Have a border of mashed potato on a plate, and around it arrange the chops. In the center put some fresh green peas, boiled, and some boiled carrots cut in tiny cubes, heated in butter.

Tomato Salad, Robespierre.—Peel tomatoes of uniform size and cut from each a small slice at the stem end. Have some celery root and chop till very fine. Add to it a few almonds, also chopped very finely, and a sprinkling of chopped green peppers. Into these chopped things stir mayonnaise, and with it fill the tomatoes, having scooped out of them all their seeds. Then have some just liquid aspic jelly and pour it on the tomatoes to take the place of the slices removed. Set on ice for the jelly to get quite hard and serve. This jelly may be flavored with a bit of onion and a few drops of sherry in the making.

Lemon Sponge.—Put into a pint of cold water one-half ounce of leaf gelatine, the thinly pared rind of two lemons and a half pound of loaf sugar. Set over the fire till the sugar is dissolved, then let simmer without cooking for ten minutes or a little more. Strain into a basin and add the juice of the lemons; leave it to cool, and, as it begins to set, whisk in the whites of three eggs previously whipped to a very stiff froth, and whisk all together lightly till spongy. Then turn on to a glass dish and serve, or mould first and then unmould to serve.

Continental Pie.—One cupful of molasses, one cupful of boiling water, one teaspoonful of soda, three cupfuls of flour, three-fourths of a cupful of lard, three-fourths of a cupful of sugar. Mix well together and stir most of crumbs in and put rest over top; this is for three pies.

The cleverest way of marking handkerchiefs is to embroider the whole of the first name, as if it were written on, copying the signature of the person for whom you are doing it as nearly as possible. Embroider over a thread for packing.

A HINT ON SWEEPING.

Fine dust raised in sweeping is most unpleasant. When sweeping have a pail half full of very warm water in which put a little ammonia. Before beginning dip the broom in this, shaking as dry as possible. When broom becomes filled with dust dip and shape as before. The damp broom holds the dust which would otherwise fill the air. By changing the water often no injury will come to the finest rug or carpet. Ammonia brightens colors and they look very much cleaner than when swept in the old way. The labor of dusting is greatly lessened, and germs are disposed of.

When grip and colds were prevalent in the neighborhood, not one of my family suffered from either. It is worth trying.

DON'TS TO BE OBSERVED.

Don't neglect the care of your teeth. Health and appearance depend upon a wholesome mouth.

Don't wear dirty fingernails, for nothing about a person is more noticeable than the hands.

Don't forget the care of the hair and scalp. Use the brush and comb several times a day, and cleanse the scalp at least once in ever two weeks.

Don't put on your clothes without first brushing them thoroughly.

Don't substitute a pin for a button. Learn to sew and see that buttons, hooks and eyes are never missing from your garments.

Don't wear sloven shoes. Brushes and blacking are too cheap to allow of such

untidiness.

Don't wear soiled collars and neckties. Better to knot a clean handkerchief about the throat than to appear with such unsightly accessions to your toilet.

Don't neglect the weekly hot water bath, followed by a "salt rub," to keep the body clean and healthy.

CHAFF.

"Like most men," he said, "I have my shortcomings, I suppose, but—" "Oh, it isn't your shortcomings father objects to!" interrupted the girl. "It's your long stayings."

"Yes, she's made a name for herself."

"In what way?" "Why, she used to be Ellen Cummins Brown. Now she is Aileen Comyns Browne."

"It is simply impossible for me to find bread for my family," said the loafer. "Same way here," remarked the grocer; "I have to work for it."

Lover—Ah, if you only had \$100,000 income! Loved One—What would you do? Lover—Nothing.

Jennie—"Did you hear of the awful fright Jack got on his wedding day?"

Olive—"Yes, indeed! I was there and saw her!"

Micky—Say, I'd like to go out wid a show an' be de hero.

Jimmy—Aw, I'd rather be de villain. De villain always has to smoke plenty of cigarettes.

He (indignantly)—I beg your pardon, miss, but I always keep my word. She (complacently)—I can easily believe that, for no one would take it.

His Wife—John, dear, the doctor says I need a change of climate. Her Husband—All right. The weather prophet says it will be colder tomorrow.

Prisoner—Your honor, I used to give your daughter singing lessons. Judge—Twenty years.

"And have you any special terms for summer girls when they come in a party?" asked the pretty brunette in the mountain hotel. "Yes, indeed," responded the clerk, suavely. "And what are they?" "'Peaches' and 'dears.'"

Molly—He is a student at one of the big colleges. Polly—Nonsense! He talked with us for an hour when he was here yesterday and never used a bit of slang."

"The Mojave desert must be a terrible place," said Meandering Mike. "Well," answered Plodding Pete, "there's one good thing to be said of it. There are not a lot of people there on the lookout for farm hands."

INTEREST IN NUT CULTURE.

To the Editor: The Press is, to my notion, more and more and more interesting as the weeks come and go. Your editorials of late are particularly meaty. I was much interested in the article on Franquette walnut in the number of the 7th inst. There are many persons outside our State, as well as residents here, who are more and more impressed with the idea that walnut culture is a very desirable investment. A friend, Prof. C. B. Ridgway, of the University of Wyoming, is now in this State seeking a favorable location for establishing an orchard of these trees. A friend who is quite wealthy, who has lived for several years on the shores of the Gulf of St. Lawrence, has sold out his large interests there and, with other capitalists, has determined to buy walnut orchards in one of the lower counties.

Undoubtedly newcomers, as well as some of our old residents, will turn their attention to this business. Am glad you are giving so much prominence to the nut

The lamp is yet to be made for which I haven't made a chimney that fits.

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My Index gives a fuller explanation of these things, and may be had for the asking.

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industry in California.

In favored locations, here in Napa county, we have for many years raised most excellent English walnuts. It may not be generally known that at Rutherford, Napa valley, there is a walnut (English) avenue half a mile or more in length, which is said by travelers to be unsurpassed by any in this country or in Europe. It is very difficult for many of our Napa farmers to get out of the old ruts they've travelled since the early 50's.—A. WARREN ROBINSON, Napa, Cal.

FROM A DISTINGUISHED FRIEND.

To the Editor: I have the honor to acknowledge receipt of your special issue of the 21st ultimo intimating, consequent on the earthquake and fires at San Francisco, your change of address, which has been duly noted.

Permit me to express the sincere sympathy of this Department with you in the great trouble which befell you and so many others, and to hope that the courage with which you have met the disaster will be rewarded by a speedy return to business prosperity.—WALTER S. CAMPBELL, Director of Agriculture, Department of Mines and Agriculture, Sydney, N. S. W.

(Continued from Page 121.)

be kept after March 15 of the following year. Do not permit any cattle, horses, or mules on such pasture or range during the period indicated. If the premises in which the cattle are placed during this period adjoins the pasture or range where they are to be kept after March 15 it will be necessary to set the dividing fence over some 10 or 20 feet on the pasture at the time of changing the cattle in March. Be sure to examine every head of cattle carefully for ticks before changing them in March. If ticks are present on the cattle at this time and are not destroyed the pasture will become infected and the work will have to be done over again. If the ticks are frequently removed by picking and the cattle are greased immediately after they are taken from the pasture in September, the danger of future infection will be greatly lessened.

Conclusion.—Any of the above methods may be followed from midsummer until the following April.

Select the method best suited to your conditions and carry it out vigorously. Help your neighbor to do the same.

Be sure that no other cattle pass over the premises where your cattle go unless the other cattle are kept free of ticks.

Do not let a single tick mature after September 1.

If everyone will do his part in getting rid of the ticks the cattle quarantine will be removed.

Should the reader desire to know more about cattle ticks he may obtain Farmers' Bulletins No. 258 and 261 on the subject by addressing the United States Department of Agriculture, Washington, D. C.

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AGRICULTURAL REVIEW

Butte.

TWENTY-FIVE TONS OF HAY BURNED.—Marysville Appeal, August 9: A fire occurred on the farm of A. Y. Brown at Indian Springs Sunday morning and destroyed 25 tons of hay. The fire occurred between 2 and 3 o'clock in the morning and is of unknown cause, though Mr. Brown declares that it was set by an incendiary. The hay was baled and ready to be delivered to a customer, Mr. Brown having negotiated for the sale of the hay for \$425. He carried an insurance of \$300.

WILL BE THE LARGEST HOP FIELD IN THE WORLD.—Sacramento Bee, August 9: Baron Von Horst, one of the largest exporters of hops in the West, was in Chico in the interest of his hop field, located several miles north of Chico, along the Sacramento river. Two years ago the Baron bought 1,000 acres of the well-known Wilson ranch, north of Chico, and this year has 260 acres in bearing hop vines. So enthusiastic was the promoter of this industry that he predicted that in two years he would have the largest hop field in the world located on his farm. In an interview yesterday Baron von Horst stated that fully 600 of the 1,000 acres were adapted to hop culture.

HEAVIEST CROP OF HAY IN LOCAL RECORDS.—Gridley Herald, August 10: Mention has been made heretofore of the crop of millet produced by the aid of irrigation on the place owned by H. P. Brown east of town. The hay has been mowed and yesterday Mr. Brown began delivering it from the field. The first load came off from a space of about 500 square yards, and it weighed just a ton net. At that rate the yield per acre amounts to over eight tons, and the whole field is fully as well covered as the part from which the first load was hauled. Mr. Brown sold the load for \$10 per ton, so the gross return will be over \$80. The millet is of the variety known as German millet. Mr. Brown believes the Hungarian millet will do equally well under irrigation, and as the stalk is smaller it will make finer hay.

EGYPTIAN CORN.—Gridley Herald, August 17: Arthur Olschowka, who came here from Tuolumne county and bought ten acres of land in Colony No. 1, has one of the finest looking pieces of alfalfa in the neighborhood. He also has a crop of Egyptian corn that is a splendid example of what irrigation does for growing plants. Egyptian corn is considered by farmers to be one of the standby crops on unirrigated lands, and it produces fairly well if water is not put on its

roots. But the heads of corn on the unirrigated crops are not half the size of the irrigated corn, and the latter will produce twice or three times the weight of corn.

FREE SOIL ANALYSIS.—Chico Enterprise, August 18: The California University will conduct a laboratory as an item of the splendid exhibit which it is preparing for the State Fair, and will make analysis of soils free to those who desire it. We suggest that our farmers take a sample of their soil with them and have it analyzed. By thus learning its properties they may get a better idea how to treat it. It is this line of work that the farmers will be deeply interested in.

CHAMPION LEMON.—Chico Enterprise, August 10: Through the kindness of Mrs. Salisbury, who resides at the corner of First and Oak streets, this office is in receipt of a lemon which in size is equal to a full half dozen of the ordinary kind. It is 11½ in. in circumference and was grown in Mrs. Salisbury's yard.

FAST HAY BALING.—Chico Enterprise, August 10: One of Bullard's improved hay presses has just finished baling a large field of hay for Supervisor C. E. Porter. It began on July 2 and finished August 8, at 8 o'clock A. M., having put out 10,130 bales, 1,103 tons in 32½ days, an average of over 34 tons per day.

FINE MELONS.—Chico Enterprise, August 17: J. T. Bryant of Sutter county, brought to Marysville yesterday a load of fine melons. He has 14 acres planted to melons and has already sold \$700 worth this season. There are so many still on the ground that it looks as if none had been taken. The profit on this 14 acre tract is greater than on 320 acres planted to grain and there is less trouble and work connected with it.

Colusa.

COLUSA COUNTY TURKEYS LEAD.—Colusa Sun, August 9: Colusa county excels in almost everything and now comes a record-breaker in egg-laying by an old turkey hen on the Potter ranch, near Grimes. This hen more than two months ago commenced laying and with only a day or two missed, laid an egg every day until there were 49 eggs. Then she quit a couple of days and Mr. Potter supposed that she was ready to set. He accordingly placed a number of eggs under her and marked them. He saw her leave the nest the following day and remain off longer than usual for a setter, and went to investigate and found she had, after one day's setting, decided she would lay some more and had added another egg. This she kept up until about five days ago, when she quit her daily visits to the old straw box. The total number of eggs from this one hen

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now numbers 69. She still refuses to set and after a short vacation may decide to resume laying.

Placer.

KEEPING FRUIT COOL.—Newcastle, August 9: Lloyd S. Tenny of Washington, D. C., and Professor A. V. Stubenrauch of Berkeley, both in the employ of the United States, have been here since July 30, investigating different forms of fruit cooling, icing, etc. They find that peaches packed on the ranch in the afternoon and allowed to stand in the boxes all night in the open are cooler next morning than those loaded into the cars in the afternoon and put under ice refrigeration all night. This shows it to be better to pack in the afternoon, and deliver at the cars early next morning than to bring it in the evening to be loaded at night.

Sacramento.

STOCK BREEDERS TO MEET.—Healdsburg, August 16: The annual meeting of the California Livestock Breeders' Association will be held in Sacramento Tuesday, August 28th. The business meeting will be held at the Capitol Hotel at 5:30 P. M. and the open meeting at the State Capitol at 8 P. M. A good program is being prepared and every effort will be made to make the evening session one of great interest and value to the livestock men.

SOMETHING NEW IN FRUIT BOXES.

—Colusa News, August 9: A paper box, strong enough to carry fruit shipments, but so treated that it will prevent the passage of gases through its walls, has been successfully produced by experi-

menters employed by the American Fruit Co. of Sacramento. This box is the last step, it is thought, in the perfection of a fruit-keeping process in which a number of prominent men are interested, including State Horticultural Commissioner Elwood Cooper. Fruit, which decays rapidly when submitted to the action of oxygen, in the air, will keep indefinitely in nitrogen. The experiments of the company have therefore been directed to the production of some container that would hold nitrogen and keep out oxygen. Tin was tried, but it was found that fruits containing acid could not be kept in tin. Their acids have an affinity for metals and carbonic acid gas was formed, which gave the fruits a taste and color not their own. Fruits whose juices were sugary, like grapes and prunes, kept perfectly in tins. Some of the fruit has been kept as long as 90 days, in perfect condition.

Santa Cruz.

PROGRESS OF BEET SUGAR INDUSTRY.—Pajaronian, August 16: The United States Department of Agriculture has sent out its report of the progress of the beet sugar industry in the United States in 1905. Under the heading "Salinas" the report says "This factory,

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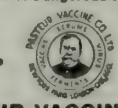
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located in the Salinas valley, not far distant from San Francisco, has a capacity of 3,000 tons of beets daily. I believe, however, as a rule, the factory runs considerably below this capacity, as the district has never been able to furnish sufficient beets to run at full capacity. Weather conditions in the early part of the year were favorable for beet planting and fields as a rule showed very good stands. Indications in early April were probably as favorable as at the same time in any other season since its beginning.

Santa Clara.

GIRLS BETTER WORKERS THAN JAPS.—Gilroy Gazette, August 17: The busy time has come for fruit growers. In this vicinity there is going to be a good yield, now that the apricots have been cleared out of the way. Of that fruit there was a marked shortage. But of peaches, prunes, pears and grapes there is going to be more than a fair crop. Complaints have come down from San Jose and Campbell and around those sections that there will be a great shortage in the prune crop. It is not so here. At many places visited and most of the orchards inspected there is an abundant crop of good prunes, and the sizes will be larger this year because there is no overbearing. The only cloud that has appeared out of the sky for the orchardists is the dropping in the price. This apparently without cause, and indeed has been without cause, as ascertained by those who have investigated the subject.

ANGORA GOATS.—San Jose Herald, August 15: The C. P. Bailey & Sons Company has received a carload of Angora goats from its ranch in Monterey county. There are perhaps 70 in the lot, mostly bucks. Some of these will be kept here to be prepared for the State Fair. Others are to be shipped to various points where the industry is being attempted. Orders have already been received from Arizona, Texas, Oregon and different parts of this State for these bucks of the San Jose company, which have won prizes at many fairs and are famous abroad as well as at home. Within the last few years shipments have been made to Honolulu, the Philippines, Australia and New Zealand. Among the bucks in the present carload are several which took prizes at the St. Louis Exposition. They are a lively carload and extremely fond of carrots. Several disputes over the possession of a certain mouthful are in progress most of the time.

San Luis Obispo.
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"SHARPLES TUBULAR" separator spindles banded with steel where they wear in wood bushing. Send bowl with worn part by prepaid Express also Money Order for \$1.75 and we will return within twenty four hours as good as new. LEBOYD BROS Elk Grove, California.

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Sixty-nine acres fine fruit and vegetable land in the early fruit and vegetable belt, three miles southwest of Winters and one mile from Putah Creek; 25 acres are in fruit trees, apricots, peaches, and plums; 5 acres of grape vines, principally Tokays. On the place there is a fine well equipped with a good pumping plant from which the greater portion of the place can be irrigated. There is a good plain house of four rooms; wind mill and well finished tank house, barn 40x50 feet, including granary, packing shed and all other necessary out-buildings. There is also about 250 feet of hot beds, and water is piped where needed on the place. Terms of Sale: One-half cash, balance in one and two years, at 7%. Address, Box 907, Winters, Cal.

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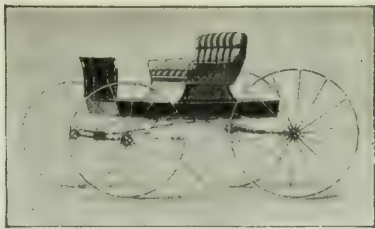
Obispo Tribune: State Veterinarian Charles Keane, accompanied by Dr. William M. Mackellar, an inspector connected with the United States Bureau of Animal Industry, called at the Tribune office Friday afternoon before their departure for San Francisco and Sacramento.

Dr. Keane states conditions are to be so arranged that cattle that are free from ticks may be moved from the west to the east side of the Santa Lucia range after having been dipped at a public dipping plant to be located near San Luis Obispo. This dip is to be constructed by the county on the plans furnished by Dr. Keane. There are a number of dips on ranches in the coast section.

Dr. Mackellar was sent here from Fort Worth, Texas, and will assist in making a vigorous campaign against the tick in this county. He will have two men in the field in this county.

Dr. Keane gave out the following statement to the local press:

"As far as the method of eradicating the tick is concerned, there are a number, but we have adopted that of mechanically dipping the cattle in crude oil. This we have found to be the most effective in destroying the tick. On some of the ranches in some of the counties in the southern portion of the State a great number of the cattle are immune; that is to say, they will become inoculated by the infection, but will not die from it. The manner in which the Texas tick creates disease among cattle is analogous to the manner in which the mosquito causes yellow fever among humans. The poison is transmitted to the systems and in the case of a non-immune it generally means death. The northern cattle are all non-immune, and, therefore, we have to be particularly careful that



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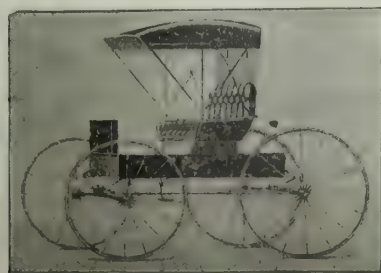
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Solano.

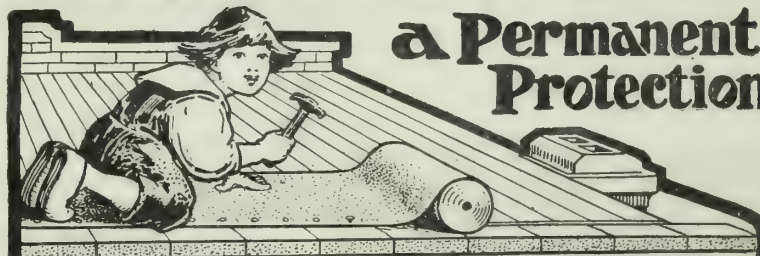
PHENOMENAL HARVESTING RECORD.—Solano Republican, August 17: Sixty-three sacks of grain in a minute. This is the record made by Ernest Young in harvesting wheat on the Muzzy ranch near Birds Landing recently—a record never before equaled. The grain was

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Yuba.

HOPS WEIGH DOWN VINES.—Sacramento Union, August 18: The hop growers of this county are making strenuous efforts to procure enough help to harvest the immense crops that are weighing down the vines. Picking has commenced in the vicinity of Wheatland. People come from places many miles distant to camp in the hopyards and spend their vacation among the vines. Some become expert, and their pay checks run about \$3 per day in many instances.

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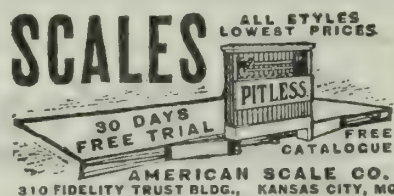
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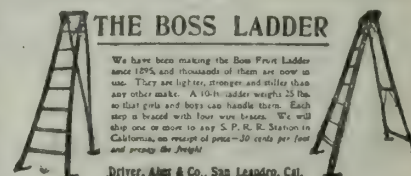
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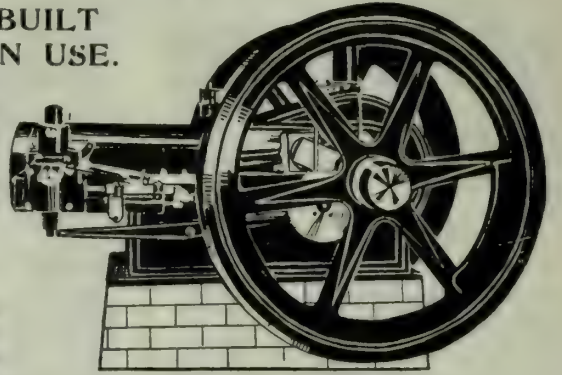
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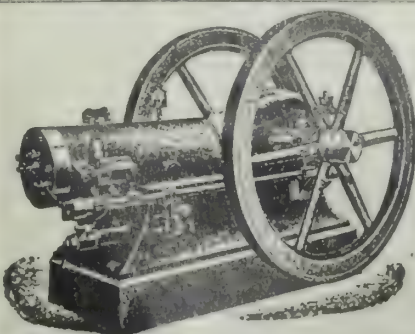
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THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXII. No. 9.

SAN FRANCISCO, SATURDAY, SEPTEMBER 1, 1906.

THIRTY-SIXTH YEAR

SOMETHING NEW UNDER THE GROUND.

Our readers have most to do in the sunshine and should be thankful, probably, that their work lies in the open air rather than in the dark places of the earth, but even this arrangement may give them keener interest in the strange things which are done under the ground. They are quite familiar with the various uses of falling water upon the surface of the earth, but is it not strange to go to immense expense to make water fall far into the rocky interior of the earth not for any purpose which the water can serve after arrival but for which it incidentally accomplishes while getting there. It might not be of more than passing interest, for example, if one should sink a shaft and take down water to turn a turbine or beat upon a wheel and in that way generate power for some profitable subterranean labor. It strikes us, however, of the greatest interest and novelty to arrange so that the falling water should drag down air with it and this air, compressed in the process, should be reconveyed to the surface to act as a

motive force. That is a matter of great ingenuity and one which involves close economic calculation, because the inventor has not only to be sure that the air and water will act as he proposes but that the whole cost of the operation will be cheaper than equal power can be secured through some other agency. In the case which we illustrate on this page both these conditions have been fully met, and this is the reason for calling attention to the matter.

The scene is in Michigan, and as fuel is expensive and water abundant, the latter is applied in an ingenious way to the generation of the former. Water is taken from the river under a head of 71 feet, and air is admitted into the falling water through a number of small pipes; the water, with the air thus entrapped, is piped through three shafts to a depth of 330 feet, where it spreads into a large chamber cut in the rock. Here the air, now at a pressure of 117 pounds per square inch, rises from the water and occupies the dome of the chamber, whence it is piped to the surface. The tail-water meanwhile escapes through a lower tunnel that communicates with an incline shaft, leading to surface, 260 feet overhead. The air



Outlet End of Air-separating Chambers, Showing Blow-off Pipe and Water Escape.

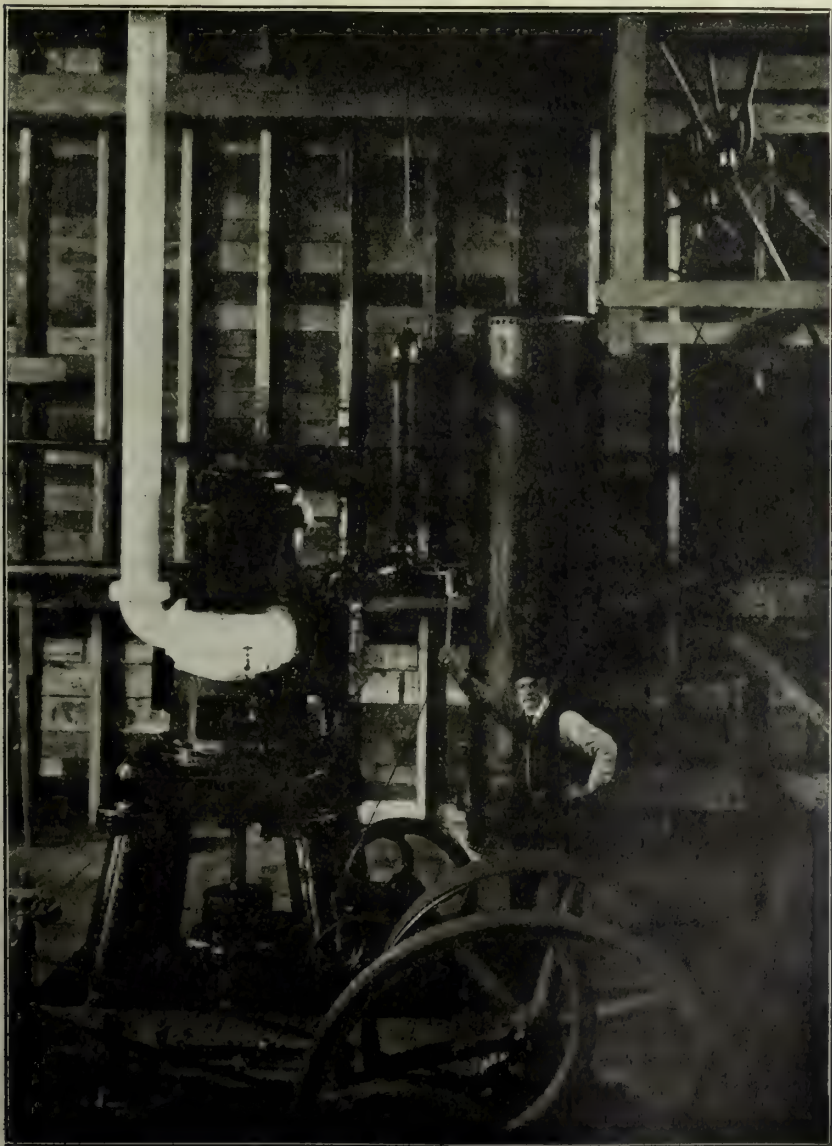
has the low temperature of the water and the loss due to rise of temperature in compression is minimized. The energy thus generated is applied to various kinds of machinery.

The inventor of this novel recourse is Mr. C. H. Taylor and he gives a very interesting account of his achievement: The principle of the compressor is simple: The water is drawn in between two conical castings, having an adjustable space or opening; between these two castings are placed 1,800 three-eighth inch standard pipes. The partial vacuum caused by the descent of the water draws the air through the small pipes which take air through seven inch vertical pipes in the headers, whose upper ends open to the atmosphere.

With the proper setting of the head, the air produces a vibrating sound resembling the running of a pair of iron gears at high speed. This vibration is caused by the bubbles of air separating from the ends of the small tubes; these bubbles are disseminated through the whole column of descending water and forced down to the end of the compressor-shaft, striking conical spreaders, which scatter the

water into the separating chamber. On its course to the discharge shaft, it rises to the surface of the water, accumulating there, and displacing the water until it is forced down to the saucer-shaped end of the blow-off pipe, when the air escapes, preventing the water from being forced down any further. If the air is drawn through the 24-inch air main to the full capacity of the compressor, the blow-off becomes inactive. The separated water passes on through a lower tunnel and up the incline shaft to the tail-race. The pressure of the air is equal to the vertical height of the water in the discharge shaft only. The natural water-head controls the volume of air to the extent of the volume of water available together with the dimensions of the compressor. A compressor of this kind can be constructed to give any pressure and any horsepower, depending upon the natural head and the quantity of water.

Much interest naturally pertains to the separation of the water from the air. One engraving shows the tunnel or separating chamber which is 57 feet wide and 22 feet



Machinery Driven by Compressed Air from Under Ground.

(Continued to Page 136.)

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THE WEEK

The State Fair is in progress in Sacramento, as we write, and reports are that the exhibition is very rich and varied in distinctively agricultural and horticultural materials, and widely representative of the State geographically. We infer, however, from reading between the lines of the comments which come to our sight, that there is a dearth of some of the old, popular attractions and of the excitement which they stimulate. Possibly we shall have to record that the changed character of the exposition reduced the gate money and that the balance sheet may not look as well as it might. This may not work out that way by the end of the week, but suppose it does, what of it? If it should appear, after fair comparison of this year's Fair with its predecessors, which have been greater in "attractions" and gate money, that this year's display has been richer in that which is clearly agricultural and clearly demonstrative of other bona fide resources of the State, it will be of secondary moment whether the gate money is less or not. The State does not need to have an unholy show under the name of agriculture, but it does need to have a widely representative and educational display of our agricultural resources and achievements, even if it has to pay something for it. We haste to get in this little preaching into the public ear, in case there should be a light cash box at the gate, before our readers may be tempted to indulge in a line of criticism because there is less money in a representative exhibition than in previous years, when there was an unholy show. The test is not what a Fair costs, but what it is worth in the elevation and promotion of industry, and this year's display must be ultimately judged by this standard.

If this test should never come, so much the better. It may be that the popularity of the Fair may leave no opportunity for criticism on the ground of unrequited cost. One thing seems sure: That this year's Fair has the character it should have and which justifies its being called an agricultural and industrial exposition. The Sacramento papers are giving the new secretary, Mr. J. A. Filcher, much credit for the Fair, and endorsing his claims for it. What these claims are is given in the Sacramento Union in this way: "I want to call your attention to the fact that this exhibition of the things California produces are this year as complete as they can be made," said Secretary Filcher last night. "Name me a mineral of any sort, and I can find it for you. This is true of fruits or cereals. Whatever there is that grows from the ground, or is found in the ground, I will find it for you among some of the exhibits here. From the Nevada line to the Coast, and from the Mexican border to the northern line of Siskiyou, the raw products and the wealth of the State's manufactures are represented somewhere on this floor. There are more people in attendance than last year, and there is more interest displayed by those who come to see. If there is any feature of this exposition that deserves special mention more than another, I think it is the educational value of the Fair. The Agricultural Department of the State University, and the California Polytechnic School have exhibits which cannot fail to win commendation from educators from all parts of the State. Professor Anderson, the head of the Polytechnic School, is himself in charge of the exhibit from that school. But when I speak of the educational feature I mean more particularly the value of the exhibition as a whole. It gives, as nothing else can, a view of the mul-

tiform industries in which the people of California are engaged."

This is what a Fair ought to be: when it is over we shall see what can be learned for future efforts from its experiences. Evidently some of the live stock classes are unusually fine and full. The old Shorthorns, for example, which are the greatest cattle in California, judged by the breadth of their dissemination and the influence they have had upon the common stock of the State, are shown in large numbers, and some of the old breeders who have been absent from recent Fairs, are in evidence, because they had confidence that there was to be an agricultural fair, and not a hippodrome. The result of the reawakened interest of those owning good stock of different breeds, is that all stockmen are pleased this year with the large number of entries. In fact, the number so far exceeds that of last year that the stalls which were occupied by horses and cattle jointly last year, are this season, given over entirely to cattle. And there are good horses and other animals in abundance. It really does seem that California had entered upon a new era in State Fairs, and now let us hope that a series of reports which shall be as true to the needs of the State will be forthcoming.

Do the bees bite or puncture fruits? This is an old question and contributions of observation are always interesting. The latest information is that Professor Garman, of the Kentucky Experiment Station, took up this matter and set a watch to find which insects were puncturing the grapes, peaches and plums. He found two varieties of tree-cricket working vigorously at night cutting holes in the fruits named. He expresses the belief that these crickets are the chief culprits in puncturing thin-skinned fruit. One variety of June-bug was also found in the same business. After the holes were made, of course, the bees freely partook of the juices. We do not have the orthodox June-bug of the East, but we have plenty of the same group of beetles. The puncturing of fruit is probably done by many insects, some in one part of the country and some in another, and bees follow them all. But the matter of bees puncturing fruit does not, of course, cover the case where cut fruits are put out for sun drying. There is no doubt about bees being intolerable when fruit drying is in progress.

Another vexed question, though of a wholly different character, is also advancing toward solution. It is the medication of trees by introducing substances into the circulation of the sap. No claim which was based upon boring into the wood of the tree and depositing sulphur, charcoal, etc., in the hole, has ever been substantiated. Recent investigation does, however, show that when suitable materials are brought into connection with the moving sap near the exterior surface of the tree a movement does take place and it is effective in doing certain things. According to Consul-General Guenther, of Frankfort, Germany, German papers state that it happens frequently that the roots of fruit trees are more exhausted than the parts above the ground, and so the life of the tree is threatened. In order to prolong its life in such cases, it has been recommended to vaccinate the trunk of the tree with a solution of sulphate of iron, the same article which is used in the so-called anaemia or chlorosis (Bleichsucht) of the grape vine. A Russian scientist, Mr. Sigismund Monrjetzki, has now made minute scientific experiments with reference to the results of such vaccinations, and by employing colored solutions, he has shown that the solution never enters into the old wood. It only follows the young growth, but it penetrates into the roots down to a depth of one meter (about 39 in.), while on the other hand, it penetrates up to the top of the tree. It is, therefore, deemed best to vaccinate the tree through a single opening of the neck of the root, and it should serve not only for the introduction of nutritive substances, but also of such liquids, which, by killing certain bacteria, tend to cure diseases of the plant. This last proposition is, however, hypothetical: it needs demonstration, and opens a wide

field of experimentation. If such treatment can be shown to be effective, it will be one of the greatest horticultural achievements of the world's history.

We are continually talking about cover crops, and they are receiving much attention in California, but with two main purposes, viz., to prevent winter washing of hillside orchards and to add plant food to the soil, and to improve its friability by the increase of the humus content. It is interesting, though of little practical value in this State, that cover crops are protective against hard freezing and against other ills which pertain to the severe winter conditions. For example, the Nebraska Experiment Station has just made a publication on "Cover Crops for Young Orchards." The tests made at the experiment station during the past five years show conclusively that young, rapidly growing peach trees are made hardier in both wood and fruit buds by the use of a cover crop that will, by drying the ground somewhat in late summer, check the growth of the trees and cause them to mature their wood properly before the advent of freezing weather. Cover crops that survive the winter, rye for instance, are detrimental to orchards, since they dry the ground excessively in spring, when the trees need abundant moisture. Cover crops that are killed by the early frosts are better than those that live later, because, as soon as killed, they stop drying the soil, catch fall rains, and check evaporation. For the past seven years, at the time winter has set in, the ground in the experiment station orchards has been as moist in the plots that grew frost-killed cover crops as in the plots that received thorough cultivation throughout the fall. Cover crops that live until killed by severe freezing weather, oats for instance, sometimes keep the ground so dry that there is danger of serious injury to tender roots should the following winter be very cold. Of course, these propositions sound strange in California, and we introduce them to emphasize the different conditions under which we have to work, and to induce cogitation upon the general subject, under all conditions.

Some of Anglo-Californians have told us from time to time that there is no use in trying to fool John Bull on what he eats and that the arts resorted to to make very fine-looking dried fruit would be in vain with that very discriminating individual, who eats with his soft palate and not with his eyes. Perhaps that is so, but we cannot help smiling over recollections of such upbraidings to which we have been subject when we read of what Mr. Bull is doing with bogus butter. There is something of that kind on another page of this issue and, as supplementary thereto, comes the declaration of the London Times, that England, as a matter of fact, is largely a margarin-eating country, and figures given in statistics under the head of dairy products are decidedly misleading, because, through adulteration, butter and cheese form only a proportion of the article so scheduled. There is a comparatively limited market for the highest-quality butter, but margarin and margarined butter, from their lower price, have claimed the majority of English consumers. In view of the fact that the country has learned to satisfy itself with sophisticated fats sold openly as margarin, or less openly as a mixture of butter and margarin, and with the deliberate intention of deception in cases where methods are employed with such scientific skill that analysts have to confess that a considerable quantity of foreign fats may be introduced without the possibility of their detecting them, it is difficult to see that the farmer errs in not materially adding to his cow stock. Great Britain imports a vast quantity of "stuffed" cheeses—that is, cheeses made from separated milk—the appearance of richness in cream being given by working into them cheap fats of the margarin type. Lard is not a dairy product, but it comes into competition with butter for cooking purposes, and imported lard is not free from margarin. And if it is true that John Bull takes so many things in his dairy goods, why should we admit that he is bound to object to a little antiseptic brimstone in his cured fruits.

QUERIES AND REPLIES.

ORNAMENTAL PLANTING ON BEACH SAND.

To the Editor: I am about to make a home on the ocean beach, and would be obliged if you would give me such information as you can regarding the growing of grass, plants and trees on beach sand at an elevation of about six feet above high water mark. The sand, being pure beach sand, is, of course, slightly salty. My intention is to level the land, and then cover it with sod about six inches thick. On this I propose to plant strips of Bermuda grass. Do you think Bermuda grass would be a satisfactory grass for such conditions? Which would be the most desirable shade trees for such a location? I propose to sink barrels filled with good soil in such places as trees would be planted. Any information regarding these matters would be appreciated.—READER, San Diego county.

Whether you can succeed in making any grass except salt grasses grow upon your beach sand depends upon the amount of salt it contains. You can hardly reach that conclusion without a trial. Bermuda grass will stand a good amount of alkali, but common salt is a little more trying to a plant than alkali. Still, we do not know of any other one which would be more likely to succeed. As for trees to be grown in the barrels, for lack of experimental knowledge we cannot make you definite suggestion. This is a matter which you will, also, have to determine by experiment, unless you can find a demonstration of the relative suitability of trees at some of the older places near the beach in your locality, and thus borrow the wisdom which has been reached by the earlier experimenters. Your proposition is rather new and finds us unable to give definite advice. We would like to hear from subscribers on these points.

EUCALYPTUS FOR RAILWAY TIES.

To the Editor: Can you tell me what is the most rapidly growing tree? Is there a kind of blue gum which grows very rapidly and is hard enough for railroad ties? And is any grown for that purpose, if so, where?—ENQUIRER, Freeman, Ontario.

Blue gum, or eucalyptus globulus, is a hard wood of exceedingly rapid growth, but it is not suitable for railroad ties because it rots very quickly. For this reason its use for posts, which was begun early in this State, was long ago abandoned. Experience has not yet demonstrated whether other eucalyptus will be satisfactory or not, although some of them have a record for durability in Australia. All the eucalyptus coming from Australia are tender trees and will not endure very much frost, and are therefore not available north of California.

BURR IS BETTER THAN CRIMSON.

To the Editor: Kindly advise me if the clovers, burr or crimson, are considered substitutes for peas, as a cover crop. They can be sown so that the rains will carry them without irrigation, I believe.—READER, Los Angeles.

Burr clover is a very satisfactory winter growing cover crop, and is, therefore, to be considered as a substitute for peas. Crimson clover is not as hardy as burr clover, and the occurrence of frost during the rainy season would injure it. For this reason burr clover is superior for the purpose you have in view.

SOILS FOR GRASS.

To the Editor: Do I need to have soil analyzed so as to learn what kind of grass would thrive best thereon? Will you kindly advise me how to proceed?—SUBSCRIBER, Lake county.

If the soil which you have in mind is good agricultural land and has been productive of grain crops the question of growing grass upon it is almost wholly determined by what moisture is available. Most of our pasturage grasses will thrive on quite a variety of soil, providing they have moisture enough, and we have not yet succeeded in finding a grass that will give a good summer growth without irrigation, while there are several that will make very good return during the rainy season. The grasses which are most promising to sow for pasturage purposes are Australian rye and orchard grass. If you have irrigation, red and white clover and alfalfa will give you satisfactory summer pasturage and hay. An analysis of the soil would not be particularly significant until you settle the question of water supply.

POISON MONKSHOOD.

To the Editor: Please tell me if the enclosed plant is poisonous to cattle and, if so, what symptoms they show when dying from its effects.—CATTLEMAN, Inyo county.

Mr. H. M. Hall, Assistant Botanist of the Experiment Station, identifies the plant as "Monkshood" (*Aconitum Columbianum*) and gives this account of it: Well known to be poisonous to stock, but seldom grows in sufficient abundance to be a menace. Restrictive to stream banks and other wet places, it ranges throughout the Sierras, north and east. I have no record of symptoms, but the poisonous principle is very much like that in Larkspurs, to which the Monkshood is closely related, and Mr. Chestnut, who has made a study of poison by this plant, reports the symptoms as follows: "The first signs of poisoning are usually a general stiffness and irregularity of gait. There is often a pronounced straddling of the hind legs in walking. These symptoms increase in severity until locomotion becomes difficult or impossible, and the animal finally falls to the ground. The skin is very sensitive to the touch and the muscles of the sides and legs soon begin to quiver spasmodically. This is a very characteristic symptom, being usually exhibited for several hours." During the later stages the animal is usually attacked by violent spasms; but there is seldom an excessive salivation.

The remedy recommended is powdered permanganate of potash and sulphate of aluminum, 30 to 50 grains of each for adult cattle, completely dissolved in a quart or more of water and given as a drench.

PEACH ON MYRABOLAN?

To the Editor: I have a piece of ground I wish to plant to Muir peaches and would like to ask you if they would succeed on a Myrabolan root. Under ordinary seasons I am satisfied the ground is dry enough, but a winter like this last one would in all probability prove too wet for them on their own roots. Apricots do well in this locality on a Myrabolan root, and why wouldn't a peach do just as well, and would it prolong the age of the tree on this root?—SUBSCRIBER, Santa Clara county.

Our understanding of the matter is that the peach on Myrabolan was tried out several years ago and the use of this plum root for the peach was abandoned. If we are wrong will some one kindly state otherwise?

PASPALUM DILATATUM.

To the Editor: I note in your issue of July 28 an account of a hardy grass—*paspalum dilatatum*. I am located on a clayey loam soil of 16 feet depth or more on the banks of a small slough with great oaks growing thereon. Will this grass grow well in my soil? How does it compare with alfalfa for feeding value as hay? You see we can not pasture our land in wet weather where we expect to plow. Or can it be pastured like our clover in winter and thus remain as a permanent pasture? I don't like the work involved in soiling cattle. Do you suppose it will stand the dry, hot summers of the Sacramento valley and continue to grow and furnish pasture during this long rainless period? Will it act well under irrigation? Have the University people stopped sending out sample lots? Could I get enough to plant one-half acre or an acre? How will it behave on wet land—wet in winter, and hard and dry in summer; almost alkaline; not too alkaline for sorghum, however. By the way, I sowed about two and a half acres of sorghum just before the last rains this spring. Had a great growth of hay for the first crop and now it is growing finely and bids fair soon to require cutting again—in fact it is denser and better stooled than at the first cutting. I used it in Iowa and find it behaves well here in this sunshine valley. By answering these questions you will greatly oblige me. Our irrigation water yet lingers in the Sacramento river and I hardly dare risk alfalfa until the water starts this way. Further, can you (if verdict is favorable and none is to be had at the University) help me to some seed at less than 75c per pound?—FARMER, Norman, Glenn county.

We cannot answer many of your questions. This grass must be more widely tried before safe conclusions can be reached about its value in California. It is a fact, however, that the hay will be inferior to alfalfa. It is rather a coarse grass of moderate nutritive value as any grass which stands both flood and drouth has to be. It will not endure the summer in the driest lands in the Sacramento valley without irrigation, and we do not

know any grass that will. It should make good green feed during the rainy season. Your experience with sorghum shows that that plant is the one to make a great amount of feed without irrigation and sorghum will grow on land where unirrigated grasses will die out in the summer. We do not know where you can get *paspalum* seed even as low as the price you name. The University has no seed at present. Mr. Luther Burbank of Santa Rosa quotes it at 25c per packet or \$1 per oz.

CURING IMPERIAL PRUNES.

To the Editor: It is claimed as a result of actual experience (and the plan is followed in some sections) that the Imperial prune should not be dipped in a lye solution, or in hot water, but in cold water merely, which tends to neutralize the "bloom," and then to run the prunes over the pricking board. Thus treated, they will not stick to the trays, but of course must still be turned daily for a few days, which may be done with reasonable expedition by not filling the trays too full, and by using a broom to gently turn them over.

These Imperial prunes, picked every day, and not allowed to stand in the sun before they are pricked, handled carefully and properly, are worth a lot of money. I know of one case where a packer bought some extra fine ones for 8c. and sold them (wholesale) at 18c. Experience has shown us that the trees are poor bearers, planted in large blocks. They seem to bear well enough if planted in small blocks, pruned well, and interspersed with some other more strongly self-fertile sort, such as French.

LEONARD COATES.

Morgan Hill, Cal.

DYNAMITE IN LAND CLEARING.

Professor H. E. Van Deman of Virginia, recently gave the Rural New Yorker his experience in handling stumps with dynamite, which he found reasonably cheap and entirely effective. He says: We use 40% grade and an electric battery for firing. We could not have used fuse for firing, because we had to put several sticks, in one case nine of them, under a single stump. We often fired a chain of five or six stumps all at once, and never had any trouble or endangered ourselves from unexploded dynamite, as might easily be the case with fuse firing. There is much skill needed in placing the dynamite where it will do the most lifting, and this should be as near under the center of resistance as possible. One-half stick of dynamite will lift out the smaller stumps, and a full stick, the larger ones. It will not be necessary to hire an expert at a big price to do the work or the bossing of it. Anyone with good judgment who can handle a crowbar can punch the holes under the stumps. The dynamite should be stored a safe distance from the place where it is to be exploded; 100 yards is far enough. The dealer in explosives of whom the material is purchased will show how to fix the exploding cap in the stick, and to attach the fuse or electric appliance, all of which is very simple. I began with "an expert dynamiter" on our job, at \$4 per day, and after our men saw him work for a day, any of us could and did do just as well. There is nothing mysterious, complicated or even difficult about the whole operation. Good sense, some muscle and a lot of care in handling the explosives are all that are needed to do a first-rate job of stump blowing. The cost per acre will not be great, but I think it will be about \$50 by the time the stumps are burned. I saw plenty of stump and land clearing in Oregon, Washington and British Columbia last year, where they were almost ten times bigger than those we have in the Eastern States. They use a "donkey" engine, steel cable and snatch blocks to pull them up, and at the same time drag them into piles ready for burning. A tall and very stiff stump or snag is selected and to this one block and the cable is fastened as high as can be, and all that can be piled about it are dragged to this common center. I have seen piles of stumps and logs there fully 30 ft. high and 50 ft. across made in this way. This would not be practicable for the job in question, but the same might be done with a winch and horse power. However, I think it would cost more in money and take much longer than by dynamiting.

HORTICULTURE.

THOSE NEW CITRUS FRUIT HYBRIDS.

Although California growers of citrus fruits have perhaps little to expect from the undertakings of the plant breeders of the Department of Agriculture to combine the hardness of the Japanese deciduous orange with the edible delights of the sweet orange of commerce, their work should be generally known in this state. California has conditions for orange growing which do not require greater hardness than the sweet orange has of its own right. Our outlook in breeding is in developing better types of this fruit without debasing it by hybridization with the trifoliata. To know what will constitute improvements from pomological and commercial points of view and to secure them is our problem, and it is in this line that the new University Experiment Station at Riverside will work. Still we need to know what is doing in other lines. A Washington correspondent of the New York Evening Post gives information of this kind and we shall make selections therefrom.

The plant and fruit experts of the Department of Agriculture are continuing unceasingly their search for novelties. They note even the least indications of new traits which impress them as possessing possibilities of development, and see whether results cannot be gained in the permanent betterment of the fruit species to which that particular product belongs. The Rusk and Willets citranges and other lately improved fruits are but a part of the satisfactory results attained through experimentation, and there was the promise of other similar achievements to be announced within the ensuing year.

Hybrids of the Lime.—One of the most popular and delicious thirst-quenching decoctions at this season of the year is limeade. Up to within seven or eight years ago, although the lime as a fruit was grown in all tropical and sub-tropical countries for home consumption, it was only at a very few places that it was cultivated extensively for the manufacture of an article known as "lime juice." No commercial culture existed, however, in any part of the United States, and this was an evident indication that there was no demand which made fruit growers suppose it would be worth their while to grow limes. When the use of limes at soda fountains was introduced, the demand increased so rapidly that the fruit attained standing as a commercial product, and developed trade possibilities which were promptly recognized by plantation owners in southern Florida.

As the general demand for the lime is of such recent origin, very few varieties have been specifically named or become permanently introduced in the principal markets. Some sections of the country have shown a decided preference for the small specimens, while in other cases large limes are more in demand. Some are very seedy, others nearly seedless. Some ripen early, while others do not reach their prime until late in the season. The unknown qualities of the lime are so great, when compared with similar varieties of fruit which have been under observation and cultivation for decades past, that there has been unusual difficulty in differentiating closely between the few varieties now practically established and the others which are still largely in an experimental stage.

After much experimentation the Department experts have given names to two specimens which have progressed under their care to a point where they are looked upon as a commercial success. The smaller of the two is a hybrid of the West Indian lime with pollen of the Sicily lemon, and has been named the, palmetto. The original seedling was grown, fruited, and tested in the sub-tropical garden of the Department at Miami, Fla. The original experimental tree produced only three seedlings. One of these was small and ultimately died, but both of the others, which are almost exact duplicates of each other, have borne fruit which has had one of the chief marks of success—uniformity of size. Each lime weighs a trifle over one ounce, is nearly round, with a smooth surface, and a rind less than one-sixteenth of an inch in thickness. The pulp, of a light greenish color, is tender and very juicy, with a flavor which the experts describe as "a sprightly acid of excellent bouquet." It is almost seedless, having usually only from three to six seeds. A feature recommending it to fruit growers is that it matures early and that because of the spreading, bushy nature of the vigorous hybridized tree, it bears the greater part of the fruit near the ends of the branches, where it may be picked with the minimum of trouble and injury.

A Larger Hybrid Lime.—This small, regular, and very juicy type exactly fits the requirements of the trade in

some sections of the country, and is destined to command a good price and wide market for the growers. For other sections, however, where for some reason or other the larger specimens of limes is preferred, the experts have provided a cross between the West Indian lime and the grape fruit. This has been named the "Everglade" lime, producing the largest fruits of any lime tested in the course of the official experiments in hybridization. The fruit is elliptical, measuring from an inch and a half to two inches in diameter, and from one and three-quarters to more than two inches in height. Its color is light yellow, without the greenish tinge which distinguishes the smaller palmetto variety. Its characteristics are very similar to those of the smaller fruit, of course, but it has the advantage of producing at least a half ounce more fruit content, on the average, than its more diminutive hybrid relative.

While developing these two new specimens in the line of acid fruit, the experts did not overlook the increasing demand for fruit of sufficiently appetizing characteristics to find favor as breakfast food. The great popularity attained by the grape fruit and the scientific success attained in the development of the Rusk and Willets hybrid citranges, led to further work with other varieties and resulted in the production of the Morton citrange, so named in recognition of the valuable services to agriculture of the late Hon. J. Sterling Morton, of Nebraska, Secretary of Agriculture.

A Hardy Hybrid Orange.—The experiments in this instance were made at Eustis, Fla., the original fruit from which this hybrid developed having hybrids. This has resulted in producing a cross of the tri-foliolate orange with pollen of the sweet orange. This cross fruit produced forty seedlings, of which eleven developed unmistakable signs of the true hybrid in exhibiting clearly intermediate character of foliage. As a dessert fruit, or for eating at any time, it has been found to be much superior to the two citranges developed prior to last winter, while it is as desirable for making a beverage similar to lemonade or limeade. Its rather firm membrane, separating the segments of the fruit, permit easy extraction of the pulp with a spoon, thereby putting it at once into the class with grape fruit. It has a very slight bitter taste, and when served with sugar can be made to meet every demand of individual taste. For ordinary eating it is a little more sour than the ordinary sweet orange, but not any more so than some of the so-called sweet oranges which find their way to the markets of the big cities. It is practically a seedless fruit.

A feature of interest to consumers of this new fruit is the probability that it will be less expensive than oranges, for instance, because greater hardness of the hybrid makes possible its cultivation in sections where trees of similar species are killed by frost. While the cold-resistant quality of the Morton has not been tested to its limit, the record of experiments shows that it went through all the winters at Glen St. Mary, Fla., since 1899 without losing its leaves. Several severe freezes, which were disastrous to other species and seriously affected the orange industry even much further south, occurred during this time. Buds eight months old experienced without noticeable effect a temperature going down to fifteen degrees. Experiments in Georgia returned similarly successful results in temperature falling to eight degrees, showing that it can be grown not only wherever the orange is successful, but in additional localities where the orange could not survive the low temperature. This is an important feature as respects the availability of the fruit as a market commodity, a fact which is of general interest at such times as a great freeze in the south, when an orange crop may be killed off in a single night.

THE WALNUT IN FRANCE.

Mr. J. B. Pilkington of Portland, who left early in June on a European trip for horticultural investigations, returned August 14th and reported to the Northwest Horticulturist that in France the Mayette is the leading walnut of commerce. It is large and of fine flavor, and where there is no blight it will bear good average crops.

The Franquette, considered a little more hardy and more prolific, but not quite so fine flavor, is also grown to some extent. The commercial fruit and nut products of France are grown by many individuals, each having a few trees, the largest orchard seen being about four acres of dwarf pears owned by one party. Many of the walnut trees were found growing on very poor soil and were small for their age. One tree, said to be 70 years old, was about the size of a 20-year-old tree on the average tree soil in this country.

In the higher altitudes the Chaberte walnut is grown extensively for commerce. It is smaller and stands more extreme temperature.

THE MARKETS.

Wheat.

The question of housing the grain is the ruling feature in the wheat trade of San Francisco. The condition of San Francisco, with all her large warehouses burned, is going to make this problem a serious item this coming winter. From all reports the yield of wheat in California is fairly large this year and is consequently going to require a large amount of storage room. A great many of the local merchants are beginning to prepare for this, however, and are putting up suitable buildings for the storage of wheat. The fact that there is no room for the grain in San Francisco is making the railroads backward about carrying grain to this point. Exporting from San Francisco is quiet, but some is being shipped from Oregon, and as the season advances much more exporting is expected. The spot wheat market in San Francisco is slow and there is very little demand for milling grain. This, however, is very easily accounted for as most all of the mills were burned. The export trade will undoubtedly be very light, as the crop here will be very little more than will be needed for home consumption. A good crop is being harvested in the southern end of the State. The quality of wheat this year is, on the whole, good, but a great variation is evident. Some yields are exceptionally good in quality and others are poor. This latter fact will probably have some influence on the amount of millstuffs put on the market.

Flour.

The flour situation in San Francisco is about the same as last week. About all the flour handled by the local merchants comes from the interior and this will probably continue to be the case until the local mills are rebuilt and in operation. The foreign demand is gradually increasing and some large orders have been received from Japan and South America.

Barley.

The barley market is fairly active in San Francisco. The main difficulty is, of course, finding store room to store the necessary supply for the winter. The barley crop is good this year and there will be plenty of this cereal to supply local points as well as for export. There is very little barley being sold at the present time as the growers are holding for all the way from \$4 to \$6 per ton more than buyers are willing to pay. Shipments are, however, beginning to come in more freely and as the season advances the old activity in the barley market will undoubtedly be resumed. The quoted price for barley is about \$1 per cental. The harvesting of the barley crop this season has been a serious matter. The late rains and winds damaged the crop to a certain extent, but the most prevalent trouble was that nearly all the barley in California was badly lodged. Most of it was saved, however, owing to the improvements in modern machinery and the condition did not prove so serious as it at one time looked.

Oats.

The oat crop is phenomenally large this year and as a natural result the oat market has practically collapsed and prices have been marked down. A few have contracted for \$22 and \$22.50 per ton, but this price will probably not last. The large yield of oats in this State will undoubtedly cause a falling off in the import trade, and it is very doubtful if any oats are shipped in from other States. There is very little of the old crop on hand at present and this will undoubtedly be disposed of, as it will bring more now than later when the new crop is in. The amount of oats to be exported from the Pacific Northwest this year will greatly exceed that of last year. The amount tributary to Puget Sound is said to be about double that of last year and that tributary to Portland fully three times as great.

Millstuffs.

The situation of the millstuffs market is at present comparatively uninteresting, with prices if anything a little lower than last week. The amount of millstuffs is of course very light in San Francisco, but this is to be expected, as all the mills are out of operation. There seems to be a quantity of wheat of poor quality on hand throughout the country and this is having some influence on the market for millstuffs. Many of the dealers are of the opinion that prices will be lower than at present and are acting accordingly. Nevertheless, owing to the extraordinary condition in San Francisco the demand in this city is good, especially for rolled barley.

Beans.

The handling of the coming bean crop is a matter of interest. The crop has not begun to come in yet, but from all reports it will be very large. Reports from the river and south are very favorable. The crop this year is a little later than usual and this, together with the unusual size of the yield, is going to make it harder for the local merchants than otherwise would have been. The local houses are pretty well cleaned out of all the

last crop of beans and are holding what they have at a stiff price.

Seeds.

The seed market is creating some little interest. The coming crop is being bought up and is reported to be fair. Some of the local dealers raise their own seeds on their own farms, so that the question of buying up stock is not troubling them. The situation is generally firm and prices are considered good. The present quotations are: Brown Mustard, \$3.75 to \$4; Yellow Mustard, \$3.75 to \$4.50; Flaxseed, \$3.50; Canary, 6 to 6½c.; Alfalfa, 12½c.; Rope, 1½ to 4c.; Timothy, 5c.; Hemp, 5 to 5½c.; Millet, 3 to 3½c.; Broom Corn, \$20 to \$21 per ton.

Bags and Bagging.

The interest shown in the bags this week is about the same, with some increase in the demand for bean bags. The grain crop is about harvested, and as a result the grain bag market is uninteresting. Nevertheless, the harvesting of the immense bean crop will undoubtedly awaken a new interest in this line.

Hay and Straw.

The arrivals of hay last week were 3,516 tons. This is a slight falling off from the preceding week. The railroad has been bringing in some of the accumulated cars of hay loaded from one to two months ago and left on side tracks. Probably about one-half of the accumulated has now been brought in. No hay is yet being received on Southern Pacific cars for shipment to San Francisco, and when this condition will change it is impossible for anyone here to find out. Therefore, all hay being loaded for shipment to San Francisco must be hauled to the landing and shipped by water. A large fleet of bay schooners has been running steadily on this work, but they are unable to handle enough to supply shipment for what is being offered. It is nearly impossible to obtain an idle boat. Under the above conditions the market has remained decidedly firm. All offers of first-class hay are readily placed at top quotations. The poorer classes of hay are of slower sale, and not being sought for. Some wheat hay is being sent forward for export purposes. Alfalfa hay continues to arrive very moderately, and the market is fairly steady, although the demand is not brisk. Straw is scarce on this market. None is being brought in on the railroad, and the schooners being busy bringing in hay, cannot be spared to bring in straw.

Hops.

The hop harvest is causing much speculation in and around San Francisco. The producers seem to be unable to get help enough to pick the present crop and circulars have been spread throughout the refugee camps of this city announcing that growers guarantee \$1 per 100 lb. picked, and will furnish the necessities, such as wood, tents, etc., to the needy. It has become such a vital question that special excursion trains are being run to and from the fields. The hop market is fairly firm despite the exceptional yield and the growers are confident of good prices.

Butter.

The butter market is about the same as last week, but with everything pointing to a slight decline in price. The best butter is selling now at 26c. per lb., a decline of ½c. under last week. The supply of butter is not so plentiful as it has been and the decline in price is a little unexpected.

Cheese.

Cheese is about the same, with the receipts falling off a trifle. Cheese is selling at 11½c. per lb., a figure about the same as that of last week. The fact that the cheese supply is a little short seems hard to account for, but undoubtedly this will be of short duration.

Eggs.

Eggs are plentiful and there seems to be no unusual demand. The dealers are, however, not worried in the least, as they are doing a fairly good business. Selected eggs are selling at 29c., firsts at 25c., seconds at 18c. per doz. Eastern eggs selected are selling at 24c. per doz, firsts at 21c. and seconds at 18c. Cold storage California selected at 26½c., firsts at 25c. per dozen.

Poultry.

The poultry business is in much the same condition as last week. There is a good demand for young stock, especially hens. Turkeys continue to be scarce, with no demand. The producers must have foreseen the comparatively small demand for turkeys and as a consequence few are being received. Ducks are selling at \$3.50 to \$5 per dozen. Very little game is being received and the market is good and is expected to continue so as long as the light receipts continue.

Vegetables.

Vegetables are generally steady with about the same demand as last week. In some lines, however, the market has weakened, but this is to be expected when the receipts overbalance the demand. Tomatoes have weakened lately, but this will probably not continue, as they are in good demand. A good many at present

are being sent to the sauce factories, as otherwise they would be unmarketable. The smaller vegetables are about the same, with a fair demand and plenty on hand.

Potatoes.

Sweet potatoes are selling at 3c. per lb. River Burbanks at 50 to 85c. per sack and Salinas Burbanks at \$1.25 per sack. The potato crop is reported heavy throughout the country and prices seem to hold up wonderfully well.

Fresh Fruits.

Fresh fruits of all seasonable varieties are selling at about the same old figure. The peach supply is very small and pears are beginning to be scarce. Apples are selling at \$1 per box for the best and there is considerable shipping demand for this article. A good many common apples are on the market and the dealers are discouraging shipments of this grade. There is a fair demand for grapes, but the supply being plentiful not much interest is being shown in this line. The receipts of berries are light and all of these are selling well. Canteloupes are over plentiful and are accordingly cheap. A good demand is still ruling, but the supply seems to be so great that in spite of the demand the market is flooded with canteloupes. Watermelons are not so numerous and are kept moving along in good shape.

Dried Fruits.

Some small shipments of dried fruits have been received, but the bulk of the crop is yet in the field. The apricot crop is very light and is consequently selling at a high figure. The greater part of the crop is already sold, however, and the remainder will probably be in a short time. Peaches are beginning to come in in small quantities. These will also be scarce this year and the prices are good. The producers are showing a tendency to hold their crops, however, as they believe that everything is pointing to an advance in prices. Some prunes of a poor quality are reaching the city, but the bulk of the crop is still to be received. Prunes are a little weaker, but this is to be expected on account of the heavy yield.

Raisins.

The crop of grapes is turning out much smaller than had been anticipated and as a consequence prices are taking a turn to the good. The crop yield for the year in the raisin section of the State seems to be a matter of controversy. The yield for Fresno county is put by different authorities at from 3,800 to 6,000 cars. Packers claim that the crop this year, in spite of the hot weather, is fully as great as last. Prices, however, are better.

Citrus Fruits.

The condition in the citrus fruit market is about the same. Very little interest is being shown at present. Prices are about the same.

Wine.

The wine crop of the State promises to be a heavy one, though in some sections it has been reduced by mildew. Napa and Sonoma valleys and the Livermore section report a shortage, while the Sacramento and San Joaquin valleys will have a large harvest. The output of the State is figured by wine men at about 40,000,000 gallons, which will be one of the largest ever produced. The destruction of so much wine in San Francisco is having a tendency to increase the demand and raise prices.

FRUIT MARKETING.

THE CHANCE FOR EARLY APPLES ABROAD.

Oregon apple growers are doing something very enterprising in exploiting the shipment of early apples to England. California can discount Oregon in this trade in point of earliness, but the fight against the codlin moth has never seemed to appeal to our early apple growers as it has to the producers of fall and winter fruit. In fact, California growers have never risen to the opportunities in the Pacific coast trade in this line. If those having good apple soils in the early ripening districts do not rise to this chance they will be very neglectful, for they can cut in a month ahead of all competitors.

These remarks are prompted by an interesting account in the New York Fruit Trade Journal of what our Oregon friends are doing, viz.: An interesting feature of the early apple export business is the effort which is to be made by the Hood River apple growers to get a part of the early export trade which has hitherto been supplied by New York, New England and Eastern Canada. The Hood River Apple Growers' Union has arranged for a large shipment of early fall apples which will be sent to England. The shipment will consist of eight cars of apples, and marks a new era in the history of apple shipments from the far West. The fruit will be shipped some time between the last of August and September 10th, and will be rushed through by extra fast express.

Manager Shepard of the Fruit Growers' Union makes the following statement relative to the proposed shipment:

"These apples will consist of the varieties known as Wealthies, Kings and Gravensteins, and are early fall apples, which have heretofore been considered too perishable to be sent abroad. We have been induced to try this experiment of shipping early apples to England by Eastern dealers who are familiar with the Hood River product and its excellent keeping qualities and who think the shipment can be accomplished successfully.

"The demand for early apples abroad has in former years been supplied from the orchards of New York, New England and Eastern Canada. The fruit from these sections has not the keeping qualities of the Hood River article and is far inferior in every way to the fancy Western apples. Shipments of early Eastern apples to England and other points across the Atlantic have not been altogether successful during the past few years, and as there is an excellent market for them there, apple dealers have been looking elsewhere to supply the demand. This shipment will, of course, be somewhat in the nature of an experiment, but we think by exercising extra care and picking the apples slightly earlier than usual they will arrive in first-class condition.

"If we can market these early apples on the Continent successfully we will at once create a demand for them that we now have for our Newtons, Spitzenbergs and other high grade but later apples. Gravensteins, Kings and Wealthies do not, of course, bring the price that the later and longer keeping varieties do, and heretofore they have been sold mostly to the local trade. We have, however, secured a very good price for this shipment, with an agreement that we shall receive all profits above a certain amount of commission.

"Our efforts to market our Newtons in Europe, in the face of the competition from the Hudson River valley, having been successful, we now hope to meet with the same success in this new venture. If we do, we will have placed the apple business in Hood River valley on a more profitable basis than it even now is, and will have created a market for Hood River fruit that will be practically unailing."

Western apple men say that these early fall apples from here are even earlier than those from the far Eastern States and can be marketed in advance of them and command better prices. They say also that, in view of the fact that reports from the various other apple growing sections of the United States are to the effect that there will be a large apple crop this year, the demand for Western apples so early in the season proves their superiority.

The first exportation of American apples for the season of 1906, which were shipped from the port of New York to Glasgow by W. M. French, netted \$1.60 to \$1.85 per barrel. Considering the quality of the fruit, this price was fairly satisfactory. The sale can hardly be taken as representative for the season. There is always a demand abroad for American apples, but in view of the large crop in prospect, the expectation of high prices could hardly be justified. The large early apple crop of England is also a factor which must be reckoned with, as these apples, while of an inferior quality, are nevertheless competitors with the early varieties of American apples.

THE OUTLOOK FOR SELLING WALNUTS.

From an address by Mr. H. M. Williamson at a recent meeting of the Oregon State Horticultural Society:

"Everybody likes walnuts. I do not suppose that from the foundation of the world to the present time a child has been born without a natural fondness for nuts, and of all nuts there is none that appeals to more people than the walnut. Away back in the ancient times when the people thought that everything which was best belong to their gods they called the walnut the 'nut of Jove,' because the walnut was regarded as the one nut worthy of being the special property of their greatest god. Coming down to somewhat later times it has been impossible to secure in America production of walnuts to correspond in any measure with our increased consumption and in order to get the increased supply we have paid Europe advanced prices for walnuts and have thus taken the nuts away from those who had been using them and would have continued to do so if the price had not been raised. Therefore in developing a walnut industry here in Oregon to meet the growing demand we shall rob nobody. California has been developing the walnut industry for a good many years, but is not increasing its products fast enough to have any material effect in meeting the demand, as we are now importing about 10,000,000 lb. more walnuts than we did two or three years ago. The increased supply needed to meet the demand must be met and will be met, it appears to me, in the main by Oregon and Washington.

"What will that increased demand amount to? If the increase in the use of nuts amounts now to 6,000,000 lb. a year and this increase is kept up there will be an increase of 60,000,000 lb. in ten years, over and above imports and present production. In other words, we may expect within ten years' time a market in this country for 60,000,000 to 80,000,000 lb. more walnuts than we are now producing.

"I am not one of those who are always saying there is no fear of over-production. Some years ago when the prune-planting boom was at its height I read a paper before a meeting of this society which met quite a frigid reception because I suggested therein the danger of over-doing the planting of prunes. There is practically always a possibility and danger of over-production of any article whose production is not limited by natural laws, and there is a possibility of over-production of walnuts, but this can occur only in the remote future. In all probability there will within ten years be a market in the United States for 75,000,000 lb. more walnuts than we are now producing, or say 95,000,000 lb. a year in all, and even that will allow only 1 lb. of nuts a year for each man, woman and child in the country. That would hardly do more than supply our tables on Thanksgiving and Christmas, and there are even now families who think they must have walnuts every week in the year and some every day. They are used not only in their natural condition with dessert, but the use of them both by confectioners and housewives in the making of candies, cake, etc., is steadily and rapidly increasing. Then, too, the vegetarians who can afford to do so use walnut butter, which is much better than peanut butter, their regular substitute for the product of the cow.

"I cannot see how it is possible to increase our production of walnuts fast enough to meet the increase in the demand, for many years to come, because of the lack of supply of trees of the varieties which are adapted to our climate. The supply of these trees has been extremely limited and for a number of years past, intending planters in Oregon and Washington have found great difficulty in getting as many reliable trees as they wished to plant. Our nurserymen have scoured France for trees and for first generation nuts and have had orders for first generation nuts only partially filled even when the orders were comparatively small.

"The Oregon Nursery Company has by a stroke of characteristic enterprise secured for a number of years the crop of nuts and the supply of scions from the only known large grove of grafted walnut trees in the United States of any of the varieties adapted to our conditions—the Franquette orchard of Mrs. Vrooman at Santa Rosa, Cal. If it were not for this grove there would be no apparent possibility of meeting more than a very small share of the great and growing demand for walnut trees for planting in the Pacific Northwest, which is now developing. We are, in fact, limited, as far as we can learn, for our supply of reliable second-generation trees to those grown from nuts raised in this grove, the comparatively small number which Mr. Gillett sends out annually and the limited number which reliable French nurserymen can supply.

"If planters put out the wrong varieties of trees—those which will not bear in this climate, or those which produce nuts not desired in the markets, the planting will cut no figure in the supply.

"The inauguration of this industry is one of those enterprises which promises much for the country and will in the end reflect great credit upon those who have been instrumental in inaugurating it and in developing it upon a broad scale. It promises much for Oregon and will, we trust, in time bring millions of dollars annually into the State and do much toward raising the standard of value of agricultural productions above \$50 per acre per year."

[Mr. Williamson evidently spoke from an Oregon point of view. We concur in his tribute to the enterprise of the Oregon Nursery Company. It is well placed. But, of course, there are other grafted walnuts in California than Mrs. Vrooman's. The grafted trees introduced by Mr. Gillett and others, are planted quite widely in California, and others grafted by them are also growing and bearing in considerable numbers, and other propagators will be able to offer straight French varieties in accordance with the demand. It is also true that the production of the California seedling varieties will increase in localities where they do well. Mr. Williamson's conception of the future demand for the walnut is inspiring, but his conception of the ways by which it will be met is a little too narrow.—Ed.]

THE FIELD.

ANOTHER STATEMENT ABOUT DRY FARMING.

We have recently demurred to some of the claims for novelty in the dry farming enterprises of the interior States of the slope on the ground that they were but a local adaptation of culture policies and methods in vogue in California for the last half century or less. This point will be clear to California readers as they read a very satisfactory statement concerning dry farming recently prepared by Professor A. Atkinson, Agronomist of the Montana Experiment Station, as follows:

The system known as 'dry land farming' is carried on in regions of scant rainfall and on lands that cannot be irrigated. From the name it is evident that the chief difficulty against which the farmer must contend is the limited moisture supply. It is evident, then, that those who would gain the highest success in this particular line must get the fullest use of the moisture that is present.

While plants require a large amount of water for growth, some as high as 500 lb. for each pound of dry matter produced, yet when we figure the water required to mature a crop in terms of inches it appears to be very slight. Seven inches precipitation conveys enough water to the earth to grow a good cereal crop. Since the average annual precipitation of this area is not less than 12 in., and in some cases as high as 18 in., is evident that if half this moisture were saved, paying crops could be grown.

Preparation of the Soil.—In preparing the soil for a dry land crop the first essential is to have a seed bed that will store the maximum amount of water. When land is to be broken for the first time, experience seems to indicate that this can best be done in the spring, or at least not later than June. As to the depth, little definite experimentation has been carried on to determine this, but the general practice is to break from 4 to 6 in. deep. The deeper the soil is broken for the first time the greater reservoir of loose earth there will be to hold moisture later. The soil will be harder to work down for a year or two, but better results seem to attend deep breaking eventually.

As the breaking is being done, it is important to keep the land cultivated. A good plan is to disk the part plowed during the day, before leaving the field in the evening. The land will work down more easily when in this condition than if allowed to remain untouched for a time, and since the disking fills the crevices and forms a mulch on the surface, any moisture that may be present is prevented from escaping. If the furrows are allowed to remain just as the plow leaves them, hard and compressed, with spaces between them such that the air circulates freely, every particle of moisture present, either in the furrows or the underlying soil, escapes. This leaves the soil hard to work into seed bed condition, and since moisture is lacking, the humus or vegetable matter that has been turned under does not decompose.

In this connection good results come from using a land roller or heavy soil compactor of some sort. Such an implement presses the layers of soil together closely and makes conditions for the rise of moisture most favorable. This brings about rapid decomposition of the humus material, prevents the too free admission of air and drying of the soil, and is of value to the growing crop, as it provides a perfect connection for the rise of moisture later. When the roller is used, however, it should be immediately followed by the harrow or some surface cultivator that will form a mulch on the surface of the ground so that the rising moisture may be arrested before it escapes into the atmosphere.

Cultivate the Land Frequently.—After the plowing and first cultivating have been completed, it is important to cultivate the land frequently. This works it into a good seed bed and by keeping a mulch on the surface retains the moisture. It is especially important to cultivate after each rain, in order that the fallen moisture may be imprisoned. This cultivation may be continued after the crop is sown and until it is up, without seriously injuring it and with profit to the crop later.

When ground that has been broken in the spring has been kept cultivated all season it is usually in condition for a fall crop the first year, or, if not, for a spring crop the following spring. When this crop has been removed, fall plowing is found to give good returns, and when practicable, is to be recommended. Of course, the ground is frequently so hard at this time that the cost of plowing may be out of proportion to the advantage gained. Again, in some localities the prevailing high winds cause the soil to blow so as to seriously affect its surface. Under this latter condition it is well to leave considerable stubble, as this holds the snow and prevents the rainfall from running off too readily. The merit in fall plowing lies in the fact that fall and winter moisture is admitted to the soil more frequently when

the ground has been opened up. If the soil is compact the moisture cannot gain admission and so passes off down the coulees.

Early spring cultivation ought to follow on land that has been fall plowed. An experiment reported by King, of Wisconsin, in his 'Physics of Agriculture,' brings out the value of this. He determined the spring moisture content of a piece of fall plowing as soon as the soil was in a condition to be cultivated.

He then had a portion of the ground cultivated, while a similar portion was allowed to remain untouched. Seven days later moisture determinations on the two areas showed that there was a slight gain in the percentage of moisture in the surface foot of the cultivated area, while on the uncultivated area six pounds of moisture, an equivalent of an inch and three-quarters precipitation, had been lost from the surface foot. When the atmosphere becomes warm enough to evaporate water from the surface, moisture that has been deposited there during the fall and winter goes very rapidly. With the soil in a packed condition, as we find it in the spring, water moves through it rapidly from particle to particle. This movement is from the wet to the drier parts, and as the dry part is at the surface, the water brought to the surface passes off into the atmosphere. When the surface soil is stirred and the compact condition broken up, the moisture cannot move through and is accumulated in a few inches below the surface. This accounts for the increase of moisture in the cultivated area in the experiment reported. When the plowing is done in the spring, cultivation ought to follow immediately for the same reason as in the case of breaking.

Summer Fallow.—In dry land farming summer fallowing land each alternate year makes conditions favorable for the greatest returns. The objection to this system in localities of greater precipitation, viz., the loss of plant food from leaching, does not apply under semi-arid conditions. The advantage gained comes from the additional moisture stored, so that two years' moisture will be at hand to produce one crop.

Since no direct returns are gained the season the land is summer fallowed, it is important that the moisture be accumulated and retained for the succeeding crop. To do this the summer fallow must be kept thoroughly cultivated. This keeps weeds from growing and wasting moisture, and by maintaining a mulch on the surface prevents loss from evaporation. As these dry farming lands are not high priced, normal returns each year from half the area cultivated gives good interest on the investment. The cultivation of the summer fallow can be done at a very low cost, as the men and teams necessary on the farm can be utilized in this way during the crop growing season.

THE CAMPBELL SYSTEM.

A writer for an exchange in Monterey county makes an exhortation in favor of the Campbell system which comes in well in connection with the discussion of dry farming. This is his view of the matter:

The ingenuity of a Yankee farmer bids fair to transform the semi-arid lands of the prairie region extending from the Dakotas to Texas. If it can do as much for the prairie region why can it not help the dry valleys of California. Much has been said about the Campbell system of farming, but being new, only few know what it really is and fewer try it. Such has been the success of the system in the prairie region that it is no longer a doubtful experiment, but a wonderful system. Thousands of happy homes now occupy a country where a few years ago poverty and disgust were rampant.

A writer in World's Work for August says in part: "It is not a patented, or monopolized system, though Mr. Campbell has invented various machines. The system consists mainly in deep plowing, sub-surface packing and constant shallow cultivation of the surface."

It is simply the summer fallow system of the farmers of the upper Salinas valley, but carried out more thoroughly and adding the sub-surface packing. The sub-surface packing seems to be the mainspring of the system. The land is plowed but once, thoroughly and 8 or 10 in. deep, then comes the sub-surface packing, for the moist soil must be pressed together again beneath the surface, then comes the harrowing. Every few weeks throughout the summer is the ground harrowed until a dust blanket is formed over the packed bed of moisture beneath.

The sub-surface packing is done with a machine similar in appearance to a disk harrow, except in place of the disks are wheels about the size and shape of a wheel barrow wheel. The old-fashioned roller will not do, for it packs the surface and not the soil beneath, whereas the reverse is desired.

Tests made in Nebraska and other places where Mr. Campbell has experimental farms show that soil tilled

(Continued to Page 135.)

GOOD ROADS.

POINTS ON OILING ROADS.

Hon. N. Ellery, State Highway Commissioner, has recently been looking closely into the subject of oiling roads and, in answer to inquiries propounded by the Sacramento Union, has prepared some hints which should be widely useful:

What are the essentials of a macadam oil roadway or street?

"Build a proper foundation, of course. From the experience I have had I would, before putting on the top layer of metal, the finishing of the macadam, apply about three-quarters of a gallon of cold asphaltic oil to the square yard. On this I would place the top coat of macadam. I like to get the oil about two inches under the top or surface rock. Of course, the lower layers are maintained at a certain state of dampness. This aids the oil in its trip to the top, where it will surely come. As soon as the roadway is finally rolled and finished, the oil will begin its upward march. It will take some time to come to the surface, but when it does we have as nearly as possible, with macadam, a dustless and mudless road."

You would then put no oil on top, as we do here?

"Certainly, I would put no oil on top."

But suppose it is an already constructed roadway of macadam that you want to oil?

"In that case I would clear the surface of all dirt and dust perfectly, apply my cold oil and on top of it place a layer of finely crushed rock, making the macadam a bit thicker."

You say that you use approximately three-quarters of a gallon to the square yard, here we use 50 barrels to two blocks.

"That is over a quarter of a gallon more than I would advise. In the first place, the attempt is to get an asphaltum surface; in the second, we try to get a bituminous macadam roadway."

"In the last Riverside examination I made they showed me samples of oil boiled down leaving no residue where heavy asphaltic oils are used. Again I saw samples leaving about 50% of residue. In the first instance it was of no use for road purposes; in the second, very good roads are made of it."

"Riverside has some excellent oiled roads and streets on the macadam basis. They cut out with a grader and make a sub-grade to cross-section as required, and with a regard to the crown. Next they dump and well roll a sort of granite they have there, putting it four inches thick. When this is completed, wetted and thoroughly rolled, they apply oil, a half-gallon to the square yard, or perhaps three-quarters of a gallon. They then place two or three inches of top road metal of their granite and decomposed granite."

"These roads I went over carefully and the surface was smooth, elastic, and yet much harder than some other roads treated on the top plan. The city engineer of Riverside follows the plan of work I have outlined, entirely, and with the very best results."

"Do you favor the use of hot oil?" "No, use it cold."

"But suppose it will not run freely enough when cold?" and the answer was: "In such cases it must of course be warmed—that is, if there is too much asphaltum, it must be warmed, but the oil can be used cold with best results."

"How about the treatment of earth roads with oil?"

"The best examples of earth oiled roads I find in Yolo county and especially in Supervisor Ormsby's district. First, with a grader he cuts out his roadway to the proper cross-section grade, using a grader for the purpose. Next he compacts the earth road well, scraping off the surplus earth to the sides of the road, where he leaves it for subsequent use, all the while rolling well, and scraping from crown to side. Then, when the compacting process is complete, he applies the oil cold. Presently he drags back upon the oil the surplus earth piled on the sides as stated, covering the oil from four to five inches thick with it. Almost immediately after, he opens the road to traffic, after rolling well."

"For some time Ormsby's roadway looks just like a common earth road. But after a time you will see the oil coming up in spots, and presently it comes up evenly all over the surface, and eventually becomes a hardened oil road. By this process he opens his road far earlier than can be done with top treatment. When the oil is up, great loaded wagons with one or two loaded trailers to each, pass over the road without making an indentation in the surface."

"After his oil is on and covered, Mr. Ormsby works his road smooth with a grader, attached to which is a drag, moving at an angle to the road. This drag is composed of a heavy wooden timber shod with steel. In front of it and attached by end bars is a T railway rail. The two pieces are from 15 to 18 in. apart. A road thus constructed can be seen between Davisville

and Winters and it is one of the very best to be found anywhere. The cost of this kind of road in Yolo is low, \$150 per mile."

"How is the oil best applied to earth roads or others?"

"By any device that will evenly and properly distribute. Almost any wagon fitted with a distributor properly perforated will answer."

"Do you find instances where too much oil is used?"

"Oh, yes, numerous ones, and where there is not secured complete saturation the result is a soft road. But in the method I stand for, the traffic is early admitted to the road, and the weight of wagons pressing downward, the oil has to come up through its covering."

"How would you repair a macadam road?"

"Well, if a rut occurs in the road it should be cut down square and with vertical sides, not cup-shaped nor rounded. This gives the necessary shoulders. Then the fine crushed rock and oil should be put in as in construction. In such repairing the new material will not push out before wheels rolling over it. Of course, the patch should be made a bit higher than the plane of the road, to allow for shrinkage."

"Do you advocate the use of sand on macadam for earth oil roads?"

"Yes; sand may be used if the oil comes up too freely; either coarse sand or finely crushed rock may be applied."

"How about the accumulation of oil in gutters after application to the crown of the road?"

"In the process I have described as best there is no such accumulation."

"Suppose oil has been put on the top of macadam and stands in puddles after the rest has dried out?"

"I would use sand in such cases. Whether put on top on the principle of the asphaltic surface or underneath as in the process I have described, the more the sun gets to the road the better. It hardens and evaporates more readily, the volatile part passing off more rapidly."

"Is there difference in treatment according to character of soils?"

"Yes, the soil affects the oil. Alkali chemically decomposes it. Oil contains two parts necessary to be understood—petroleum and asphaltine. Alkali forms a combination with the first and leaves a black dust that is very disagreeable. Neither are lime substances good for road oils. In cases of improper soil the only thing to do is to create a false soil or base, by use of plenty of proper material, so that the rock and oil it reaches are kept separate from the undesirable in the original soil."

"What is the trouble with some oiled streets in towns in winter when, and especially under shade, they present a sticky oily mud an inch thick in places?"

"That is caused by partial saturation only, instead of complete. Water is in the surface and the result is oil and water, dust and oil and water mud. It is for that very reason that summer is the time for oiling roads for asphaltic surfaces. The sun's action creates a certain percentage more of asphalt."

"How should sand roads be treated?"

"Sand body is porous, of course. The thing to do is to get the oil into the sand after getting the road into the best shape possible, and after oiling, to cover with more sand, that when the oil comes through it will be just perceptible."

"How would you treat gravel roads?"

"The same as macadam roads. The gravel macadam road gives excellent service. If the Legislature would provide a fund for the construction of a model road oiled, in every county, of a half-mile length only, the result would be in the highest degree beneficial, for what the people want is the object lesson and practical information on the oiled-road subject. In some counties oiled roads have been discontinued as failures. But had they been properly treated they would not have been failures."

THE CAMPBELL SYSTEM.

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by the Campbell method has 100% more moisture than soil treated by the common method. Fifty bushels of wheat have been raised on the Campbell farmed land where but a scanty yield was obtained by others.

Mr. Campbell, a practical farmer himself, has given his process free to the world, although it cost him years of experimental work and the jeers of his "wise" neighbors. If the system can do for California what it has done for the prairie region it is surely worthy of early introduction. A thorough test on a few acres will soon prove its value alongside of the ordinary system of summer fallow. Who will be the one to try the system and hand down the fame of Campbell to the farmers of this section?

THE VETERINARIAN

METHODS OF ERADICATION OF BOVINE TUBERCULOSIS.

By C. M. Haring, D. V. M., University of California, at the meeting of the California Livestock Breeders' Association at Sacramento.

This is a topic which is of interest to every breeder. If the combatting of bovine tuberculosis in the interest of public health had never been heard of, it would still remain a problem of great importance, and it is along this line that I am going to talk. As long as bovine tuberculosis was considered purely as a public health problem and was handled with little regard to the interest of the cattle owners, there was often a disinclination on their part to face the facts. The great increase of the disease among the cattle of this country, and the better knowledge of its nature is resulting in a change of attitude. The more progressive breeders and dairymen are coming to feel that tuberculosis is an unnecessary and unprofitable adjunct to the business, and are beginning to inquire into the various methods of freeing their herds of this disease.

In the application of any methods for the eradication or control of tuberculosis there are a few prominent factors which must always be kept in mind:

The first is its specific nature. Tuberculosis does not develop spontaneously. The cause of the disease is the *Bacillus of Tuberculosis*, a vegetable parasite which exists only in the bodies of tubercular animals and their excretions, or in substances contaminated by them. Dark, filthy, badly ventilated stables, poor food and crowded conditions may be the cause of its rapid spread among cattle, but the disease never originates in a healthy animal, no matter how bad its environments, unless it is exposed to the disease virus.

The second factor is its infectious nature. It is a very catching disease. The germs are transferred, not only by direct contact, but will live for a long time in contaminated places. The chief way in which a disease is disseminated among grown cattle is the indirect contact of the healthy and diseased, such as crowding, feeding from the same manger and the like. A frequent means of transmission is by the milk. Calves and hogs fed on milk from tuberculosis cows soon become infected. The Federal Meat Inspector at the Western Meat Company's abattoir in San Francisco, reports that in the last few years the disease has become common among California hogs. Many things point to the fact that they usually contract the disease from milk and not from one another. The disease is rare in all but dairy hogs. In a pig the disease usually develops more rapidly than in a calf.

A third factor is the period of incubation. By period of incubation we mean the time elapsing between the exposure to a disease and its actual development. The tuberculosis germs may be lodged in the body for some time before the disease actually develops. During this incubation period animals do not react to the tuberculin test.

The fourth factor is the long duration of the disease and the difficulty of detecting it by physical examination. Sometimes reacting heifers will live to a fat old age. Visible symptoms of the disease almost always indicate an advanced stage. I haven't time to dwell upon the symptoms—cough, emaciation, rough coat and hard skin may be due to other causes. On the other hand, animals which are apparently in the prime of condition may be badly infected, and quite as dangerous in spreading the disease as those which show the symptoms.

The tuberculin test is the only reliable method of detecting the disease. There have been many unjust things said about tuberculin, and many cattle owners have come to fear that it is a dangerous agent to use. It has been found, however, that tuberculin is harmless to the health of the animal. The dangers that are supposed to come from it are the results of impure tuberculin, unclean instruments, or other avoidable causes. The best answer to ill-founded assertions concerning the harmfulness of tuberculin is the herds in which it has been repeatedly used. Although the tuberculin test is not absolutely infallible it is the most accurate test for disease known to medicine.

Tuberculin is a concentrated liquid, usually glycerinated bouillon on which tubercle bacilli have grown. It contains the products of their growth and the contents of their cells, but it contains no germs. In applying the tuberculin test it is important to observe the following:

1. The normal temperature of the animal to be tested must be determined and it is recommended that it be taken hourly or every two hours for the day preceding

the test. Practical experience has shown that all these are unnecessary and in practice veterinarians usually take the temperature but once or twice before injecting the tuberculin.

2. The tuberculin is injected subcutaneously in the side of the neck. Care should be taken that the syringe is sterile and the site of injection should be disinfected. The size of the dose depends upon preparation of the tuberculin, that is, the degree of concentration.

3. Beginning eight hours after injection, the temperature should be taken every two hours until the sixteenth hour.

4. During the time of testing the cattle should be kept quiet and free from all exposure, and fed normally. At about the twelfth hour they are let out for water.

5. To constitute a reaction there should be a rise of at least 1.6° F. above the normal individual temperature as determined on the preceding day. The reaction is determined by the temperature curve. The elevation of temperature should come on gradually, remaining elevated for a few hours, and gradually subside. Erratic elevations of short duration are to be excluded. In case of doubt the animal should be retested.

6. Animals advanced in pregnancy and those known to be suffering from any disease should be excluded. All methods of treatment, including exposure to cold, or kind of food or drink which would tend to modify the temperature should be avoided. Animals in which tuberculosis is far advanced sometimes fail to react.

7. The dose of the tuberculin manufactured by the principal laboratories is 2 c. c., but it should vary somewhat to correspond to the weight and age of the animal. In cases where a second test is made within six months the quantity of tuberculin injected should be double that for the first test. The results of tests made at short intervals cannot be relied upon as the previous injection of tuberculin, usually for several weeks, modifies the subsequent reaction.

8. The interpretation of the temperature record requires care. If, however, all conditions pertaining to the protection of the animal have been fulfilled, the temperature curve mentioned is a very sure indication that the animal is suffering from an active, although it may be a very small tubercular growth. If there is no reaction the correct interpretation is more difficult. In this case there are three conditions which may be taken into account, namely: (1) If the animal is extensively diseased it may not react. In this case the physical condition would show that the animal was at least not healthy. (2) If the test was made during the period of incubation there would be no reaction, although the disease may soon develop. To overcome this danger a subsequent test should be made in from three to six months. (3) It is known that cows that have reacted may, because of the arrest of the disease, fail to react subsequently, but later the disease may start up when the animal would react. Great care must be exercised, therefore, in the interpretation of negative results, especially in tests made in herds where tuberculosis exists, and where it is possible that the animals failing to react have been infected.

Successful methods for the eradication of tuberculosis are all based upon the intelligent use of the tuberculin test. I shall deal with the question entirely from the standpoint of the individual breeder and not enter upon the problems of state or municipal efforts. In the enforcement of municipal ordinances the test necessarily has been and must be carried on by those having a training in veterinary science. However, we do not go to the extreme of insisting that the person applying the test always shall be a trained veterinarian. We believe that the test can be used with good results by any intelligent dairyman on his own herd, who will make a little effort to familiarize himself with its limitations. It is only through the intelligent co-operation of breeders and dairymen that we can hope to improve the extremely undesirable conditions which at present exist. The opportunity for learning and perfecting himself in making the test is open to any dairyman who will avail himself of it.

How to Eliminate Tuberculosis From a Herd.

First: Test the entire herd. Then the question arises, what can be done with the reacting animals? The way in which this question is answered will define the method. Of course the reacting animals must be at once removed from the healthy, in order to stop further spread of the disease. If the tuberculin test shows a single animal, or comparative few are affected, then it is unquestionably good policy to exterminate the diseased by slaughter; or in any event, to remove the infected animals from the herd with a view of disposing of the same as soon as circumstances permit. The common method of disposing of reacting animals was by slaughter and burial. Where this wasteful method has been followed the results have been discouraging. Even

when the State recompensed the owner in part for the loss of his stock the method has proved unsatisfactory. A large number of reacting animals are usually but slightly diseased. They will readily take on flesh and can be fattened and used for beef. They must be carefully examined when killed, and if the disease is found to be extensive, or in the two large cavities (thorax and abdomen) the carcass must be condemned. The government meat inspection regulations admit the use of meat of slightly tuberculous animals for food.

It should be borne in mind that a single test cannot be depended upon to eliminate all of the diseased animals. Remember that the disease has an incubation period during which the animals may harbor the germs of the disease, but in which the germs have not yet begun to multiply in the tissues sufficiently to cause a reaction. On the other hand, animals which are in advanced stages of the disease may not react. The history of the herd belonging to the University of California is a good illustration of the necessity for repeated testing.

On May 25, 1905, 21 cows were tested, 4 were condemned and slaughtered. All of the original herd had been bought subject to the tuberculin test. On June 16, 1905, the remainder of the herd, viz., 10 calves and bulls, were tested, none reacting. On November 16, 1905, the cows (16) were again tested, none reacting. On August 24, 1906, the entire herd was tested, when one heifer and one young bull, affected with an abscess at the time, showed a high rise of temperature. The bull will be retested later. Those animals had been tested on May 27, 1905, and failed to react. Both of these had been fed as calves on the mixed milk of the herd before the tubercular cows were removed. Our experience at Berkeley shows that constant vigilance must be exercised to keep a herd clean.

If a large proportion of a herd is found to be diseased, or if the reacting cows are valuable as breeders, they may be isolated and kept for breeding purposes by removing the calves at once and feeding them on milk from healthy cows. This is called the "Beng method." It is simply the procedure recommended and carried into effect by Professor B. Beng of the Copenhagen Veterinary College. The method is especially adapted to herds of valuable animals and has been tried with success in various countries. The method may be summarized as follows:

1. A herd is tested with tuberculin. The animals that are in bad condition are slaughtered. The reacting animals that show no physical evidence of the disease are isolated. They are kept for breeding purposes.

2. The offspring from the reacting cows are promptly removed from their dams and fed milk from non-reacting cows, or the pasteurized (heated to a temperature of 85° C. (185° F.) milk from the reacting ones. The milk of the isolated cows after pasteurization is also used for human food.

3. If any of the isolated animals give evidence of the disease advancing, such as enlarged glands or emaciation, they are slaughtered.

4. The non-reacting cattle are tested from time to time and if any individual react it is placed with the isolated ones.

5. The calves that are raised from the reacting cows and which fail to react to tuberculin are placed in the sound herd.

As the sound herd is replenished the isolated cattle may be fattened and killed, under proper inspection, for beef. The laws of nearly, if not all countries, permit the use of meat of tuberculous animals for food when the disease is localized.

Beng's method, as carried on in Denmark, proves that the disease can be "weeded out" in a practical manner. But in many herds in which the method was tried, a varying number of animals were found that afterward reacted positively to subsequent tests. These partial failures, amounting in all to about 12%, he attributes to carelessness in maintaining complete separation of reacting from healthy herds. The method has been followed with good results in Norway and Sweden. In Hungary the method has been applied with great success. The reports show that many highly infected herds have been absolutely freed from the disease in from four to six years. Professor Russell of the Wisconsin Experiment Station, has been especially successful, both in the Station herd and elsewhere. The New York Agricultural Experiment Station, Geneva, N. Y., has just issued a bulletin in reporting complete success in eradicating tuberculosis from the Station herd.

Although the system is not difficult, it requires care. Most of the failures can be attributed to poor disinfection, incomplete isolation and of failure to retest frequently the healthy herd. The matter of disinfection is an important one and, where new buildings are erected in introducing the system, it is advisable to place the non-reacting animals rather than the reacting ones in

them. This is in accordance with a principle governing the control of all infectious diseases, viz., remove the healthy from the diseased, rather than the diseased from the healthy.

The Prevention of Tuberculosis.

"An ounce of prevention is worth a pound of cure." It is well to include in this talk a few facts bearing directly upon the prevention. The most common method of introducing tuberculosis is by the purchase of a diseased animal, or in the feeding of milk of such animals. Therefore, buy all animals on a tuberculin test and retest after three to six months. Do not feed skim milk that comes from a tuberculous herd to calves without first sterilizing it. Prevention is simple. The disease is produced by tuberculous germs and if we keep the bacteria away from the cattle they cannot possibly develop tuberculosis. Although, experimentally, cattle can sometimes be infected by injecting the virus from tuberculous human beings, it is a question if infection ever takes place naturally. This is well illustrated by the conditions on the Island of Jersey, which is free from bovine tuberculosis, although the disease is prevalent in human beings. On the other hand, it cannot be denied but that infants may contract the disease through the milk of tuberculous cattle.

Vaccination, immunization of cattle against tuberculosis, is now being advocated, but the methods used are, as yet, in the experimental stage. We have very definite knowledge as to means of infection, but the course of the disease, in the cases that appear to recover, needs yet to be determined. It appears from the known facts that a previous infection does not produce an immunity to subsequent infection. The effectiveness of vaccination cannot be predicted at this time. Professor von Behring, in Germany, and Professor Pearson, in Pennsylvania, have tried the method extensively. The results of von Behring's experiments are promising, but as yet the vaccinated calves have not attained to old age, so that the length of the resistance that seems to be established by vaccination is not determined. The results recorded by Pearson indicate the production of immunity against tuberculosis is not likely to be an easy task. However, it is desirable, from an experimental point of view, that as many calves be vaccinated as possible. Experiments in this direction are interesting and many prominent authorities are hopeful of good results.

So long as California breeders are content to let their herds go without making effort to combat this insidious disease, so long will the disease continue to thrive in spite of every other sanitary precaution. Any man engaged in the business of cattle breeding, says Professor Russell of Wisconsin, who does not apply the tuberculin test as a safeguard against the disease, is running a chance of reaping trouble and disaster. To those familiar with the progress of the anti-tuberculosis crusade, it is apparent that there is going to be an increased activity of the efforts of the boards of health and other sanitary authorities to eradicate bovine tuberculosis. But it will never be stamped out completely unless the more intelligent, progressive and influential stockmen are willing to investigate their herds. If each one would do that, the numerous centers of infection that now lurk in some of our most highly developed herds would be exterminated.

DUST IN LAYING BOXES.

To the Editor: Having asked questions it is a real pleasure to have a real find to offer others. Noticing that hens laid eggs freely in a large dusting box of ashes I tried the experiment of putting ashes in nests. The hens do not resent it. It aids immensely in keeping off vermin. The eggs need wiping before marketing, but good taste would do this anyhow. The famous hen fancier, H. R. Blanchard of Hadlock, Washington, president of a poultry association, approves this use of ashes in nests.—AMATEUR, Saratoga.

SOMETHING NEW UNDER THE GROUND.

(Continued from First Page.)

high where the intake shafts enter, and it tapers to 18 feet wide and 25 feet high at a distance of 50 feet; from this point it continues at the same height for 281 feet further, when it drops vertically to 10 feet high and connects with the discharge shaft, shown in the background of the picture. Above is the collector and the pipe which conveys the compressed air directly through the rock to the surface where it is employed.

How the compressed air is used is shown in the lower engraving which shows a heavy piece of machinery operated by it. The very white pipe is the exhaust pipe of the machine, its whiteness being due to the frost which collects from the moist atmosphere because the air has such a low temperature.

THE DAIRY.

DAIRYING IN DENMARK.

By J. A. Kinsella, Dairy Commissioner,
New Zealand.

Naturally, the question which I was most interested in while in Denmark, and one which I was seeking reliable information on, was the testing of herds for the butter-fat yields of individual cows, and I found that, with a view to improving the milk supply, the following system, which has been started in 1893, has been very successful.

Testing of Herds for Butter-Fat Yields of Individual Cows.

There are about 325 dairy-control societies, composed of farmers owning nearly 300,000 cows conjointly. Qualified men are engaged by these societies to spend a couple of days at intervals on each farm belonging to members, in order to test the quality and quantity of the milk, and to calculate the cost of it as produced by each cow. By adopting this method it is easy to see that the farmer is in a position to know which cow of his herd pays him best to keep. Experiments have proved that some herds yielded one-third more milk than others, while the butter made from the milk given by certain cows cost only 5d. per pound, as compared with that from others, which cost as much as 2s. To encourage the work of these societies the Danish government pays \$125 per annum to each one having above 300 cows under its control. It is interesting to note what co-operative testing in this way has done for the Danish dairy farmers in cheapening the cost of production.

Then again, co-operative testing associations were started in 1895. Each society is composed of farmers limited in number from 12 to 15, and these agree to have careful tests of their cows made at frequent intervals during the milking period by a competent man hired for the purpose. Records of a fairly accurate nature are thus secured, not only of the yield of milk and butter-fat, but of the amount, kind and cost of the feeds consumed. The information thus made available has proved exceedingly effective in inducing the dairy farmers to adopt improved methods of breeding, feeding and culling of dairy cows. At the time the first testing association was formed, in 1895—the value of the butter exported from Denmark was less than three millions sterling (\$15,000,000). By 1901, when over 300 of these associations had been established over the country, the value of the butter export rose to nearly six millions sterling (\$30,000,000). This enormous increase, it is generally conceded, was for the greater part due to the testing associations in weeding out the unprofitable cows. And not only was the average production of the milking cows so largely increased, but so much additional skill in feeding was acquired that the cost of feed necessary to produce a pound of butter is estimated to be less than two-thirds of what it was when the first co-operative association began operations. The cost of keeping the yearly records was shown by the reports of the testing societies to be from 40c. to 60c. per cow, while the increased returns per cow, as a result of five years of testing, were shown to be from \$6.07 to \$14.60 per cow per annum. This rate of interest must be deemed to be eminently satisfactory, while the extraordinary increase in the number of the societies in Denmark proves how highly their work is appreciated. The tests made by the original societies were more than sufficient to convince the Danish farmers that formerly they were not dairying on business principles, but were allowing a lot of robber cows to eat up the profits produced by the better-class cows, and, naturally, the Danes were quick to adopt better and more profitable methods. It

is but a short step from the co-operative factory to the co-operative testing association, and it would seem that methods which have proved of such great benefit in Denmark should not remain untried much longer in this country. There is at least one particularly intelligent, progressive man in each dairying community who should have little difficulty in inducing 20 or 30 of his neighbors to join with him in an enterprise that has shown such good results elsewhere.

In Denmark a large number of inspectors are employed by the various associations. These inspectors, or supervisors of the work of inspecting herds, cow-byres, and the care of the raw material at the farm, are partly paid by the government. Each inspector has his own district allotted to him—not so large as to prevent him from making frequent visits—in order that he may be able to follow up his work in a systematic manner. In addition to being qualified regarding the care of milk and possessing the necessary knowledge of the construction and equipment of cow-byres, drainage, etc., many of these inspectors possess a fair knowledge of the diseases in stock; and in districts where the inspectors are not qualified in the latter respect, veterinary surgeons are called upon to make occasional visits to the various institutions or farms. I was informed in the few districts I visited that this scheme of systematic dairy inspection has done more towards improving the quality of the milk which is delivered to the butter factories than anything else which could have been introduced in connection with the dairy industry in Denmark.

BLENDED BUTTER IN ENGLAND.

The British Government has recently issued as a Parliamentary paper a report of the select committee appointed to consider the conduct and control of the trade in butter and butter substitutes. The report was agreed upon unanimously and makes suggestions to be embodied in legislation.

The London Times asserts that genuine dairy butter is a thing past praying for. Four-fifths of the population of London, the Times asserts, have never seen it in their lives. Those who know what it is have great difficulty in procuring it, and cannot obtain it in many cases at any price. What is called genuine butter in London, the Times says, is blended and reworked butter. Its tough, tenacious texture is as different as possible from that of real dairy butter, and it is destitute of the subtle aroma of the genuine unworked butter. The Times says that both the imported butter and that made at home is generally blended butter. The Parliamentary committee propose that butter factories shall be registered, the registration to be renewable annually, and that inspectors shall be empowered to enter all such premises when they suspect that butter is reworked, blended or adulterated. Adulterated butter must not be stored on such premises. With adequate penalties proportioned, as the committee proposes, to the magnitude of the output, some real check would be placed upon adulteration. Imported butter is to be met with not less stringent conditions.

It was shown before the committee by a firm that was prosecuted for the sale of adulterated Danish butter that they got off with a nominal penalty upon showing that they had ordered what is known as "control butter." This butter is guaranteed by the Danish Government. The committee propose that the importer shall be held responsible for the genuineness of the butter he sells without any regard for anybody else's warranty. No difficulty is put in the way of those who manufacture and sell imitations of butter openly and honestly. Those who want margarine will be free to buy it as

such. But people who want butter and pay for butter are expected to get butter, and not mysterious mixtures. It is thought probable that the British Government will take favorable action on the report.

WHAT A RAILWAY DID.

On the occasion of the great San Francisco disaster the entire resources of the Southern Pacific Company were employed to their utmost in saving and relieving the people. They were the first to order by wire, from adjacent cities, car-loads of food supplies for free distribution. They threw wide open their gates, and passengers were carried free on their ferry steamers, which never stopped running from San Francisco to Oakland pier. They ran steamers around the water front picking up all refugees congregated on the wharves for safety. From Oakland pier the people were carried free to whatever point they could care for themselves or be cared for—whether it was Berkeley, Cal., or Boston, Mass.; Portland, Ore., or Portland, Maine. Within ten days the Southern Pacific Company carried free 224,069 passengers. The value of which, computed at lowest rates for the class of service rendered, amounted to \$540,083.69, and this covers only the earnings of the line west of El Paso.

Canvass of accommodations in the interior of the State was made that refugees might be properly directed. Canvass of avenues of employment was made by wiring large industries that employment might be provided. Information bureaus were established at nine points in the burned district of San Francisco, which were served by horseback riders and automobiles. Messengers carrying bulletins relative to train service, relief work, information about finding people, and general public information, including statement of accommodations for relief at outside cities. Inquiries from eastern cities by the thousands from eastern friends regarding missing people were answered as far as possible, the officers using all the avenues at their command.

Transportation for relief committees, hospital corps, physicians and nurses was arranged for on a large scale between adjacent cities and San Francisco. The State Health Board was given transportation for its employees in the sanitary service. Transportation of relief supplies was given precedence over all other trains. Nearly all were run on passenger train time. Milk, bread, etc., which were badly needed, were brought in free in baggage cars.

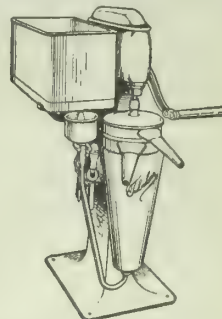
Gasoline for automobiles early became exhausted, and a large number of machines in the service of emergency hospitals, physicians, military and civil authorities were tied up. The Southern Pacific Company furnished for these machines every drop of gasoline in its stores. In addition, it wired to nearby cities for all automobile parts which were likely to be needed in an emergency. These were supplied free to anyone engaged in emergency and relief service.

The transportation of relief supplies from April 18th to May 23rd, computed at lowest tariff rates over the Southern Pacific Company, Union Pacific Railroad Company, Oregon Short Line Railroad, and the Oregon Railroad and Navigation Company, amounted to \$445,400.00, representing 1603 full car-loads, in addition to a great many less than car-load shipments. This does not include business handled by the express companies, of which there were quite a good many cars on which the railroad company received no compensation.

Much more than this has been done by the Southern Pacific Company since dates named, so that their entire contri-

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You need a Tubular Cream Separator because it will make money for you; because it saves labor; because it saves time; because it means all the difference between cow profits and cow losses. Look into this matter; see what a Tubular will do for you and buy one because you need it. How would you like our book "Business Dairying" and our catalog B. 131 both free. Write for them.

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bution runs way beyond \$1,000,000.

Before accurate or adequate information could be gotten by the San Francisco office to President Harriman he was rushing by special train to the scene of disaster. For several weeks he maintained headquarters in his car at Oakland pier, surrounded by the operating and traffic officers of the road. He was in close and constant personal touch with the civil and military authorities, relief committees, etc., attended several committee meetings daily, and took a prominent and helpful part in every movement for the rehabilitation of San Francisco.

There was nothing that the Company's officers could think of that would prove helpful that they did not do. Neither men nor means were spared to accomplish the company's object to care for the people. While all this was done under the most trying circumstances and difficult conditions, to the credit of the Southern Pacific Company's operating department be it said, that it was done without one accident and without injury to life or limb of a single passenger. The New York Sun has truly said, "the Southern Pacific Company made a world's record."

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HOME CIRCLE

HE AND I.

He and I—and that was all—
The boundless world had grown so small;
So small, so narrow in content,
So single in possession sweet,
So personal, so love-complete,
So still, so eloquent!

He and I—and Earth made new!
The flowers blossomed for us two,
And birds to voice our rapture, sung
Divinely 'neath our northern skies,
As sung the birds in paradise
When life and love were young!

He and I—O aching heart—
Only a narrow grave apart!
Yet, seeking for his face in vain,
How changed, to me, the world has grown,
How cold it seems, how strange, how
lone,
How infinite in pain!
—Florence Earle Coates.

RED GLINT.

Britts had never been rated as a gentleman, though the educated and refined tolerated him. He had money, owned slaves. His house was among the hills of Tennessee, a glare of red brick when the sun struck squarely upon it. The land had been cleared and the house built in the early days by a man who proved ancestry by gout. Britts, an active young fellow, with a smart knack for making money, had set up a small establishment, above the door of which hung a sign announcing the sale of general merchandise. After a time he spread a mortgage on a piece of land, took a negro in payment of a note past due, and thus became a landed proprietor and a slave owner. Gradually he branched out into other business, and by the time he was thirty-five owned "Red Glint," the name of the brick house.

The former owner, old man Linchesteer, hobbled away from the place, swearing out the echo of a dying heart. He was led to a cabin on the hillside with one window through which he blinked at the sun, when it was, like himself, sinking. Britts called on him. "Show the ruffian in," the old man said, and Britts entered. Linchesteer was lying on a lounge. He turned his heavy eyes toward the visitor. "Well, sir, have you fastened your clutch upon this hovel, and have you come to drive me out?"

"No, sir, I've come to see if I can be of any service to you."

"I, gad, you can."

"Much obliged."

"You can be of great service to me. You can get out of my sight and never come into it again. That's the only request I've got to make of you."

Britts tried to smile, an unsightly attempt on his part—a red gash. "Man has a right to buy property, Mr. Linchesteer."

"Louise," said the old man, speaking to his granddaughter, "if my instructions have been followed, there's an old horse pistol in the drawer of that bureau. Please hand it to me."

Britts ducked his head out of the low door and was gone. But he returned the next day, though not to enter the cabin. He watched his chance and beckoned the girl to come out to the fence. She obeyed, frowning. He stood staring at her, pierced by her beauty.

"What do you want with me?" she inquired.

"Want to help you."

"But you can't. Don't you know we couldn't accept anything from you? It is bad enough to be ignorant, but to be vulgar and brutal—" she broke down.

"Miss, you are abusing me, I believe, but anything you say sounds sweet; and I would stand here forever just to hear

you talk. Don't go; wait just a minute." She turned about and looked at him. "Miss, I ain't as bad a man as they make out. I come in here to make a living, and because I am sharp enough to make more than a living they don't like it. They commenced to scrap with me as soon as I got here, and I out-scraped them. That's all there is to it. I let your grand-daddy have money when he was hard pressed; nobody else would let him have any. He swore he would be my friend for life if I would accommodate him. I did, and as is always the case, he hates me. I didn't push him; I let him alone until I found that he couldn't pay me, and then the law took its course. It's exactly what anybody else in the neighborhood would have done—what your granddaddy done himself once with a poor fellow that lives up the creek. So I hope you—"

"But what have I to do with it, sir? I know only that I have been turned out of my home."

He moved up closer to the fence. "Miss, you have stepped out of your home, but you may step back again. Be my wife, and I will make it over to you." The look she gave him was more like a blow than a look, for he threw up his arm and staggered back. "How did you do that," he asked gazing at her. "It seemed like somebody was throwing a light into my eyes with a looking-glass. But why can't you do as I say? I'm not a smart man, except when it comes to making money, and they teach boys all around here that is the right sort of smartness. I'm passable good-looking, and I don't talk like a nigger. I'll move the old man back and give him the best room in the house, and if you have got any poor kin folks, I'll take care of them—and with it all I love you. Wait a minute. And it ain't for me to love but once. You are the only human being that ever made me forget how money looks, and the only one that can. And I speak the truth when I say that I'd rather be a nigger and belong to you than to be the richest man in the county without you. Love has gone pretty far with a man when he talks like that, and it ain't to be despised even if it comes from the lowest thing that walks the earth." He stepped up and laid his hand on the fence, and the next moment a thrill shot through him. She had touched his hand. But she stepped back and her face was sweetly sad when she spoke: "No woman could despise such a love and such offers of kindness, Mr. Britts, but I can not marry you. I don't love you."

"I know that, but you can learn."

She shook her head. "That has been said to so many women. But I don't think that kindness wins the greatest love. Kindness may win the heart, but it's something else that lights the soul. But I am deeply grateful to you, Mr. Britts."

"But won't you try to think enough of me to marry me?"

"I might pray, and I believe that the Lord would deny it."

"Miss, that's putting it powerful."

"It is just as I feel, Mr. Britts."

A negress came out of the cabin. "Miss Louise, come in ef you please. I think yo' granddaddy is er dyin'."

She ran into the house. The old man was dead.

Britt saw her once, and only once after the funeral. She stood in front of the tavern to wait for the stage coach, to take her away, down among the low plantations. He grabbed off his hat and bowed low. "I beg your pardon, Miss, but have you got a good living when you go to where you are going? I don't know how to offer it, but won't you take this?" He held out a purse. She shook her head. "It is yours. The fact is the mortgage didn't quite reach over all the

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land. There was one corner down yonder left bare of it. So the money belongs to you."

Again she shook her head. "I happen to know better, Mr. Britts. I was my grandfather's secretary, and I know that the sale of the farm fell somewhat short of the amount of the mortgage."

"The sale of the farm. Why, it wasn't sold, in fact, for I bid it in."

"I know, but for less than the amount of money you advanced."

"Yes, but I know'd it was cheap. It's worth—why, it's—"

"No," she interrupted. "You seem to be suffering, Mr. Britts, and if on my account, I am deeply sorry for you; but really, it would be worse than madness for me to—to marry you. I have lived in an ideal atmosphere, with the poets—bad teachers, no doubt, but heavenly companions, so I couldn't marry you. But I will promise you one thing. If after three or four years I find that there is not a love to enthrall the whole of my life and soul, I will come back. There comes the stage down the hill. Good-bye."

He went home in a bewildering daze; she had almost promised to be his wife. He smiled with the confidence of the man who is accustomed to win. Such a love as his must even move a rock.

Two years went by. He had not heard from her, so at last he set out upon a journey to the low country. He knew of the neighborhood and found it. He found also a grave beneath a cottonwood tree. An old man, a relative of the girl, said to Britts: "She spoke of you just before she died, and in her mind-wanderings she said she was going to you."

It was a long time before Britts returned home. He went up and down the earth looking for dissipations—gambled, followed the races. With him was a negro named Tom, not only a child of bondage, but the fruit of a mortgage. He was an enormous fellow, with a melancholy song when evening came, an echo from barbaric Africa.

One Sunday the little church near Red Glint was astir with the news that Britts had returned but it was only a momentary flutter, for the preacher lifted his voice and cried for war. The country was in a desperate state. And soon the first gun was fired. One morning Britts called for Tom, and when the giant came, the master said: "Tom, by tomorrow night all my slaves will be gone. I am ruined and compelled to sell them. My affairs didn't prosper when I was away; an overseer ran off with the money, and I am done for."

"But, marster, I hope you won't have ter sell me,"

"I am afraid so, Tom. But not to pay a debt. You know, Tom, what I think

of you—you know that you saved my life more than once."

"Then what is you goin' to sell me fur, marster?"

"To build a monument over the grave of Louise Linchesteer."

"O, please doan. I kain't stan' ter be separated from you now. An' besides dat, I gwine marry a lady in de neighborhood. I love her like you loved one, sah. Doan sell me. Sell er piece o' de land."

"The land does not belong to me now. And I'll be forced off within a year or so. It's only a question of time. But I won't sell you, Tom."

"I thank you, sah; an' now lemme tell you what I gwine do ef I live—I gwine build er monument ter de lady. I'll do all sorts o' odd jobs o' work, an' raise many things in de truck patch. I thanks you, marster."

The smoke of the war guns blew nearer. Britts mounted his horse. The negro asked him whither he was going. "To get away," he replied. "If they catch me they will kill me. I am from the North—I was in the regular army, and I killed an officer—because he insulted me—and ran away. I tell you this, but no one else must be told. Good-bye, I am going to Mexico."

Red Glint was a general's headquarters. A battle was fought near by, and the top of one of the chimneys was knocked off, but otherwise the old house sustained no injury. Not far away, in a small weatherboarded house above which hung a sign announcing general merchandise, a black giant sold knick-knacks to the soldiers. A white man, looking enviously toward the establishment, said

that Tom was coining money. Peace came, with its change of social conditions. A village lawyer, speaking of the negro Tom, remarked: "One of the best business men I ever saw. He'll own the whole community after awhile." And it was not a great while before he did own Red Glint. He had married and his children were growing up about him. Years passed, and in a manner less bitter the people could look back upon the war. The recalled bravery on both sides, and were proud of it. Tom went to the Legislature at Nashville, drove down in a buggy. He made quite as good a record as some of his white brethren, and was driving toward home, when in the road near his place he overtook an old man on foot. "Won't you get in and ride?"

The old man looked at him and without replying clambered into the vehicle. He was ragged and his white beard was long. "Piece of paper may be small thing," said he, "but sometimes you can make it stretch over a plantation. Covered Red Glint with one."

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Tom clutched him. "For heaven's sake, Marster, don't you know me?"

"I know you are a good big nigger—worth fifteen hundred. Is there a mortgage on you? If not I'll put one on."

"Don't you know Tom? I'm Tom."

"I owned a fellow named Tom once, yes. But you are too old. But I'll put a mortgage on you."

"Look, do you see the sun shining on that house over yonder?"

"Yes, it is Red Gint—mine. Lips like pink shells reproached me, but I offered it. I would have taken the old man for my grandfather. And so I am coming home."

Tom's wife came out to the buggy. He whispered to her. The old man looked at her. "You are worth six hundred," he said. He walked into the house, into his old room, and there he found everything as he had left it. He took out clothes and dressed himself, and they hung loosely upon him, a weazen body in the habiliments of the past. Tom employed a number of negroes, and the old man looked out upon them as they moved about the yard, "I'll have to sell you all," he said. "My affairs have not prospered, Tom," he called.

Tom stepped into the room. "What are they doing with the field at the right of the mill?"

"Breakin' it up for co'n, marster."

"All right. And have they mended the fences around the Jennings field?"

"Yes, marster, de fences is in good condition."

"All right. I want mutton. Kill me a sheep. Wait a moment. Do you want to be sold?"

"No, marster."

"Well, I won't sell you, but all the rest must go. Who is that woman with the child in her arms?"

"My wife, marster."

"But which one? As likely a buck as you must have a wife on every plantation within ten miles. Which one, Tom?"

"The one I loved so much yars ago."

"Oh, very well. We must not sell her. Catch my horse. I want to ride over the farm."

A horse was brought round to the gate and the old man was helped into the saddle. A boy was dispatched in advance to open the gates and let down bars, and the old fellow rode off whistling—not

whistling, trying to, blowing through his ashen lips, the wheezing of an old bellows. In a lane he met a man who had been a magistrate and the owner of many slaves. He had driven in a carriage, flashing with a coat of arms. Now he labored along on foot, his white head bowed. Britts drew up. "Who are you?" he asked.

"John Bracefield."

"Oh, yes. And you called me a Yankee upstart because I knew how to figure. You called me ignorant. But I went away and studied—learned a language you never heard, and here I am now riding and you are walking."

The old man looked up with red scorn in his eyes. "I am walking on my own feet," he said, "and you are riding a negro's horse. At my house I have a bushel of meal and a side of bacon, but you eat at a negro's table." Britts lashed at him with a switch. "Pauper, I will teach you how to respect a scholar and a gentleman of property. I could black you, buy you, and sell you a dozen times. Get off my land." Old Bracefield looked at him again, taking care to keep beyond the reach of the switch. "Poor old fellow," he said. "A pauper and doesn't know it—crazy." Britts laughed, a pitiful cackle, and rode on. Coming to a mill where negroes were grinding corn he called for some one to help him down. Tom's orders had preceded him, and he was obeyed. Inside the mill he began to issue commands. "Who's your master?" he asked, speaking to a man.

"De Lord, sah."

The old fellow cackled. "Good. My negroes are witty. But I must sell you. Who owns your wife?"

"De Lord."

"Hah, the second skimming of wit is thin. Get to your work. Here, somebody, help me on my horse." He rode away, the negro boy keeping in front of him. Coming to a rotting cabin on the side of a hill, he scrambled from the horse, stood for a moment with his head bowed, and then dropped upon his knees. A flower grew out of the doorsill. He bowed his head over it, and the boy, standing near, saw his tears falling. He could not climb back upon his horse, the boy could not help him, so he walked home with the flower in his hand. He did not get up the next morning. Tom went to him. He was so weak that he

could scarcely raise his hand, but a murky cloud had cleared from his eyes. "My old friend," he murmured. "I see it now. I am a beggar."

"No, not in my home, marster. You did not sell me. You went away almost without money and left me free. I have kept the old room for you. Your orders shall be law."

The old man pressed the negro's hand to his shrunken bosom. They heard the bleating of a sheep. "Tom, the spring-time lamb, washed in the clear waters, is not whiter than your soul. God, what a life we have lived. The world cannot see it again. What a land of error was the land of the free. Tom, coming home I lost my mind—down among the lower plantations. It fled from me when I stood and gazed upon a marble monument above—her grave."

"I had it built, marster."

"Yes, I know. And I came back without a mind, but I found it growing out of the sill of her lowly door—a flower."

"Yes, marster, an' now you gwine git well."

The old man smiled. On his pillow lay the flower. He turned his face toward it. The sheep bleated. "No whiter than your soul," he said, turning his eyes toward the negro. "Put your arm under my head. Is it your soul I see, or have you grown white? Now all is dark. Hold me tighter. I'm slipping away." The negro eased him down. His wife appeared at the door. She asked if the old man were asleep. Tom slowly nodded his head.

OPIE READ.

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HINTS TO HOUSEKEEPERS.

Topics of the Home.

Have a horseshoe magnet to which is attached a long cord or ribbon, in your workbasket. It will pick up needles or scissors when they fall on the floor. This is especially useful for invalids and elderly ladies.

Common house ammonia is much better for cleaning porcelain than sand-soaps. Many of the stains on porcelain washbasins and sinks are caused by allowing them to be injured. When new porcelain is smooth and is rubbed with sandsoaps it becomes rough and it is quite impossible to remove the discoloration.

If housekeepers, in preserving fruit, will make a syrup of the sugar in a separate dish, cooking the fruit only long enough to be thoroughly heated, then, when putting it up, fill the jar about one-third full, and about three spoonfuls of the thick syrup, and so on till the jar is full, they will find the fruit much better and more natural in flavor than when the sugar is mixed in with it and cooked. In this way, too, it does not take so much sugar to sweeten it, as it is a well-known chemical fact that it requires more sugar to sweeten fruit if it is boiled with it, than if prepared in this way. Cook only about two quarts at a time, and the fruit will not mash up.—Indianapolis Star.

How to Destroy Moths.

There is a better insurance against moths than the ordinary moth balls or gum camphor, says Good Housekeeping. Put into the bottom of the trunk in which clothes are packed away a small bottle of chloroform, say an ounce or two, according to size of case. Split the cork slightly, so that the chloroform can gradually evaporate. The fumes will kill not only moths, but many disease germs. It would be an exaggeration to say that the gas will kill all bacteria as well as insects, but certainly it is more efficacious than ordinary camphor. Of course, care must be taken not to inhale the fumes when opening the chest.

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DOMESTIC HINTS.

Watermelon Preserves.—Select a thick rind and prepare it as for pickles. Let the rinds stand in weak alum water over night. In the morning wash in cold water, and drop into a weak brine. Let them stand in this 24 hours. In the morning place them in cold water until the salt has soaked out. Then boil the rind in clear water until each piece can be easily pierced with a fork. Allow one pound of granulated sugar to each pound of rind and one cup of water. Boil it to a thick syrup. To every pound of rind allow one thinly sliced lemon, and to every two pounds add one rounded teaspoonful of ground ginger, tied in a piece of muslin. Drop the rinds in the syrup and cook until clear. This makes a delicious sweet. After the alum bath the rind is firm, yet soft enough to easily cut in any preferred designs; stars, hearts, rings or diamonds.

Peach Shortcake.—Sift together two cupfuls of flour, four level teaspoonfuls of baking powder, one saltspoonful of salt. Mix into it one tablespoonful of sugar and two tablespoonfuls of butter. Add sufficient sweet milk to make a smooth dough, roll out in two layers, butter and bake in one pan. When sufficiently baked remove from the oven, butter the under crust well, spread it with peaches, previously pared and sliced, sprinkle generously with sugar and place the upper crust on. Cover it with peaches and whipped cream sweetened to taste and flavored with orange.

Mock Duck.—Pound a large slice of round steak to make it more tender. Make a dressing of one cup of fine bread crumbs, one-half of an onion chopped fine, two level teaspoons of sweet herbs, and three tablespoons of melted butter. Add a saltspoon of salt, and the same of pepper, two or three gratings of nutmeg, and two beaten eggs. Spread the dressing over the steak, roll up, and skewer or tie securely. Roast, and baste often with butter and water. Make a gravy from the contents of the pan and serve the "duck" with jelly.

Cabbage Tart.—Chop fine a small head and season with salt and pepper; cook in a kettle in just enough water to keep from burning. Take half a cupful of sour milk, half a cupful of vinegar, two eggs, butter the size of an egg, beat together and pour over cooled cabbage in the kettle. Let it boil up once and serve. Can be eaten by a dyspeptic without harm.

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AGRICULTURAL REVIEW

Butte.

LARGE YIELD OF PEARS.—Chico Enterprise, August 20: A young fruit grower, who owns an eight-acre pear orchard located near Yuba City, has just finished delivering his crop from 800 trees, and realized the astonishing amount of 95 tons of green pears, which, sold at \$36 per ton, brought him the neat sum of \$3,320. From the same eight acres last season the young man realized over \$4,999.

Fresno.

CARLOAD OF MALAGAS A DAY SENT OUT FROM SELMA.—Fresno Morning Republican, August 24: Selma table grapes are being shipped to Chicago and New York. This week Malaga grapes are being shipped to the big Eastern cities at the rate of a carload a day, and next week two carloads a day will be sent out. The shippers are C. H. Sherwood, Carl Heisinger and L. D. Scott, who anticipate good returns from their venture, as the fruit is sent by fast freight in refrigerator cars, reaching its destination in prime condition. The prices for Malaga grapes in the Eastern markets have ruled high, netting the growers from \$50 to \$150 per ton. On August 14th and 15th quotations showed that the grapes sold at from \$1.35 to \$2.50 for a 25-lb. box.

The Selma Fruit Company is also shipping table grapes from this point, and J. E. Turner is shipping his Malagas from Fowler.

MILK TRUST WILL ENTER VALLEY.—Fresno Republican: The San Joaquin Ice Company may be absorbed by the American Farms Co., a New York corporation with a capitalization of \$50,000,000, which is getting control of the dairy industry of the country. This company is the owner of a new process for handling milk, which has proved a success. This process consists simply of extracting the water from the milk, which is then reduced almost to a solid substance. This is done by heating the milk almost to steam and by means of a blower carrying off the water. The residue contains all the elements of milk save the water. It has keeping qualities that can be imparted to it in no other way except by the use of preservatives. Forty gallons of milk thus processed are reduced to about 10 gal. This amount can be shipped, say to San Francisco or Los Angeles, and there, by simply adding the amount of water taken from it, can be converted again into chemically pure milk, pasteurized and free from bacteria, sweet as though fresh from the cow. A. B. Evans, speaking of the proposed deal last night, said that this process has never yet been tried in such a warm climate as Fresno. Tainted milk always curdles when heated, so that milk affected by the weather in the least degree will not be fit for use by the new process. One of the machines will be in Fresno within a few days, and during the next two or three weeks much milk will be processed for the purpose of ascertaining just what percentage of the milk that can be secured in hot weather will be fit for use.

PEACH CANNING AT ITS HEIGHT.—Fresno Republican: The canning season is at its height at the present time. The Fresno plant of the California Fruit Canners' Association and the Griffin and Skelley plant are running to their full capacity from 6:30 in the morning until 11 and 12 o'clock at night. They have been doing this since the first of the month and will continue doing so until about the 20th of September, when the canning season will come to a close and work in packing raisins will commence. Between 3,500 and 4,000 boxes of peaches are received every day at each plant and they are all canned before the cannery closes down for the day. Both freestones and clings are being canned. There are several varieties of each. There are the orange and lemon clings and the Alberto, Susquehanna and Muir freestones. These will last for a week or two longer and then a later variety of peaches will be canned. These later peaches are called the Philip, Golden Gate and White Heath clings and the Solway freestones. Each plant employs between 500 and 600 laborers.

Kings.

TWENTY THOUSAND VARIETIES OF PLUMS.—Hanford Sentinel, August 9: At Luther Burbank's experimental grounds near Sebastopol at the present time there are between 15,000 and 20,000 different specimens of plums that are ripe and hundreds of other varieties that are ripening daily and will do so for weeks to come. Incredible as it may seem to those unfamiliar with the gigantic proportions of the work of the man who for years has been ceaseless in his endeavor in the giving of new fruits and flowers to the world, there are on this experimental farm between 250,000 and 300,000 different varieties of the plum family. They have been gathered from all quarters of the globe and from them Burbank is selecting year after year species that he will experiment with further and produce new plums. It must not be understood that separate trees bear all these thousands upon thousands of plums. It is not an uncommon thing to see a single tree with scores of different varieties of plums grafted thereon.

Dr. Gage of Cornell University, recognized as one of the greatest scientists in the country, and Dr. Turner, one of the leading historians of the University of Wisconsin, saw and marveled at the wonderful things that Burbank has to show on his farm at Sebastopol.

Lake.

EVAPORATING APPLES A NEW INDUSTRY FOR LAKE.—Lake County Bee, August 8: Benson Espey has erected an apple evaporator in Scott's Valley, where he is drying apples. The Bee has been informed that he has contracted for 20 tons of this season's apples and will convert them into the dried product. Lake county has an abundance of first-class apples for this purpose and will in time become one of the noted apple producing sections of the State of California.

Mr. Espey's effort is an infant industry and should receive the support and hearty co-operation of the entire community.

In other apple growing sections there is no waste in handling the crop. The best are marketed, while the culls are sent to the evaporator. The cores and parings are not lost, but are turned into cider vinegar.

DEER IMPLEMENT CO'S NEW QUARTERS

To the Editor:—We hereby notify you that we have moved into our permanent quarters, which cover the block bounded by Michigan, Alameda, Illinois & Merrimac Sts. Our office is on the northwest corner of Illinois & Merrimac Sts. To reach us take Kentucky Street car, get off at Fourth & Kentucky Sts., go one block east and one block south.

DEER IMPLEMENT CO., San Francisco.

tains. Up to two years ago, when the Warner and Modoc reserves were established, the middle of the summer always saw the cattlemen hard pressed for feed for their stock. But the shutting out of over 100,000 outside sheep has relieved the strain wonderfully.

Instead of bare valleys, there are now large tracts of range with grass going to seed. This has resulted not only from the rules against sheep, enforced by the forest service, but also because of the fact that no cattle or horses are allowed upon the ranges of the reserves unless their owners have obtained permits for the privilege. These permits are restricted to the number of stock that the supervisor in charge recommends.

Supervisor Hogue, in charge of the Modoc and Warner reserves, with headquarters at Alturas, made what seemed to him a conservative estimate last spring, but, surprising to tell, the applications for grazing permits were greatly under the estimates. Mr. Hogue believes that as many as 5,000 cattle could have been pastured on his reserves the present season, in addition to those now ranging there, without any shortage of feed occurring. In many places the grass is going to seed, which means that if the rainfall is good next season an increased crop of forage will be the result.

Riverside.

MALAGA GRAPES AT THERMAL.—Riverside Daily Press: Mr. Abbey, who was here last week, is the owner of the only vineyard of Malaga grapes on the desert that is in full bearing. He has one acre of vines three years old last spring, located at Thermal. Last year was the first crop the vines bore and, owing to the vines being only two years old and small, the crop only amounted to one ton and a half. The grapes, however, netted Mr. Abbey 10c per lb., making \$300 for the crop. This year, however, the vines are in full bearing and the crop produced was seven tons of the very finest of grapes. These Mr. Abbey has already sold and shipped on a guarantee of 12½c per lb. net to him for the entire seven tons. This makes his crop of grapes from one acre of Malaga vines bring him \$1,750 net. Mr. Abbey says the market for these grapes is very great and that no doubt several hundred carload of them could be sold each year. He has about 20 acres set out to younger vines of this variety, and a good many of the farmers at both Coachella and Thermal are going into Malaga grapes.

This is the hottest day of the season, with a maximum temperature of 105 in the shade. Orange growers profess to like this sort of weather for the good it does. Hot weather is killing off a lot of the black scale as it hatches out now-a-days, and this more than offsets all the discomfort.

San Joaquin.

BIG FRUIT SHIPMENTS FROM LODI.—Stanislaus Weekly News, August 24: The banner carload shipment of tree fruit consigned from San Joaquin county was sold in Boston on August 13th. It was shipped from Lodi jointly by the Earl Company and the Frank H. Buck Company, grossing \$1,774. The shipment consisted of 925 crates, including Imperial, Crawford and Foster peaches, and is the top price ever paid for a similar shipment of California fruit. On the day following, another car from Lodi sold in the same city for \$1,692. To date, Lodi has shipped 62 cars of tree fruit, every Modoc.

GOOD FEED REPORTED IN MODOC MOUNTAINS.—Oroville Weekly Register, August 23: One of the good effects of the forest reserve established in this county is shown by the present great abundance of feed throughout the moun-

A Humane Society in a Bottle

KENDALL'S SPAVIN CURE

Nothing affords such relief for Curbs, Splints, Ringbones, Spavins and Lameness as

Kendall's Spavin Cure.

Whitfield, N. C. June 28, 1906.

Dr. B. J. Kendall Co., Enosburg Falls, Vt.

Gentlemen:—I have used Kendall's Spavin Cure on Spavin, Ringbone, Sweeney, Galland Nerve, and it has cured them all. Very truly yours, S. M. Clark.

Price 50¢ a bottle. Greatly reduced for family use. All druggists. Accept no substitute. The great book, "Treatment on the Horse" free from druggists.

Dr. B. J. Kendall Co., Enosburg Falls, Vt.

pound of which has been consigned to and sold in the Eastern markets.

SALE OF PRUNES.—Lodi Sentinel, August 9: Mason Bros. have completed the shipment of 16 cars of prunes, aggregating 14,800 crates, which is the largest individual shipment to date from this point. The first car to arrive in New York sold for \$1,578. Most of Mason Bros.' carload lots have been shipped f. o. b., but those consigned have netted the firm the best returns.

San Diego.

SAYS HONEY CROP IS SHORT.—George R. Ritchie, apiarist and school teacher of Spencer Valley, is in the city and reports that the yield of honey in his vicinity is a failure to the extent of 75%. The season opened well, but the untimely rains and cold weather of June put a quietus upon it. Mr. Ritchie obtained but 50 cases of extracted honey, where in a fairly prosperous year he would have had at least 200. A case contains about 120 lb., or in the neighborhood of 10 gal.

Mr. Ritchie's apiary, elevation 2,500 ft., at Eagle Peak, has much to do with the crop, he believes. He finds that on the desert side of the Cuyamaca mountains the honey crop is much better. For instance, J. C. Silvers, whose apiaries are in the Grapevine mining district, obtained 100 cases from 100 stands of bees.

Mr. Ritchie's nearest bee-keeping neighbor, Otto Marcks, elevation 1,500 ft. on Eagle Peak, obtained 90 cases from 180 stands of bees. Frank Hill, whose place is one and a quarter miles from Julian, elevation about 3,500 ft., got only 8 cases from 80 stands. Charles Littlepage of Ballena, elevation about 2,500 ft., got 25 cases, or about one-fourth of his usual crop.

"As a general thing," said Mr. Ritchie yesterday, "the apiarists at the beginning of the season laid in stocks of supplies far in advance of what they can possibly use. Commission men ought to be careful how they make predictions at the commencement of the season, even if the bee feed is abundant. The business is very much demoralized by false reports."

San Bernardino.

SOUTHERN CROP SHORT.—Redlands Citrograph: Up to Thursday night there has been shipped from South California 21,054 cars of oranges. Last year, up to the same time, the shipments were 24,655 cars, thus showing a shortage this year of 3,601 cars. The orange season is almost over, only about four or five cars remaining here and not over a thousand cars in South California. And the prospects for next season are not bright, not more than 16,000 to 17,000 cars. The shortage is in every locality, although it may not be on every orchard. It looks now like the crop would be two-thirds this year or one-half of that of last season.

DURKEE RANCH FOR DAIRY PURPOSES.—Chino Champion, August 10: When the Durkee ranch sale was first announced it was understood to be for raising mules. The San Bernardino Index, however, understands it to be for dairy purposes, and says: "One of the greatest dairy farms in the world is destined for

Horse Owners! Use

GOMBAULT'S

Caustic Balsam

A Safe, Speedy, and Positive Cure

The safest, Best BLISTER ever used. Takes the place of all liniments for mild or severe action. Removes all Bunches or Blemishes from Horses' Sides. SUPERSEDES ALL CAUTERY OR FIRING. Impossible to produce scar or blemish. Every bottle sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars.

THE LAWRENCE-WILLIAMS CO., Cleveland, O.

GREENBANK

Powdered Caustic Soda and Pure Potash
Best Prune and Olive Dip
T. W. JACKSON & CO., Temporary Address,
Sausalito, Cal.

this county by a deal made in the south-west corner, by which Frank H. Rowley and James W. McAllister have purchased from Daniel Durkee of San Dimas 3,000 acres of land lying about 10 miles south-east of Pomona, but in San Bernardino county, and adjoining the celebrated Chino ranch. The Durkee ranch is abundantly watered, and is part hill and part valley land, and is now used as a dairy ranch, but is only partially developed. Hundreds of cows will be placed on the ranch to graze, and it is the intention to develop milk and butter products for the Los Angeles market. The consideration in the deal was \$150,000, and the new owners are now in possession and working out the details of plans for the great improvement."

FAT YEAR FOR BYRN MAWR GROWER.—San Bernardino Sun, August 10: To have paid \$5,000 for an orange ranch, and to have the crop from the same net more than the purchase price the third year after, is the cheering experience of H. H. Kelly of Bryn Mawr, whose orchard is just north across the Southern Pacific tracks from Loma Linda, and on the east side of the avenue leading to the sanitarium.

Admittedly, this has been a great year for orange men, but the report furnished by Mr. Kelly is one of the first rank in interest. One car of Valencias shipped from his ranch a few days since, sold in the New York market Wednesday for \$2,270, and for two cars recently shipped, this and one other, Mr. Kelly netted \$3,190.

Of those sold Wednesday, the fancies brought \$6.50 per box, and the choice brand went for \$5.35.

Mr. Kelly was in town yesterday and he made the statement that what he had netted from the grove this season was more than the purchase price three years ago, the price paid being \$5,000.

KEEP UP FIGHT AGAINST PEAR BLIGHT IN COUNTY.—San Bernardino Index, August 18: The cutting out of the pear blight in the apple and pear orchards of the county continues, in an effort to stop the spread of the pest, according to the monthly report of S. A. Pease, secretary of the County Horticultural Commission. Continuing, the report of the secretary says:

"In the month of July we have continued the cutting out of pear blight from apple and pear orchards. We have finished spraying for the Florida red spider and have commenced spraying for the yellow scale.

"We have done a little inspection in the Highland district, as a matter of precaution, to see if any case of bad scale infection may have started. None was found.

"Many colonies of vedalia have been placed in orchards affected with white scale.

"We have also attended to the cleaning up of a number of thousand more citrus trees that have been brought into the county and set out in orchards, making this the record year for planting citrus orchards in this county, since 1900. We are now preparing to mend and dip tents preparatory to commencing fumigation about September 1."

The total expense of the Commission for July amounted to \$1,089.70. The receipts for the month amounted to \$372.67.

ORANGISTS UNITED.—San Bernardino Index, August 10: The various orange companies which have filed articles of incorporation within the past

few weeks have centralized under the title of the Mutual Orange Distributors of San Bernardino county in the furtherance of the new plan for marketing fruit independent of the old packing companies. In the six associations already organized 1,000 cars of oranges are represented and it is claimed that more growers are signing up every day. A meeting was held at Redlands yesterday which was attended by 40 fruit men representing the Redlands Mutual Orange Company, the Bryn Mawr Fruit Association, Rialto Mutual Orange Company, Colton Orange Growers' Association, Highland Fruit Growers' Association, and the East Highland Citrus Association.

The Mutual distributors will handle only San Bernardino county fruit.

The directors of the central organization are J. Hartzell, William Buxton, W. A. Nichols, M. C. Butterfield, E. C. Merryfield, James Fleming, W. W. Bean, W. T. Bill, A. Gregory, A. B. Cowgill and Henry Fuller.

The policy of the distributors will be cash sales in California and f. o. b. as far as possible.

Each of the various associations is to carry its own brand of oranges.

Rialto and Colton have not yet filed their final papers of organization, but will do so as quickly as possible. Redlands will be the principal place of business.

Solano.

FIRST TOKAYS.—Sacramento Bee, August 11: The first crate of Tokay grapes to leave the State was shipped by Pinkham & McKevitt for A. Filomeo to New York on August 5, and on the 9th—the day Florin claims to have shipped the first crate—the same firm shipped to New Orleans for A. Filomeo 12 crates and A. Palgoni one crate. These grapes were well colored sweet grapes. Grapes and pears are now figuring in the fruit shipments.

Sonoma.

GATHERING HOPS.—Healdsburg Tribune, August 23: To assist in gathering the hop crop at Hopland and the grape crop at the Asti colony, it is proposed to give San Francisco refugees an opportunity to make themselves self-sustaining. Arrangements have been made with the relief committee to supply tents, blankets and transportation to those who will gather the crops. Notices of the employment have been posted in the various refugee camps in San Francisco. A telegram was received a few days ago by the Sonoma County Hop Growers' exchange announcing that several contracts had been made in Oregon at 25c. per lb.

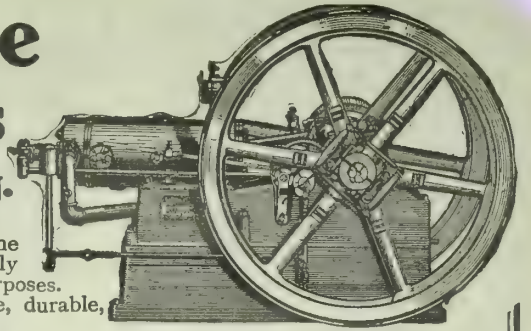
Tulare.

FRUIT CROP GOOD.—The Visalia Delta, August 23: Tulare county is pointing to the mighty crops of fruit and exclaiming: "Behold, such productiveness! Where is there another region so fertile?" The fruit growers of Tulare county are shouting for help. The harvest is great, but the laborers are few, unless some are imported.

Ventura.

SOUTHERN CALIFORNIA FARMERS' INSTITUTES.—Oxnard Courier, August 10: It is the intention of the

Gasoline Engines For Irrigating.



THE I. H. C. Gasoline Engines are especially adapted for irrigating purposes.

They will be found safe, durable, simple, and economical.

With maximum power, they can be operated at a minimum expense. Expert knowledge or previous experience not required to operate them.

They can be attached to any kind of pump in any position, for raising water from deep or shallow wells, reservoirs, canals or running streams. They excel in full, regular and long sustained power.

They can also be used for a general purpose engine for sawing wood, churning, cream separating, feed grinding, etc.

They are unequaled for power of all kinds. Made in variety of sizes and styles:

Vertical—2, 3, 5 Horse Power. Horizontal—(Portable and Stationary), 4, 6, 8, 10, 12 or 15 Horse Power.

An engine of this description, with a suitable pump, makes agriculture a success where it would otherwise be impossible.

Call on local agent and examine these engines or write nearest general agency for illustrated catalog.

WESTERN Denver, Col., Portland, Ore., Salt Lake City, Utah,
GENERAL AGENCIES: Helena, Mont., Spokane, Wash., San Francisco, Cal.
INTERNATIONAL HARVESTER COMPANY OF AMERICA, CHICAGO, ILL.
(INCORPORATED.)

authorities of the University of California to have 35 farmers institutes held in Southern California, including the counties of Kern and San Luis Obispo. These counties have been added to the territory in charge of J. B. Neff of Anaheim, and all applications for farmers' institutes should be addressed to him.

This county will be entitled to at least four institutes, and applications should be sent in early, so that arrangements can be made to hold the institutes at the most desirable time. Mr. Neff requests that mention be made of the topics which it is desired to have discussed, so that proper speakers may be engaged.

The objects of farmers' institutes are to promote agriculture and horticulture; to show where wear and tear can be diminished, labor saved, methods of cultivation and production improved and the general welfare of the tiller of the soil advanced.

EUCALYPTUS FOR HONEY.

Mr. G. P. Hall of San Diego answers a question about eucalyptus for bees, posts and telegraph poles as follows:

First, the eucalyptus melliodora—honey scented—is perhaps the very best of the numerous eucalyptus family as a source for honey, as its name implies. It will grow near the coast or foothills or in warm valleys, prefers fairly fertile soil, but will make some growth in poor soil.

It is called, also, from the color of the timber, "yellow box," is hard, tough and durable, not easy to split; is used in Australia for wagon spokes, heavy rollers and frame work of buildings. It lasts well under ground, consequently is good

for posts, will make good fuel and its fragrant blossoms attract the bees.

Eucalyptus sideroxylon—red iron bark—is another valuable tree, good for construction work requiring strength and durability; profuse bloomer, blossom pink to scarlet.

Eucalyptus tereticornia—forest red gum—is a good commercial tree, very similar and more durable than the eucalyptus rostrata—red gum.

There is no better all 'round tree than eucalyptus cornynocalyx—sugar gum, timber durable, will grow almost anywhere; used for all purposes from fence posts and telegraph poles to railroad ties.

Eucalyptus pilularis—black butt—is a good honey tree and grows tall and erect in form, makes good posts and poles, but will not endure either very high or low temperature. Thrives well near the coast.

And there are others, but if you cannot get these of the nurserymen, send and get the seed and sow it in boxes right away, so you will have them ready to transplant next April.

The following melancholy conversation between two small boys was recently overheard: "I say, Jimmy, who is that man with your mother?" "That ain't a man; that's father."

FOR SALE

Sixty-nine acres fine fruit and vegetable land in the early fruit and vegetable belt, three miles southwest of Winters and one mile from Putah Creek; 25 acres are in fruit trees, apricots, peaches and plums; 5 acres of grape vines, principally Tokays. On the place there is a fine well, equipped with a good pumping plant from which the greater portion of the place can be irrigated. There is a good plain house of four rooms; wind mill and well finished tank house, barn 40x50 feet, including granery, packing shed and all other necessary out-buildings. There is also about 250 feet of hot beds, and water is piped where needed on the place. Terms of sale: One-half cash, balance in one and two years, at 7%. Address, Box 907, Winters, Cal.

GIVEN AWAY



For the names and addresses of ten good farmers likely to be in need of grain seeding machinery, and extra stamps, to cover postage, we'll send

FOUNTAIN PEN FREE.

We do this so that we can explain to these farmers how they can buy a seeding machine that cannot be clogged in mud, gumbo, adobe, cornstalk or trashy ground; that is 1-3 lighter draught than any other; that takes 1-5 less seed; that increases the yield of wheat from 3 to 7 bu. per acre over others. Ask for 1906 catalog, and mention this paper.
MONITOR DRILL CO., Minneapolis, Minn.

KILLED BY THE FUMES.

You must kill the lice on the fowls some way. If you don't care to handle them singly, use our liquid

PRUSSIAN LICE KILLER.

Simply paint the roosts and drop boards with it. The fumes arise and kill the lice on fowl and pen. It catches them all to the last mite, and it takes the nit as soon as it comes to life. The fumes do the work. It is the perfect, easy method of protection and cure. But if you like the powder treatment better, don't forget the old reliable **Prussian Lice Powder.**

Enclosed please find 40 cents for another can of lice powder. We were well pleased with the first can, but we need and must have more.—H. F. Lake, Yankton, S. D.

Prices: Lice Killer, 50c and \$1.00; 5 gallon can, \$4.00. Lice Powder, 25c; by mail 40c. Remember also our famous **Prussian Poultry Food.** Get either of these from your dealer. If you don't find them write us at once. We will supply you and send you also our 66-page book, **Prussian Remedy Co., St. Paul, Minn. Special Agents: Chas. H. Lilly Co., Seattle, Portland, San Francisco; Chas. Winsol, Los Angeles; J. S. Pollock, Pittsburgh; Eltmiller Bros., Baltimore; Vaughan Seed Store, Chicago; J. W. Wilder & Co., Cincinnati, Ohio.**

BALSAM

Boylstonville, N. Y., Oct. 8, 1905.

The Lawrence-Williams Co., Cleveland, O.: I have a bottle of COMBAULT'S CAUSTIC BAL-SAM but the directions are lost. Please send me same, and give me the wholesale price per dozen bottles. I have been using it without directions; think it beats any liniment I ever used; have doctor-ed horses for over 60 years.

MILFORD E. SABIN.

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GEO. C. ROEDING, Fresno, California, Breeder of high-grade thoroughbred Holstein Bulls and Heifers. Thoroughbred Berkshire Boars and Sows.

RIVERSIDE HERD HOLSTEIN CATTLE—One of the largest and best in the world. Send for catalogue. Pierce Land & Stock Co., Stockton, Cal.

JOHN LYNCH, breeder of registered Short-horns, milk strain. High class stock. First-class dairy breeding. Smooth cattle. Best pedigree. P. O. Box 321, Petaluma, Cal.

HOLSTEINS—Winners at State Fair at every butter contest since 1885 in Calif. Stock near S. F. F. H. Burke, 216 Fillmore St., S. F.

BULLS AND COWS FOR SALE—Short Horned Durhams. Address E. S. Driver, Antelope, Cal.

A. J. C. C. JERSEYS. Service bulls of noted strains. Joseph Maillard, San Geronimo, Marin Co., Cal.

P. H. MURPHY, Perkins, Sac. Co., Cal. Breeder of Shorthorn Cattle and Poland-China Hogs.

JERSEYS, HOLSTEINS & DURHAMS. Bred especially for use in Dairy. Thoroughbred Hogs, Poultry. Wm. Niles & Co., Los Angeles, Cal., Breeders and Exporters. Established 1876.

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R. H. CRANE, Santa Rosa, Cal. Breeder and Importer of Southdown Sheep.

S. H. FOUNTAIN, Dixon, Cal. Importer and breeder of thoroughbred Shropshire sheep. Both sexes for sale at all times.

THOS. WAITE, Perkins, Cal., has the Gold Medal flock of Southdown sheep.

FOR SALE—Southdown and Berkshire pigs, rams, Jersey and Durham cattle. PERKINS & Co., Sacramento, Cal.

POULTRY.

BRONZE Turkeys and Eggs—Ed Hart, Clements, Cal. Large Size, good plumage, early maturity.

COPPIN & SONS, Cottonwood Farm, Pleasant Grove, Cal. Mated homer Pigeons, \$3 per doz.

L. W. CLARK, Petaluma, Cal. White Leghorns, the white-kind that lay lots of large, white eggs.

SINGLE COMB WHITE LEGHORN AND INDIAN Runner Ducks—Higgs \$1.50 per setting; \$6.00 per hundred. Send for illustrated catalogue. John P. Boden, 1338 Second street, Watsonville, California.

WM. NILES & Co., Los Angeles, Cal. Nearly all varieties chickens, geese, ducks, peafowl, etc.

SWINE.

GEO. V. BECKMAN, Lodi, San Joaquin Co., Cal. Registered Poland-China Hogs, both sexes.

BERKSHIRES—Prize Winners—bred from prize winners. Boars all ages. T. Waite, Perkins, Cal.

BERKSHIRE AND POLAND-CHINA HOGS C. A. Stowe, Stockton.

BERKSHIRE, POLAND CHINA, DUROC HOGS, Choice, thoroughbred Poultry, William Niles & Co., Los Angeles, Cal. Established in 1876.

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ORPINGTONS My BUFFS lay better than Leghorns, are larger than Plymouth Rocks. I have lots of them, and sell them right. Write for FREE folder and prize record.

W. SULLIVAN, Agnews, Cal. State Vice-President Nat. S. C. B. Orpington Club

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FIRST ANNUAL SALE OF SHORT HORNS

—BY—

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Sale will commence at 1:30 P. M.

SEPTEMBER 11th, 1906,at the Farm, adjoining **NEWMAN, CAL.**

Our entire crop of 1905-6 Bull Calves listed. Also 25 head of our best Cows and Heifers. This is your chance to get "SPICY" Bulls at your own price.

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ALL STYLES LOWEST PRICES
30 DAYS FREE TRIAL
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All about Bees and Honey
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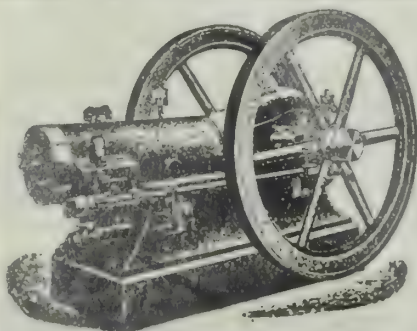
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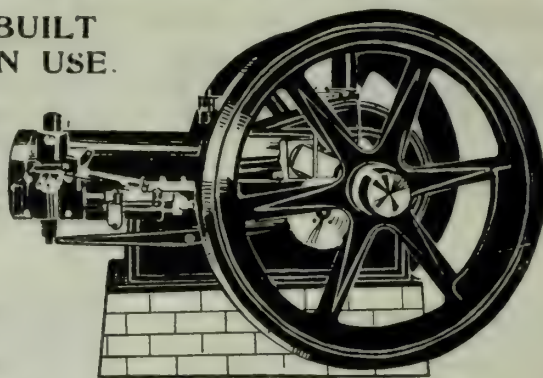
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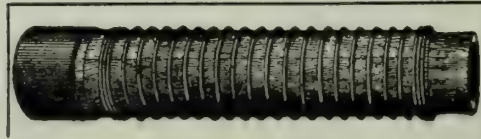
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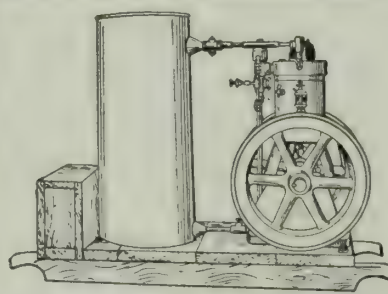
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Vol. LXXII. No. 10.

SAN FRANCISCO, SATURDAY, SEPTEMBER 8, 1906.

THIRTY-SIXTH YEAR

PIPING WATER FOR IRRIGATION.

We have from time to time given illustrations and descriptions to show the rapidly growing use of pipe lines for transmission of water for irrigation purposes to different parts of California. The demand for pipe for these uses has encouraged the establishment of manufacturing companies which are not only doing a thriving business, but are bringing out a lot of very ingenious devices which make pipe transmission more convenient and satisfactory. One such firm is the Tallerday Manufacturing Co. of Los Angeles, which has just published a very interesting catalogue of its metal work for water storage, transmission and distribution.

One of the most obvious advantages of a metal pipe is the ease with which it is taken even to most inaccessible places, and the success and cheapness with which water is delivered over intervening obstacles which could otherwise only be surmounted at great cost. One of the pictures suggests this fact, for it shows the pipe in sections being burro-backed up a mountain trail to bring down a water supply from some elevated point, and possibly to carry it over ridges and across canyons on its way to the place of using. The desert vegetation shows that the region is arid, but there is water somewhere above, and upon the pipe line will depend the productiveness of whatever enterprise is in view in this particular case, and possibly the very habitability of the locality. The mountains of California are full of demonstrations of the value of pipe lines both in small undertakings and in large, from the domestic uses of a small farm to the supply of a town or the irrigation of a valley full of farms.

The picture suggests the use of the pipe line

in conveying water across a valley to be used at various points, as for instance in the foreground of the picture where a stand pipe has been put in for surface outflow. This picture shows an installation of 10-inch Tallerday riveted steel water pipe on the ranch of Mr. B. F. Rowland, near Puente, in Southern California. This pipe is rolled in lengths of 10 feet from single sheets, and two of these lengths being riveted together gives lengths of 20 feet with only one round seam instead of many seams. as such pipes are made to contain. These lengths also have slip joints made with newly devised machinery and are superior.

Another use of pipe in irrigation is surface distribution of water from the main supply to basins, checks or furrow systems, securing conveyance without loss by seepage, and also saving land which might otherwise be required for ditches or permanent flumes. This surface piping is made by the Tallerday Company in lengths of 10 feet, from a single sheet, with a heavy taper collar riveted to one end and a band around the other, making sections 10 feet 6 inches long. The collars have the right taper to fit together easily, are made round, true and smooth, and the large end of the pipe is also made true and smooth, making a joint which is water tight for surface irrigation purposes. This pipe has proved very successful in large saving to the users, as by its use they are enabled to distribute water over uneven surfaces and irrigate practically and thoroughly.

The important items of expense saved by the use of this method of irrigating are the grading of land, which in many cases is a very heavy expense, the continual expense of making and cleaning ditches, the loss of water by seepage and evaporation, the waste of land occupied by the ditches, washing of soil, annoyance and loss of time in harvesting caused by the ditches, and many other items of trouble and expense.



Installing 10-inch Riveted Steel Pipe Line on Ranch of B. F. Rowland, Puente.

Some have found this the only satisfactory method of irrigating alfalfa, or, in fact, any crop on very sandy soil. In many cases long lines of this pipe have been used to elevate water to a height above the pumping plant of 10 and 12 feet, with only a very slight loss by leakage at the connections. When this pipe is used for irrigating by the furrow system or for trees, the pipe is fitted with sliding gates, spaced as desired. This adapts the pipe for many uses, as small streams can be taken out at many points.

The ordinary method of flooding land with this pipe for alfalfa and similar crops is to begin at the source of the water, adding lengths of pipe to the line while water is flowing through the pipe, as may be necessary to flood the land properly, or by laying the line of pipe to the farther portion of the tract and taking off lengths at intervals, as the land becomes properly flooded. The taper collars admit of this pipe being laid over uneven surfaces, or the line may be curved to any circle less than 45 degrees. For sharp curves elbows should be used. After pipe is taken apart, it should be laid along the course to be irrigated next, and the work can be rapidly done as pipe fits together easily.

The Tallerday Company claims to be the only manufacturers of this pipe in lengths of 10 feet from a single sheet, all other pipe of this class being made in lengths of about 30 inches, riveted together. The short length pipe is liable to damage in handling. The rough surface, on account of the round seams, prevents free flow of water, and the user is continually annoyed by being obliged to have the pipe repaired.



Conveying material for a pipe line in the mountains of Southern California.

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EDGAR RICKARD - - - - - Business Manager

THE WEEK

As we anticipated last week, the State Fair seems to have reached its end a little shy on cash receipts, and the public will be duly informed that a highly moral show does not pay, and a movement toward return to the old "attractions" may be expected. It should not be forgotten, however, that the Stock Breeders' Association, which assembled during the Fair, and had full chance to see what it was, passed a resolution which approves the State Agricultural Society, and urges the Legislature to give it more liberal appropriations, that it may grow in the direction it has taken. The Governor is urged to allow the money on hand to be used to complete the stock grounds of the society. Judge Carroll Cook said that the trouble is the agricultural society has not the money—that the State has cut off a chief source of its revenue and makes wholly inadequate appropriations. The society is of great benefit to the State, and the State should be more liberal with it. Gate receipts this year will be so light as to amount to little, yet the society is growing in the direction of a stock and agricultural show of enormous value. The State must support it in public interest. General W. R. Shafter said every member of the convention should appeal to his Assemblyman and Senator to give the State Agricultural Society adequate support—tell them the facts, and they will deal justly with it.

The cattle growers had their innings during the State Fair, and a fair chance to strengthen each other and secure the public ear by a recital of their wrongs and hardships. Mr. Hebbbron, of Salinas City, made an address at a public meeting which we hope we may have in full for publication at some convenient time. From the sketch of the speech in the Sacramento Union, he certainly said things enough to keep the cattle growers thinking for some time. He is reported to have said that cattlemen do not receive a fair share in trade; butchers grow rich on the offal of cattle; combination depresses prices, and cattlemen receive nothing of the general advance and prosperity. The cattlemen have to sell at 6c. and deduct half; the rule of standing the cattle over night prevails only in California, and is cruel; slaughterers make more in 30 days than growers in three years, who have to expend that time to bring a steer to market. When Japan asked for 1,000,000 pounds of beef a Chicago packer got the contract and California growers were left out. Mr. Hebbbron said he did not know what should be done, but something should be, to correct such wrongs. Mr. Hebbbron is right. It is not wise to keep on growing stock and pushing it up the chutes without knowing more about what growers' rights and wrongs are. These cannot be found out, either, by annual meetings. There must be association for frequent discussion; there must be careful inquiry into the exact state of the facts, and the right things to do. And if inquiry should prove that some hardships are more fancied than real that, too, would tend towards contentment. The first thing to do is to get the facts, and agitation is the way to get them.

We are very glad to note that the conservative policy which we urged upon the California delegation to the Irrigation Congress fully prevailed in the councils of that body which closed its sessions since our last issue. Elsewhere this week we publish two notable addresses which were made at the Congress, one by the President of the United States and the other by the Governor

of California. Both these are conservative in tone and proclaim against the diversionary and expansionary issues which they feared might crop out at the meeting. It is quite true, it seems to us, that the greatest danger to the Reclamation Act is to be apprehended from those who will not allow it to demonstrate its own success. The Congress declared itself in the hope that the Governmental Irrigation works under construction and in contemplation will be pushed to an early completion. It heartily approved the efficient and thorough work of the reclamation service, and expressed the fullest confidence in the honesty and ability of the service. It also indorsed and commended the earnest and efficient work of the National Weather Bureau, and commended the work of the Federal Agricultural Department in its irrigation and drainage investigations. All of this indicates that the Congress is disposed to be patient and to wait. It is a matter of much satisfaction to Californians that the Congress decided to hold its next session in Sacramento. This also indicates that the Reclamation Act is to have a fair show against enemies and unwise friends.

Mexico is going to be a good grain market this year and it may help California to some extent. Mexican reports state that it will be necessary to again remove the duty on American wheat so that the cereal can be imported in sufficient quantities to supply the Mexican mills. The duty on American wheat was removed at the beginning of this year and was replaced in July. It is said that the Mexican crop will be able to supply the Mexican mills only until November. The importation of American wheat during the fiscal year ended June 30 last, was heavier than for many years previous. The wheat brought into Mexico in the twelve months had a value of more than \$2,000,000 gold. The corn crop of Mexico will also fall short of expectations this year, and a big importation of American corn is certain. American corn to the value of about \$1,000,000 gold was imported in the last fiscal year. Fortunately the corn belt has plenty of corn this year and will not miss a million dollars' worth.

Talking about the immense value of the corn crop, it seems a little small to figure closely on the cobs, but it is reported from Washington that the Department of Agriculture has made arrangements with a big Western sugar concern for experimenting with 10,000 tons of refuse beet tops, corn stalks, husks, cobs, etc.—to determine whether cheaper alcohol can be made from these materials than from anything else. It is known they contain much alcohol, and the question is whether it can be extracted cheaply. The department officials say American genius will produce alcohol much cheaper in the near future than the world has ever known it. Now what sort of a trust will get a cinch on it?

We wonder if a story which comes from New Mexico, by way of Washington, is to be a reproduction of an old California experience. The story is that a collector in New Mexico has found a new alfalfa which will grow luxuriantly in sections so dry that heretofore no vegetation has been produced there except by irrigation. It was first found in New Mexico, and seems to be an ordinary alfalfa which has adapted itself to conditions and developed a structure that enables it to send its roots very deep for moisture and to use all it finds. It is declared that this plant will make, and, in fact, is making great desert regions valuable for pasturage and forage. The department is raising seed from it, for use in other dry sections, and will soon be prepared to distribute it where its introduction will be of the most benefit. We would not advise anyone to count much on this discovery until some one who knows gives assurance that this plant is really alfalfa and not *melilotus alba*, or "sweet clover," which deceived so many California growers a few years ago, and is now a pest in alfalfa fields. It looks enough like alfalfa to deceive many practical growers and it acts just exactly as the story describes. The chief trouble with the plant is that only educated stock will eat it.

They are going to have plenty of wheat in India this

year, something like a million tons more than last year, but they may still have to mix dirt with it so that they will not have to deliver any purer goods than the trade requires. Readers may remember our recent reference to this subject, in which it was shown that the dealers put in just what dirt the traffic would bear and still sell as market wheat. There is, however, an outlook for clean grain. The Indian Trade Journal says that the government is taking a deep interest in the complaint of the admixture of dirt in the wheat exported. The government has consulted the chambers of commerce, some of whom, however, indicate a reluctance to depart from the present customs of the trade; but the Chamber of Commerce at Karachi, from which 70 per cent of Indian wheat exports are now shipped, strongly supports the government's proposal for 98 per cent pure wheat.

Many will hear with a deep sense of bereavement of the death of Mrs. Theodosia B. Shepherd of Ventura, who has done so much for the fame of the State and for the delights of California life by her achievements in plant breeding, chiefly on the ornamental side. She began as an amateur in a house lot and soon surrounded herself with so many new forms of beauty that horticultural fame found her and she was obliged to broaden her work and establish it upon a commercial basis. Mrs. Shepherd has enrolled her name indelibly upon the history of California horticulture, and it is very fortunate that her children who became associated with her during recent years can carry on her work.

QUERIES AND REPLIES.

WATER CANNING.

To the Editor: The Pacific Rural Press of August 25 contains an inquiry from "A Reader" in regard to canning by cold process. Very acid fruit will keep by covering with cold water. I have been in the habit of using the screw top can, but this is not necessary, as the process was known before the screw top fruit jar came into use. Rhubarb, gooseberries, cranberries, and very sour plums may be kept in this way without cooking. I have not tried Loganberries or currants, but they would probably keep equally well—KATHERINE WHEELWRIGHT, San Leandro.

We are out of our depth in this water process and refrain from comments.

FOR THE GOOD OF THE CAUSE.

To the Editor: In a recent issue you give full particulars for spraying with Bordeaux for peach blight. Though unable to take your paper, will you kindly mail the above, as I wish to ascertain probable cost of spraying 10 acres. Would the spray do plums and prunes any benefit?—GROWER.

Yes, we send it for the good of the cause. We hope you will make enough on your 10 acres to enable you to subscribe for a California agricultural paper. It is not fair to those who are putting in time and money to publish good journals to try to reap the benefit of their work without the small contribution which such subscription requires. There is, however, one merit in your communication, and that is the frank honesty of it. For instance, you do not try to bunko us by claiming that you are seriously thinking of subscribing, when you have no intention of doing so. And yet we cannot see how you can keep up-to-date in a business without reading regularly a journal specially devoted to it. Bordeaux will help your plums and prunes, if there are any fungus diseases attacking them.

SANDY LAND AND ALFALFA.

To the Editor: How shall I proceed toward fertilization of sandy lands. I wish to plant alfalfa, but the land is too light and sandy.—FARMER, Westminster, Orange county.

Any complete fertilizer will increase the productivity of your soil, and you can get such from those who advertise fertilizers in our columns. On many accounts well decomposed stable manure, or ordinary stable manure, applied at the beginning of the rainy season, or in connection with copious irrigation, would be the best treatment that could be made, but possibly you have no

supplies of this material available. A winter growth of peas, or vetches, from an early start in the fall, would give you green stuff for plowing in, which would also be of great value in improving the texture and retentiveness of the soil, but you might as well start right in with alfalfa. Are you sure that your soil is too light and sandy for alfalfa? Usually the plant thrives in such situation, providing there is moisture enough available.

GUM DISEASES OF ORANGE TREES.

To the Editor: My orchard of 20 acres of navels is now seven years old, and too many of the trees are thus affected with gum disease—some only mildly and some quite severely. I have treated some by removing gummed parts with a knife; then put on a wash of lime and bluestone, and have had some success so far; and, as a fact, know of no failures. I am satisfied, though, some will die from too free use of the knife. My soil is the so-called dry-bog, a very stiff, heavy clay, that will work up to a garden soil condition, if taken in time. I find inclosing the tree trunk tightly, a hard crust several inches in thickness, which cracks as the moisture leaves, from the trunk as a center, radiating like spokes in a wheel, but still retaining a very tight grip. So I am of the opinion that this "choking" is the primary cause, preventing the return of the sap to the roots.

I put men at work to loosen the earth around every tree; say 6 in. deep at the tree (or deep enough to expose the root arch), and a foot from all sides of the tree, and to cut away the circle of earth that cultivation has raised around the tree base. My trees are all low pruned, that is, limbs lying on the ground, and impossible for the cultivator to get closer to the trunk than 3 or 4 ft., so that part under the branches has remained uncultivated for several years, except hoeing out the few weeds which would not loosen up the soil to any extent and could not be called cultivation.

I would like to know what experience of others has proved the best preparation to treat these trees after this. I know some cut away badly gummed parts and simply dress with coal tar. Some add lime to this. Some whitewash after. Some use some emulsion of crude oil, with other ingredients, unknown to me, but possibly with lime or bluestone, with sufficient carbolic acid to keep away insects. Some one of your correspondents must have found something that has proved successful. I think the use of the knife is harmful. I find so many of my trees making the effort to heal themselves, throwing off the old bark and forming a new, underneath. The knife removes the inner bark, preventing that from assisting in the healing.—ORCHARDIST, Tulare county.

It is pretty generally conceded that the root rot at the crown of the tree, which you describe so well, is due to the prolonged contact of water with the bark at this point. It is almost sure to appear where irrigation water is allowed to run around the tree and remain some time in contact with the bark, and the condition is aggravated when the soil becomes hard baked, and is of such retentive character that the water cannot soon soak away. The trouble can be more easily prevented than cured. There is no treatment now known which is better than that which you describe, and any of the applications which you mention may prove effective. When the rotting has proceeded to such an extent that the tree is nearly girdled, it will naturally be a long time before it can regain vigor, if it ever does. We know of nothing in the way of treatment or application of which you are not already aware. Of course, the removal of the diseased parts of the bark should be done carefully, and all disposition to grow new bark, either from the sides or by granulations beneath, should be encouraged, and above all things water must be prevented from standing around the tree, if healthy growth is to be attained.

CALIFORNIA CHEESE-MAKING.

To the Editor: The dairy statistics show that the larger proportion of the cheese made in California is "made on farms." What does that mean, and during what part of the year is the greater part of the cheese made in California?—ENQUIRER, Wisconsin.

Although much cheese is made upon farms in California, as your letter indicates, it is not at all like the farm cheese-making of the Eastern States. Cheese is made upon large dairy farms or ranches, where there are cows enough to make feasible the operation of the

factory method, and our farm, or ranch dairies, are practically small cheese factories, which at the East would take the milk from a number of small farms. There are, therefore, comparatively few makers, although so large a proportion of the cheese is rated as farm made. The dairy season in California begins usually in December, with the new growth of grass and continues until May or June, or nearly all the year on moist or irrigated land, if prices warrant. Many dairies are fitted up to make both butter and cheese.

To the Editor: We take pleasure in inclosing herewith a recent circular issued by us, which we trust you will find of interest in connection with your reply in a recent issue to a note by Mr. Horatio Beveridge, of San Francisco.—GERMAN KALI WORKS, New York.

The statement of the particular effect of potash in connection with other fertilizers in brief form is this: Mr. Lewis F. Best, of Somerset, Nova Scotia, made a very interesting experiment to test the needs of barley on his soil. The land was a mixture of muck, clay and sand, with a strong clay subsoil. It had been used as a pasture for ten years and was then plowed and sown to oats and again seeded to grass, and was kept as a permanent pasture for six years more. The land lies south with fall enough for good drainage. The mineral fertilizer was applied and the crop sown June 6th, and on June 12th the Nitrate of Soda was applied. The rainfall was so excessive that Mr. Best for a time feared a total failure of the barley, which was in three separate plots of one-third of an acre each. Timothy and Alsike clover seed were sown on the plots so as to get the land in grass with the rest of the field. On plot No. 1, no fertilizer was applied, as this was a check plot for comparison. Plot No. 2 had an application of a complete fertilizer amounting per acre to 600 pounds of Acid Phosphate, 120 pounds of Muriate of Potash and 180 pounds of Nitrate of Soda. Plot No. 3 had an application per acre of 600 lb. of Acid Phosphate and 180 lb. Nitrate of Soda, with no Potash. Mr. Best's report of the result shows that with the same application of Acid Phosphate and Nitrate of Soda on plots 2 and 3 the addition of 120 pounds per acre of Muriate of Potash increased the crop nearly three times as much as where Nitrate of Soda and Acid Phosphate only were used. The crop on plot 3 was about double that on the check plot, but on plot 2 it was four times as large as on the plot where no fertilizer was used. The grain on plot 2 was heavier by three and a half pounds per bushel than on the check plot and one and a quarter pounds heavier than on the plot receiving Nitrogen and Phosphoric Acid only.

CROSS POLLINATION OF ALMONDS.

To the Editor: Noticing in your issue of the 25th of August a reply to questions about "pollinating almonds," and your request for observations, I make free to offer the following: Two years ago I came in control of 800 acres of orchard three miles east of Acampo, San Joaquin county, 300 acres of it being in almonds. The I. X. L. has only borne one fair crop, though the trees are 17 years old. The Nonpareils were planted in alternate rows with the I. X. L. have done but little better. Where they were planted in alternate rows with Drake's Seedling or Texas Prolific, they have been quite regular and heavy bearers. The Drakes bear well and the Texas Prolific has proven a heavy, regular bearer and very profitable. The Texas seems to be a far better pollinizer for the Nonpareil than any other variety we have. For instance, we have one 10 acre lot with the even rows Nonpareil from end to end. The odd rows are Texas on one end while the other end is made up of Drake's Seedling, Golden State and I. X. L. Where the Nonpareil is alongside the Texas, it is loaded this year and was last year also. But where it is alongside the Drake, it is very light, and alongside the Golden State and the I. X. L. it has scarcely enough on to pay for gathering. On another 10 acre lot we have Nonpareil and Drake's Seedling, alternating rows, and have a very good crop each year. We have two 10 acre lots with Drake and Texas alternate rows and they are very heavy this year and were last. Ne Plus Ultra does not seem to take kindly to the hot weather and gives too many blighted nuts and "stick-tights." The practical side is what we are after, and believe we have found it, so we are working all I. X. L. trees over to Texas Prolific, and if we were planting a young orchard today would plant Nonpareils and Texas Prolific in alternate rows, or Drake's

Seedling and Texas Prolific the same way—for this part of the country. The Texas blooms about two weeks later than the Nonpareil, yet much of the latter's bloom is fresh enough to mate with the Texas.—J. P. DARGITZ, Acampo.

This is a splendid contribution, clear and pertinent. We would like to hear from others as to their observations, both with these and other varieties in their influence upon each other in the promotion of bearing. It is more than likely that final conclusions must be drawn from many local observations, and we wish to record as many as possible.

FERTILIZERS FOR ALFALFA.

To the Editor: Will you kindly inform us what fertilizer has been demonstrated to be the best for alfalfa in ordinary adobe soil. Also how much per acre, and how good wood ashes, lime slag from a lime kiln, and slacked lime are. These three fertilizers are available to us.—READER, Solano county.

Almost any complete commercial fertilizer will promote the growth of alfalfa, except on lands which are already abundantly rich. Stable manure is also very effective both in increasing the amount of plant food and in making the heavy soil lighter and more permeable. Refuse lime also acts very satisfactorily, on adobe soil and promotes its suitability for alfalfa, because it renders it more friable and less likely to retain water sufficient to rot the root of the alfalfa. Lime can be applied to such soils at the rate of 1,000 pounds to the acre with good effect. The alfalfa plant enjoys the presence of lime so that it will be benefited directly as well as indirectly by the mechanical effect on the soil. Lime slag would be relatively less valuable because less soluble. There has been for a long time a prejudice against alfalfa for heavy soils, but more recently much satisfactory planting is being done. You must be more careful about irrigation than you would be on an open soil, which will dispose of surplus water more readily.

To the Editor: I believe I have the banner crop from a row of blackberries. The row is 147 ft. long, vines three years old, 5 ft. apart, trained on a wire. The soil is red loam in the hills, with plenty of spring water. I have picked up, August 22, 506 lb., and think there are still about 80 lb. on the vines. I get large sweet, juicy berries, and have more orders than I can fill, as all say they are the finest they ever tasted, and with very few seeds.—A. E. DE WIEDERHOLD, Mendocino county.

This is very interesting. What can other growers report?

PREMIUM CATTLE AT AUCTION.

At the California State Fair of 1906 the Howard Cattle Company's exhibit of Shorthorn cattle met with its usual success. There was awarded to their exhibit of 12 head the following premiums:

First for best junior yearling heifer.

First for best bull calf.

First for best two Shorthorns, the produce of one cow, bred by exhibitor.

First for breeder's young herd, consisting of one bull, two yearling heifers, two heifer calves, bred by exhibitor.

Second premium for best bull over two years old.

Second premium for best two-year-old bull.

Second premium for senior bull calf.

Second premium for best calf herd, consisting of one bull calf and four heifer calves.

Third for yearling bull.

Third for junior yearling heifer.

Third for senior bull calf.

Also silver medal for reserve junior champion female. Also silver medal for reserve grand champion female.

The individual animals receiving these premiums, as well as those comprising the herds are, for the most part, catalogued for the Howard Cattle Company's sale, to be held on their ranch, adjoining Newman, California, on September 11th, 1906.

This is the first opportunity that the cattle men of California have had to buy the cream of an old-established herd at auction, and this offering should receive their serious consideration.

HORTICULTURE

WALNUT GROWING IN NORTHERN COUNTIES.

To the Editor: We have been slow to recognize the substantial climatic unity of California in actual horticultural practice. It was so in the matter of orange growing; it is so now in the case of the Persian walnut. Yet the cultural range of the walnut is much greater than that of the orange, as witness the planting and preparations for extensive planting in Oregon and Washington. Individual trees bear well in Northern and Central California, but as yet a vast region north of Tehachapi has few bearing groves. The reason is not simply that we have been slow to see the adaptation of climate (though this is true), but because we have experimented in the wrong localities, and with the wrong nut. Felix Gillet has been "a voice crying in the wilderness" long enough to have induced large plantings of his "late generation" nuts. There is no reason to doubt the success, in a hundred localities from San Luis Obispo county to Sonoma county, of the late blooming French varieties, of which "Franquette" is probably the best. Col. H. E. Dosch, of Portland, calls it "the most profitable walnut that grows." This nut is a sure bearer, is large, uniform, and its sutures well closed, and it will doubtless do as well in the counties named as the Santa Barbara, or other soft shells do in the South.

There is nothing in the tradition that the walnut will not flourish outside the sound of the surf, but there is reason to fear a "hot spell" in the interior, and the burning of leaves and nuts by the sun in the average season. The older groves in the South are within a few miles of the sea, yet later plantings in the San Gabriel Valley have been quite satisfactory.

Careful investigation should precede planting, and this should relate to both climate and soil. Local conditions so affect the frost-point that nothing can be determined from a climatic map or statistics of temperature covering a district. The elevation, the drainage of cold air into a locality, the protection of a body of water close by, are hints as to the kind of study necessary in locating a grove. And it will often happen that where the climatic conditions are just right the soil is not suitable. This should be deep, rich, warm, and well drained, but moist. Soil underlaid by hardpan or by a hard clay subsoil, or land that is "heavy" or "sour" will prove injurious. The aim is to secure rapid growth. Since the years of waiting are many, and for this bottom land, rich in sediment, and in which you can go down 10 ft., without obstruction, is best.

There is probably something yet to be learned about the relative advantages of irrigation and of soils moist enough to do without artificial watering. The latter is to be preferred, not simply from motives of economy, but because of the temptation to use too much water, or the danger of using it at the wrong time.

There is also something a little hazy yet about the place of the water table. In the South the grower is afraid of land where water is within 12 ft. of the surface. For the walnut on its own root, perhaps that point is settled. But what of the walnut on the native California root? The native black walnut is often found on the banks of streams, and where water is within a few feet of the surface, will it not take kindly to the water when made a wet nurse for the domesticated tree? I believe it is the conviction of Judge S. F. Lieb, of San Jose, that the walnut on the native root will do best where it can reach water at from 4 to 6 ft. In this matter we can only know by trying it out.

The advantage of a vigorous root-stock is pretty well shown and there should be no question to-day about the value of the native root. It secures a more rapid growth, and may allow a little wider range in the selection of soil. But the first is certain, and the practical value is shown in the earlier bearing and the larger tree.

It may be that the native root will secure immunity from blight. This is yet to be demonstrated. Meantime, to get started right is half the battle. We know pretty well what to expect from "runts" in the barnyard, but we are not careful to exclude weaklings from the nursery row. Sold by the foot, the nurseryman often gets as much for a yearling tree as for a two-year-old. I have seen but one grower who prizes vitality high enough to throw away young seedlings of the walnut when they show lack of vigor in the nursery, and I should go a thousand miles to get his trees for my planting. It means much in the mere appearance of an orchard, securing uniformity in size, and it means uniform rapidity of growth.

It may mean also longer life. The experience of growers about Santa Barbara indicate that the walnut is a short-lived tree. Several orchards in the

Goleta Valley were dug up because unprofitable from old age, yet they were scarcely 30 years old. This is contrary to all traditions, which accord to the walnut a prodigious age. In European countries it is said not to reach maturity short of 50 or 60 years, while in the South it is reckoned in its prime at about 15 or 20 years. This should not be the case.

Heredity—has it no bearing on plant-life? "No two trees in any orchard," Professor Bailey says, "are alike, either in the amount of fruit they bear, or in their vigor and habit of growth," and he speaks of the "indiscriminate cutting of scions" as a "clumsy and inexact" practice. And my friend, Leonard Coates, an intelligent and conscientious nurseryman, says that "bud variation," which produces such wide difference in plants of the same origin, is simply "natural deterioration," and shows the necessity of constant "selection, or breeding up." It is as true of plants, as of animals, that there is a tendency to "run down," and it is to be feared that the producers of orchard stock do not regard "thoroughbreds" as of great importance in the nursery. We want the young tree to be "born right," of good parentage, and full of vitality.

Next, we must see that the orchard-form is right. The walnut wants room—room for the roots to feed in, to get down and to spread out, and room for the branches to breathe in. As ordinarily planted, a mature walnut tree covers the ground. In mid-summer it is always twilight in the orchard—a delightful, fragrant twilight at noon-day, but it is not good for the tree. I am inclined to think it is as bad for the tree as it is for a man to live all the time in the shade, breathing the air of a crowded room. Writing of the decay of the walnut trees in the Goleta Valley at 30 years, the Secretary of the Walnut Growers' Association of Santa Barbara says that a few trees in the valley have passed this age and are still profitable, and he points out that "these are trees more or less isolated." In Europe, Mr. Kellogg says that where trees reach a great age, they are "not planted in orchard form, but simply around the borders of the farm and at long distances apart." This is very significant, and may have a bearing upon our troublesome bacterial disease. Bacteria are like the poor; we will "always have them with us," but as a sound and healthy man is not afraid of bacteria, may not a vigorous tree be also immune? I know what the Editor will say about running a parallel between plant and man, but I venture to suggest that, as we seem to have walnut trees which resist the blight, we do not yet know but that a condition of sap and fiber, of bark and root, of bud and branch, and leaf, which belong to perfect health, and indicate abounding vitality is responsible for this immunity. At any rate, this is the line of intelligent procedure. First, vigorous stock, then good soil and wide spacing, so that the ground may be well sunned, and dry air allowed freely to circulate from below among the branches.

It is worthy of note that a Spanish nurseryman in South America thinks that the blight is due to close planting, and says so in his voluminous catalogue. This is an independent opinion, probably the result of his own observation, uninfluenced by discussions abroad, and worth what it is worth.

"Don't scrouge," the boys used to say in the little red school house on the hillside, and we fancy the walnut, subjected to artificial conditions, protesting in like manner. We should not compel the tree to breathe bad air, poisoning it by crowding so that it takes the exhalations from damp soil not made aseptic by the sun.

I have seen a nurseryman preparing stock for his own orchard. Three selected native nuts are planted: from the seedlings only the most vigorous is chosen, and when grafted, only the best are set in the orchard. The result is stocky, well branched, miniature trees, uniform in size, and as full of vigor as a young athlete. No feeble tree is allowed in an orchard row. Planted 45 ft. apart, the purpose is ultimately to remove every other tree, leaving but five to the acre. Such radical departure from all "orthodox" planting is based upon the expectation of producing trees so large, so vigorous, so expansive of limb as to compensate for lack of numbers in the acreage. There is reason in the method. Five trees to the acre will have room to do their level best. They may be expected to produce a maximum of 600 lb. to the tree. It has been done at San Jose, and again at Chico, in both cases the root-stocks being the native black walnut. But if they produce but 300 lb. apiece it is still a profitable orchard.

As to over-production: First, the importation to-day exceeds the California output; more than one-half the nuts required by the United States coming from abroad. Second, Europe is not increasing its output materially, and in view of the increasing value of land, and the confessed superiority of the California product, is not

likely to do so. Third, the consumption of the walnut is increasing. Meat-eating may be expected to decline, and nuts to be substituted.

We need not be vegetarians, but as the life of civilization becomes more complex, meat will be eaten more sparingly, and fruit and nuts will take its place in the dietary.

Again, nut production is increasing but slowly in California, a matter of less than 4,000 tons in nine years. If it should double that amount for the next ten years; or, if the increase should be 1,000 tons per year for the next 20 years, that would only mean 40,000,000 lb., or less than one-half a pound for each person in the United States for a year.

But what effect will increased production have upon the price? The answer may be guessed from this: that the price in this State has grown with production, rising from 7c. in 1896 to 12½c. in 1903, and 11c. to 13c. in 1906.

We can produce too many prunes to make prune orchards profitable, because in spite of their excellence and the stimulus of "Prune Primers," and good receipts, not every one likes prunes. But do you know anybody who doesn't like walnuts?

I confess to being an enthusiast about the walnut, and to-day I know of no investment that I would so much like to make and leave as a legacy, as a hundred acres of Franquettes on native black walnut roots. I would rather sit down under my own walnut tree than under any other orchard tree in the catalogue. And if a farmer does not care for a grove, I do not understand why he does not plant a few for beauty, as well as use, in odd places.

A. J. WELLS.

San Francisco, September 1.

[This is a most important contribution toward the higher life of the walnut tree and should be carefully read and pondered. Mr. Wells is an able observer and deep thinker: the walnut receiving his most enthusiastic horticultural devotion.—Ed.]

STRAWBERRIES AT THE SOUTH.

Mr. G. P. Hall, of San Diego, writes as follows about strawberry varieties in his district: By "extra early berries," I suppose you do not mean before Christmas, but here we use different varieties for the different seasons, the Saltzers, for instance, are a cool weather berry, and we get them in March and then on till November by using different varieties. The leading varieties used are the Brandywines, Saltzers, Lady Thompson, Jesse, Wilson, Senator Dunlap, and a whole lot of other representative berries that we can depend on to stay by us. The Arizona Everbearing has been a good berry and has served us well, but lately it has seemed to get tired and wanted to go on a strike for less working hours, smaller berries and more company. It is the way with strawberries, they get notional and want new blood infused, and you have to send off and get some to mix in that will cheer the others up and keep them thinking that the very best thing a berry can do is to do the very best it can, and hear the owner say: "I'm letting this patch go to runners, they are a fine plant and produce fine crops."

A conservative estimate as to what an acre of berries will yield is about two to three hundred dollars for the season per acre, the early and late berries, of course, bringing the best prices, but all do not reach this figure, some exceed it and have berries all the season from March to November.

THE MARKETS.

Wheat

Very little speculating is being done in the wheat market in San Francisco. Nearly all the wheat is being handled in the interior of the State. The millers are about the only active people on the market, and they have bought up all the wheat there is to be had until the hold-over comes on. About half of the farmers sell their crop as soon as it is harvested and the other half hold over for better prices. There is very little export demand as the California yield is only about enough for home consumption. According to various authorities the imports of wheat this year from the north will be in the neighborhood of 5,000,000 bushels, against 9,000,000 for last year. According to reports from Chicago, the wheat crop of the American continent, together with the hold over will be about 1,000,000,000 bushels, and this being much more than the annual consumption of the country, the export is expected to be large. The Portland market is weaker this week, with a tendency to fall still lower, and wheat holders are willing to take this week what they refused last. Considerable wheat is coming in to tide water, but as

there is no place to store here in San Francisco, most of this wheat is going to Port Costa.

Flour.

Some little activity is being shown in the flour trade. The inactivity of the wheat market is, however, effecting the flour trade to the extent that buyers are not anxious to place any large orders. There has been some little increase in the demand abroad, especially with Japan. Very little flour is now being brought to California from other States, as the California buyers are busy at present buying in this State. On the whole there is very little doing in the flour market, and this state of affairs is expected to continue as long as the present slump in wheat lasts. The San Francisco market is, however, a little more brisk than in other coast locations, as all flour must be brought here from the interior.

Barley.

There has been a good demand for barley in San Francisco this week, and offerings are absorbed almost immediately after they are put on the market. The crop of barley throughout the State seems to be very good, and a lively interest is expected to be shown in this line in the near future. At present, however, the barley situation taken all over the State is quiet. Some little interest is being shown in the Portland market. A good many sales are being made, and buyers are paying \$20-\$21 for feed and \$22 per ton for brewing qualities.

Millstuffs.

San Francisco is beginning to show a little of the demand for millstuffs that has been expected of her for some time. The millers throughout the State are not anxious to sell, as they think prices will go up. As a result a larger amount of bran, shorts, etc., is being stored in the country. The price for millstuffs is quite easy. Bran is quoted at \$18.50 per ton, shorts from \$19 to \$20 per ton. There seems to be a great quantity of light wheat this year, and abundance of millstuffs is expected.

Oats.

There is a good demand for oats this week, and a good deal of interest is being shown in this market. The crop is good and it is generally expected the prices will not be large. Many of the farmers are of another opinion, however, and these are holding their crops for an advance in price. There have been some receipts of new oats, but as a rule the producers are not anxious to get rid of their crops.

Corn.

The corn market in San Francisco is very uninteresting. Very little interest is being shown in the corn crop. A carload of corn came in last week from the east, but this was the first for some time.

Beans.

The bean crop is beginning to come in little by little, and the merchants are preparing to handle a big crop this month. The bean crop south is placed by some at 800,000 bags. The quality of the crop will be excellent if no more rain falls.

Seeds.

The market for seeds is in good shape this week. The eastern houses are buying a little freer than last week. The crop of onion seeds is short, but as a general thing the seed crop is fair. There is no speculating being done in garden seeds and prices are altogether nominal. Quite a little interest is being taken against the present practice of Congress in the free distribution of garden seeds. The seed dealers will petition Congress at the next session to have this free distribution of garden seeds stopped.

Hay.

Arrivals of hay for the week past have been 4,891 tons. This is quite an increase over last week. The Railroad has been helping out a little and arrivals have also been heavy by water. The market shows a tendency toward easing off. Prices have not changed much, but sales drag and the demand is not nearly as active as last week. Orders have been issued by the railroad to accept hay for shipment to San Francisco. Naturally, this has resulted in somewhat of a scramble in the country to ship from every point. Much difficulty, however, is experienced in getting cars, as the equipment at the disposal of hay shippers is far below that which is needed to make much of an impression on the crop waiting for shipment. What the effect will be on the market, if the railroad can bring steady and regular arrivals to San Francisco each day cannot be predicted with any reasonable certainty. Insufficient facilities for handling, at this end of the line, are, of course, a strong factor, and will continue to be so. Most of the hay coming in now is of a better grade, and this, although in heavier receipt, still sells better than the cheaper and poorer grades which are offered. Export demand

is fairly good and there is quite a movement in that direction. Alfalfa hay is in light supply, although about equal to the demand. Straw still continues scarce, with a demand very active.

Wool.

The wool market here continues quiet and uninteresting, owing to the large percentage of defective wool. In Boston good California wool is in request. Good spring California, including both Red Bluff and milled county wools, have been sold, the first variety at 27½ to 28c and the latter at 22 cents. Among the Boston sales of the week were 200,000 pounds of Red Bluff and several hundred thousand pounds of middle county wool.

Hops.

Hop harvesters are busy and the crop is undoubtedly going to be good. Some little excitement is going on in the hop market. The producers have settled in a sort of union fashion on high prices, and some are asking as high as 25c per pound for their crop. Growers in Sonoma county are daily refusing 20c per pound. The hop situation is reported to be even more lively in Oregon and Washington.

Butter.

The receipts of butter this week have been fairly liberal and the better brands of butter are a little easier at 27½c. The demand for the best butter is excellent, but the demand on poorer grades is falling off.

Cheese.

This article is in great demand for the best brands. The poorer grades have very little sale. The price for cheese remains practically unchanged. The cheese market has been exceptionally steady for the past month having practically no variation in that time.

Eggs.

The egg market is strong, notwithstanding fairly heavy receipts. Good California selected eggs show a tendency to advance, notwithstanding the presence of large quantities of Eastern and storage stocks. Receipts from some sections of the interior show the effects of hot weather and have to be sorted and candled, the percentage of culls being very large. Culls are meeting with slow sale, as buyers prefer eastern eggs at the same price.

Poultry.

The poultry business is in much the same condition as last week, with large young stock in good demand and old stock selling at practically nothing. Young hens and roosters are bringing good results. There is very little demand for turkeys except of a young variety, and the price is strictly nominal on all others.

Vegetables.

Vegetables are showing about the same run as last week, with a good supply and a demand of about the same proportion. Tomatoes have advanced a little and receipts have fallen off. There is a good demand for good potatoes, while the poorer grades are dragging. Onions are easy and plentiful. The following are average quotations for the end of the week: Potatoes, Early Rose, 75c to 85c per cental; River White, 75c to \$1.10 per cental; Salinas Burbanks, \$1 to \$1.25 per cental; Sweeties, 3c to 3½c per pound. Silver Skin Onion, 75c to 90c per cental.

Fresh Fruits.

There is a good supply of fruit on hand and the demand is good in nearly every line. Peaches are scarce and prices are fair. Berries are coming in slowly and are usually all sold in the early part of the day. The supply of canteloupes has fallen off considerably and prices have accordingly advanced. The grape crop is reported short and the shortage of wine from the fire in San Francisco is causing the price for grapes to advance at a rapid rate. Growers are holding for as high as \$30 per ton. The wine men declare they will stay out of the business if prices advance further. The prune crop in the Santa Clara valley is now reported to be much less than was expected.

Dried Fruits.

The dried fruit market is as yet comparatively inactive. Some small deliveries of fruit have reached this city, but the receipts are very conservative as yet. Some little buying of pears has been done at 7 to 8¼c, but the price for choice pears is expected to go as high as 9c or over. The yield of peaches is very light this year and the canneries are taking no small part of the crop. The quality is good, however, and a good price will undoubtedly be paid for peaches. Prunes are beginning to come in in small amounts. The crop being smaller than expected, the prune growers of this State are expecting an advance in prices. The raisin crop is still to come in, and interest in the raisin market is not so great as it will be later. The raisin crop will be light this year and prices are expected to be fair. The quality is good, however, and this will help to make up for the shortage in yield.

Citrus Fruits.

Lemon growers are bemoaning the fact that they have sold all their crop. The lemon market has taken a sudden leap and is now at high water mark. Four cents a pound is being paid for fresh fruit picked from the trees. Valencia Oranges are quoted at \$3.50 to \$4 a box.

Nuts.

Reports from the south place the yield for walnuts at 30% greater than last year. The crop for the State is estimated at 840 carloads. Some interest is being taken in almonds, although the situation is practically unchanged and no important developments are expected until the new crop begins to come in.

POULTRY INVESTIGATIONS

For several years it has been a strongly contested question among poultrymen whether mash fed to hens should be moist or dry. Very little experimental work has been done along this line, and the results thus far obtained are not sufficiently marked and uniform to admit of positive conclusions. Within the last year or two another problem has arisen with the introduction of the hopper feeding system on a commercial scale, and very little experimental work has been done along this line as well. As any method of feeding or management which will increase the average egg yield of a flock of hens, even slightly, is of great importance in affecting the profit to be derived from the industry, definite experimental data are highly important.

The Bureau of Animal Industry of the Department of Agriculture is about to begin investigations bearing on these points. Heretofore the work of the Bureau along these lines has been confined to cooperation with the Maine Experiment Station in breeding hens for egg production and with the Rhode Island Experiment Station in turkey breeding. Mr. Rob R. Slocum has now been added to the staff of the Animal Husbandry Office of the Bureau as poultry assistant, and will have charge of the new work. Unfortunately, the lack of a suitable location precludes starting an experimental establishment in the immediate vicinity of Washington, but quarters are being fitted up at the Bureau's quarantine station near Baltimore, where experiments in hog feeding have been in progress for over a year. Although the conditions there are not ideal, the work can be carried on in a fairly suitable manner. The first work to be done will be a study of the moist and dry mash systems and of the use of self-feeding hoppers.

The equipment is necessarily modest because the available funds are not large. A house divided into three pens, each accommodating twenty-five hens, with suitable yards, is to be constructed. This house, together with incubators, brooders, etc., sufficient to raise enough pullets to replace those used in the experiments, will comprise the immediate equipment.

In planning the experiment it seemed feasible to combine the two problems mentioned above, as this could be done by the use of three pens of fowls. The different lots of fowls are to be housed exactly alike and all conditions made equal except the methods of feeding. The fowls in pen No. 1 will receive morning and night a mixture of whole or cracked grains scattered in the litter, and at noon a moistened mash. Those in pen No. 2 will receive morning and night the same grain mixture, fed in the litter exactly as with pen No. 1, and the same mash at noon, except that this mash will be fed dry. The only difference, then, between these two pens will be that pen No. 1 receives the mash moistened, while pen No. 2 receives exactly the same mash dry.

The fowls in pen No. 3 will be fed on exactly the same feed as those in the other pens, but will be fed from two self-feeding hoppers, one containing the grain and the other the mash. This mash will, of course, be dry. The hopper containing the grain will be opened about 4 p. m. in winter and 5 p. m. in summer and will be left open until the next noon. It will then be closed, and the second hopper containing the mash will be opened and left so until the first hopper is again opened late in the afternoon. In this way the hens will have feed before them at all times and can eat as much or as little as they please. A comparison can then be made with pen No. 2, the only difference between the two pens being that pen No. 2 receives its food at stated intervals and in amounts indicated by the appetite of the fowls, while the fowls of pen No. 3 can help themselves at all times.

White Plymouth Rock fowls will be used, not because of any special preference for this variety, but for reasons of convenience. Pullets will be raised from the various pens and the test repeated twice to confirm results and note the effects of the different systems on vitality.

THE IRRIGATOR.

THE VALUE OF A HIGH DUTY OF WATER AND THE MEANS OF OBTAINING IT.

By Professor Samuel Fortier, Irrigation Engineer, in charge Pacific District, Irrigation and Drainage Investigations, Office of Experiment Stations, at the Irrigation Congress at Boise, Idaho.

Amount and Value of Irrigation Water.—The irrigated portions of the United States now use about five million miners' inches of water annually. The cost of this for each miners' inch varies all the way from 50c. to \$150, and would average in the neighborhood of \$5 per miners' inch. This represents a yearly expenditure of \$25,000,000 for water to irrigate land.

Assuming that the area irrigated is 10,000,000 acres, and that the average cost of applying water each irrigation season is \$2.50 per acre, the yearly expenditure for this purpose on all the land irrigated would aggregate an additional \$25,000,000.

Thus it appears that the farmers of the irrigated districts of America are expending annually about \$50,000,000 for water and for the labor and equipment necessary in applying it to cultivated crops. The sole purpose of spending so vast a sum each year is to produce food stuffs for the subsistence of man and the domestic animals under his care. It is, however, no exaggeration to state that in the accomplishment of this purpose fully 70% of the money and labor spent in securing and applying water is wasted.

We believe this fact has been fully demonstrated, that for every 100 miners' inches diverted from natural streams and storage reservoirs, less than 30 miners' inches are utilized by cultivated plants in a beneficial way. This means that out of an expenditure of \$50,000,000 a year, less than \$15,000,000 is put to a beneficial use. How to save a part of the \$35,000,000 worth of water, which is now wasted, is one of the problems connected with this subject of irrigation. If you were to ask me if it were possible to save all of the water which is now wasted and all of the money now used in furnishing and applying it, I would answer—No. It is, however, possible and entirely within the province of feasibility and profitable investment to save a large part of this waste.

Some Reasons for Increasing the Duty.—Many reasons might be advanced in favor of a more economical use of irrigation water. To begin with, there is the question of cost. If it be a fact that nearly three-fourths of the water taken from streams for irrigation purposes is wasted, then a saving of even one-third of this loss would represent an immense gain.

It is likewise true that water is every year more difficult to secure and of higher value. The rapid growth of western cities has multiplied the demand for water for municipal purposes, the development of water privileges for electric transmission lines has utilized the streams for mechanical purposes, and the extension of the irrigated area has made increased drafts on all sources of water supply.

Another reason for insisting upon a higher duty of water in irrigation at the present time is that customs soon crystallize into law. Men who appropriate and use water in slipshod manner for a number of years will lay claim to not only to that portion which they use, but to that larger portion which they waste.

Furthermore, the prosperity and material greatness of Western America is founded upon the water supply, and every gallon that is wasted detracts that much from the possibilities of this region. The State of Montana may serve to illustrate what I mean. Montana occupies the crest of the continent, and, compared with other arid States, is well watered. Its total area of 93,000,000 acres contains some of the finest agricultural lands on this continent. These arable lands would probably exceed 15,000,000 acres in extent, and might reach 20,000,000 acres. Yet the total area that is ever likely to be irrigated from streams, reservoirs and wells, will not exceed, we believe, 6,000,000 acres. On account of the limitations of the water supply, the short period of vegetable growth, and the long distances between many of the irrigated tracts and the nearest rivers, only a small part of the arable land of Montana can ever be irrigated. This estimate of a total of 6,000,000 acres is based on an average duty of water of 2 acre-feet per annum. The average use of water in that State is now over 4 acre-feet, and if no improvements in the use of water are brought about the limit will be reached when 3,000,000 acres are irrigated. This shows what the ultimate difference in one of the Western States will be between a low and high duty. It is the difference between 3,000,000 irrigated acres and 6,000,000 acres. It is the difference between a total yearly revenue from irrigated agriculture of \$45,000,000 and \$90,000,000.

Finally, the excessive use of water on irrigated lands water-logs the soil in low-lying places, brings up alkali, and creates disease. Nearly every irrigated district in the West has its abandoned farms, which have been rendered non-productive by an excessive use of water. Alfalfa fields which were at one time worth \$100 per acre, vineyards which sold readily for \$350 per acre, and orange groves which gave large dividends on a valuation of \$1,000 per acre, may now be purchased for from \$10 to \$30 per acre. The accumulation of seepage waters caused by over-irrigation and leaky ditches, with all its accompanying evils, has already damaged about 10% of the irrigated lands of the West.

The Moisture Requirements of Cultivated Plants.—The thirst of the plant must be satisfied in order to maintain a vigorous growth, but this does not mean a complete saturation of the soil around its roots. Plants require air as well as water, and if other conditions are favorable a comparatively small percentage of moisture in the soil will suffice. Ten pounds of free water in each 100 lb. of soil is ample for most crops. By "free water" is meant the soil moisture which the fibrous roots absorb and which a hot sun is capable of evaporating from the soil. The application of 4 in. of water over the surface of a field on which plants are growing fairly well, furnishes sufficient moisture for 4 ft. of soil, providing it is evenly distributed without loss. Most of the troubles of the irrigator arise from his not being able to either apply or distribute this water evenly and without loss. Good soils and sub-soils are never water-tight. If they were impervious to the downward passage of water they would not produce crops. The irrigator is thus obliged to spread water over a more or less porous mass which may permit a large part to pass through it. If he attempts to keep the water for any length of time near the surface, it will speedily pass off as vapor into the atmosphere. His task, therefore, approaches in difficulties that of keeping water in a vessel with both ends open. On the one side is a layer of warm, dry air, ever ready to suck up moisture; on the other, is a porous sub-soil through which water is drawn by force of gravity. To guard against these and numerous other losses of irrigation water, the Western farmer must possess more accurate knowledge of the frequency and extent of the chief sources of waste. It is not enough, for example, to spread a certain volume of water over a field. He should endeavor to find out how much of this volume passes through the sub-soil and collects, it may be, in his neighbor's low-lying tract, where the alkali salts are rising to the surface, and how much of it passes off into the atmosphere from the surface of the soil during the interval between irrigations.

The Chief Sources of Water Waste.—By beginning with the losses which take place on the irrigated field, and tracing other losses back through a network of ditches and canals to the source of supply, I hope to convince you that for every 4 gal. taken from the streams, little more than 1 gal. subserves a useful purpose in nourishing crops.

You will admit, I believe, that water is more skillfully applied and more economically used in Southern California than in any other portion of the West, and perhaps of the world. The office of Experiment Stations, at Washington, is now printing some results of experiments in evaporation losses conducted last year in the vicinity of Riverside, California. We selected for our investigations the lands under the Gage canal, which irrigated last year 8,500 acres of orange and lemon orchards, and we chose for our experiments some of the most skillfully irrigated tracts in that large area.

I might say, in passing, that the average duty of water on the orchards under the Gage canal for the past seven years, has been 25 in., and the irrigation water combined with the rainfall has averaged 33½ in. This means that these orange and lemon trees have been kept growing continuously the year round on an amount of water less than the rainfall of Iowa.

Regarding the evaporation losses, it was shown that a heavily irrigated orchard soil lost by evaporation at the rate of over 4 in. per week; that a soil that was fairly moist on the surface and in good condition for crop growth lost about 1 in. per week, while a dry soil lost only one-fourth of an inch per week. The usual custom in this part of California is to water only once in every four or six weeks; to apply the water in deep furrows; and to cultivate thoroughly after each watering to depths of from 6 to 10 in. In this way, much of the water which would otherwise be lost by evaporation, is saved. This, however, is not the practice in many parts of California, and more particularly in many of the Mountain States. Cultivated crops are frequently irrigated and then left uncultivated until the next irrigation water is applied. Summing up this question of evaporation losses in irrigation, it is safe to assert that about one-half of the water which is ap-

plied to fields, escapes into the atmosphere from the surface of the soil without in any way benefiting the plant. It is rather a positive injury, in that, during the process, it forms a crust on the surface which prevents air from getting to the roots and tends to draw up moisture from beneath. Some of the means that may be employed to lessen this great waste will be referred to later.

In irrigating orchards under the Gage canal, another source of waste was the percolation of water into the porous sub-soil, and its subsequent passage to lower levels. In one orchard tract of 10 acres the part of one irrigation lost by percolation was 28%, and by evaporation from the surface of the soil, 47%, or 75% in all. This would leave only 25% to nourish the orange trees.

The great waste of water caused by uneven and rough surfaces and careless application are too common to call for any extended remarks. Then, too, some irrigators are so generous that they have always water to spare. They give the county roads a good soaking every time they irrigate the bordering fields. One can't find fault with the irrigator for working only 10 hours a day, but, unfortunately, while he is sleeping or resting, the water is usually running to waste. Lack of constant attention may, therefore, be reckoned as another cause of much waste.

Next to the loss by evaporation, and frequently exceeding it, is the loss in transmission. In such channels as are used at the present time in the West for the conveyance of water, one has usually to discount the flow at the head 33%. As a rule, the cultivated fields do not receive more than 66 gal. out of every 100 gal. which pass through the upper headgates.

In all these losses caused by evaporation, deep percolation, careless application and leaky ditches, it is not surprising that only a small part of the water diverted from the natural streams finds its way to the fibrous rootlets of plants and is drawn up by them through the stem by the foliage.

Ways and Means of Increasing the Duty.—The Irrigation Department of the University of California, working in conjunction with the Office of Experiment Stations, is now carrying on experiments on the cheapest, and, at the same time, the most efficient linings for canals. The tests are made in 12 separate ditches. Various kinds of cement concrete, cement plaster, crude oil, asphaltum, puddled clay and earth are used. In the course of a few months the results will be ready to be published.

This subject is attracting a great deal of attention at the present time. The increasing scarcity and value of water are compelling canal companies to take measures to stop some of the leaks. The losses due to seepage in new canals, in particular, are often enormously high. The other day a superintendent of a canal in the Sacramento Valley turned in 125 cubic ft. per second of water and the volume available for irrigation was only 40 cubic ft. Fourteen miles of ditch had absorbed the balance. Another California canal superintendent, in writing to our office, stated that he had turned in 55 cubic ft. through the headgate of a new lateral and only had a stream of 5 cubic ft. at the lower end. He wished to know what kind of lining we would recommend. These, it is true, are exceptional cases, but the large number of seepage measurements which have been made in the West during the past seven years under the supervision of Elwood Mead, of Washington, show quite conclusively the extent of this loss. It is on these more general results that I have based my estimate of this loss in conveying water from the source to the irrigated field. The remedy for these high transmission losses is more impervious channels. In improvements of this character, the first step to take is to ascertain the extent of the loss of water and its value, and then to design and carry out the improvements in such a way that the investment will prove profitable. The uncertainty as to the effectiveness of certain canal linings induced us to conduct the series of experiments previously referred to, the results of which, it is hoped, will be a guide to good practice.

I believe the duty of water might be considerably increased by measuring each water user's share. The usual practice of contracting for a nominal amount of water per acre for the season, and permitting either the user or the water master to guess at the amount delivered is, to say the least, a slipshod way of selling water, and one which puts a premium on waste. Irrigation water in Southern California is now delivered for the most part in measured volumes at stated intervals. No guess work would be tolerated. Last July one of the largest canals in the San Joaquin Valley changed their water contracts from the old form, which allowed a specified amount per acre for the season, without measurement, to one which called for a measured volume per acre. Another irrigation district in California, which used over 600 cubic ft. per second last month, is contemplating measuring each man's share

next year, not so much to save water as to prevent excessive use, and the removal of the surplus through drainage canals and pumping plants.

In the State of Washington, prior to 1903, the Sunnyside canal could not furnish water for more than 25,000 acres. From 1903 to the present a complete system of weirs has been in operation and each man's share is measured. Last year the same canal, carrying the same volume of water that it did in 1903, watered 38,000 acres.

An early and equitable settlement of claims to water is another means of increasing the duty of water. Existing claims to water may be grouped under three heads: 1. Those which have been adjudicated in a satisfactory manner; 2. Those which have been decreed excessive amounts; and, 3. Those which have not been judicially settled, or even defined. Now, it will be generally conceded, I believe, that the first group contains fewer claims than the second, and that the third contains more than the first and second combined. A decree which empowers a water user to divert more water than he can economically use could not prove otherwise than wasteful of water. So long, also, as claims remain unsettled, so long will claimants make a pretense of using more than they really need in order to substantiate their claims for an ample supply.

There are several other means of obtaining a high duty of water, whose importance is so generally recognized that I shall do no more than to name them. Some of these are: The skillful application of water, thorough preparation of the soil, well made ditches, and an efficient system of distributing and delivering of the amount of water to which each user is entitled.

In conclusion, I can but refer briefly to some of the practical methods that may be employed to check the excessive evaporation losses from soil surfaces. The results of our experiments thus far seem to show that about one-half of the water which is spread over the fields in irrigation, passes off into the air without benefiting the plants.

The greater part of this loss occurs during the time when water is applied and for a day or two afterwards. On orchard soils in warm weather the evaporation from the soil may reach 70 tons per acre in 24 hours. Now it has been shown that the cultivation of the surface to a depth of 6 in. prevents more than one-half of the subsequent loss.

The use of well pulverized soil mulches is another means of checking evaporation. The tests conducted in Southern California show that a 10-in. layer of dry granular soil gives complete protection, that an 8-in. layer will save five-sixths of the moisture beneath, and a 4-in. layer two-thirds of the moisture.

Wherever it is practical and for deep-rooted plants, deep irrigation should be practiced, since it retards evaporation. On a citrus orchard near Riverside, in August of 1905, for every 137 gal. which were evaporated from surface irrigation, only 98 gal. were evaporated from furrows 9 in. deep.

Some crops cannot be cultivated during the period of growth, but even in the case of these, much can be done to check evaporation from the surface. One means is to irrigate less often and apply larger quantities. In following this practice the bulk of the water will be placed beyond the reach of the agencies which vaporize moisture. Another means which is frequently employed is to apply the water after sunset. The main factor in evaporation is temperature. Warm water at 89° F. loses by evaporation about seven times more than cold water at 54°. The difference between day and night temperatures in the West is usually 25°, hence the advantage of applying water after sunset.

THE PRESIDENT AND THE RECLAMATION SERVICE.

The following message from President Roosevelt was read at the Fourteenth Irrigation Congress, held at Boise, Idaho.

To the Officers and Members of the Irrigation Congress: Operations under the Reclamation Act, which I signed on June 17, 1902, have been carried on energetically during the four years since that date. The Reclamation Service, consisting of over 400 skilled engineers and experts in various lines, has been organized, and it is now handling the work with rapidity and effectiveness. Construction is already well advanced on 23 great enterprises in the arid States and Territories. Over 1,000,000 acres of land have been laid out for irrigation, and of this 200,000 acres are now under ditch; 800 miles of canals and ditches, and 30,000 ft. of tunnel have been completed; and 16,000,000 cubic yards of earth and 3,000,000 cubic yards of rock have been moved. Detailed topographic surveys have been extended over 10,000 square miles of country, within which the reclamation work is located, and 20,000 miles of level lines have been run. Three hundred

buildings, including offices and sleeping quarters for workmen, have been erected by the Reclamation Service, and about an equal number by the contractors. Over 10,000 men and about 5,000 horses are at present employed.

The period of general surveys and examinations for projects is past. Effort is now concentrated in getting the water upon a sufficient area of irrigable land in each project to put it on a revenue-producing basis. To bring all the projects to this point will require upwards of \$40,000,000, which amount, it is estimated, will be available from the receipts from the disposal of public lands for the years 1901-1908.

We may well congratulate ourselves upon the rapid progress already made, and rejoice that the infancy of the work has been safely passed. But we must not forget that there are dangers and difficulties still ahead, and that only unbroken vigilance, efficiency, integrity, and good sense will suffice to prevent disaster. There is now no question as to where the work shall be done, how it shall be done, or the precise way in which the expenditures shall be made. All that is settled. There remains, however, the critical question of how best to utilize the reclaimed lands by putting them into the hands of actual cultivators and homemakers, who will return the original outlay in annual installments paid back into the reclamation fund; the question of seeing that the lands are used for homes, and not for purposes of speculation, or for the building up of large fortunes.

The question is by no means simple. It is easy to make plans and spend money. During the time when the Government is making a great investment like this, the men in charge are praised and the rapid progress is commended. But when the time comes for the Government to demand the refund of the investment under the terms of the law, then the law itself will be put to the test, and the quality of its administration will appear.

The pressing danger just now springs from the desire of nearly every man to get and hold as much land as he can, whether he can handle it profitably or not, and whether or not it is for the interest of the community that he should have it. The prosperity of the present irrigated areas came from the subdivision of the land and the consequent intensive cultivation. With an adequate supply of water, a farm of five acres in some parts of the arid West, or of 40 acres elsewhere, is as large as may be successfully tilled by one family. When, therefore, a man attempts to hold 160 acres of land completely irrigated by Government work, he is preventing others from acquiring a home, and is actually keeping down the population of the State.

Speculation in lands reclaimed by the Government must be checked at whatever cost. The object of the Reclamation Act is not to make money, but to make homes. Therefore, the requirement of the Reclamation Act that the size of the farm unit shall be limited in each region to the area which will comfortably support one family must be enforced in letter and in spirit. This does not mean that the farm unit shall be sufficient for the present family, with its future grown children and grandchildren, but rather during the 10 years of payment the area assigned for each family shall be sufficient to support it. When once the farms have been fully tilled by freeholders, little danger of land monopoly will remain.

This great meeting of practical irrigators should give particular attention to this problem and others of the same kind. You should, and I doubt not that you will, give your effectual support to the officers of the Government in making the Reclamation law successful in all respects, and particularly in getting back the original investment, so that the money may be used again and again in the completion of other projects, and thus in the general extension of prosperity in the West. Until it has been proved that this great investment of \$40,000,000 in irrigation made by the Government will be returning to the treasury, it is useless to expect that the people of the country will consider direct appropriations for the work. Let us give the Reclamation Service a chance to utilize the present investment a second time before discussing such increase. I look forward with great confidence to the result.

By the side of the Reclamation Service there has grown up another service of not less interest and value to you of the West. This is the Forest Service, which was created when the charge of the forest reserves was transferred from the Interior Department to the Department of Agriculture. The forest policy of the Administration, which the Forest Service is engaged in carrying out, is based, as I have often said, on the vigorous purpose to make every resource of the forest reserves contribute in the highest degree to the perman-

ent prosperity of the people who depend upon them. If ever the time should come when the western forests are destroyed, there will disappear with them the prosperity of the stockman, the miner, the lumberman, and the railroads, and, most important of all, the small ranchman who cultivates his own land. I know that you are with me in the intention to preserve the timber, the water, and the grass by using them fully, but wisely and conservatively. We propose to do this through the freest and most cordial cooperation between the Government and every man who is in sympathy with this policy, the wisdom of which no man who knows the facts can for a moment doubt.

It is now less than two years since the Forest Service was established. It had a great task before it—to create or reorganize the Service on a hundred forest reserves and to ascertain and meet the very different local conditions and local needs all over the West. The task is not finished, and of course it could not have been finished in so short a time. But the work has been carried forward with energy and intelligence, and enough has been done to show how our forest policy is worked out.

The result of first importance to you as irrigators is this: The Forest Service has proved that forest fires can be controlled, by controlling them. Only one-tenth of 1 per cent of the area of the forest reserves was burned over in 1905. This achievement was due both to the Forest Service and to the effective assistance of settlers and others in and near the reserves. Everything the Government has ever spent upon its forest work is a small price to pay for the knowledge that the streams which make your prosperity can be and are being freed from the ever-present threat of forest fires.

The long-standing and formerly bitter differences between the stockmen and forest officers are nearly all settled. Those which remain are in process of settlement. Hearty cooperation exists almost everywhere between the officers of the Forest Service and the local association of stockmen, who are appointing advisory committees which are systematically consulted by the Forest Service on all questions in which they are concerned. This most satisfactory condition of mutual help will be as welcome to you as it is to the Administration and to the stockmen. To the stockmen it means more, and more certain, grass; to you, because of the better protection and wiser use of the range, it means steadier stream-flow and more water.

The sales of forest-reserve timber to settlers, miners, lumbermen and other users are increasing very rapidly, and in that way also the reserves are successfully meeting a growing need.

Lands in the forest reserves that are more valuable for agriculture than for forest purposes are being opened to settlement and entry as fast as their agricultural character can be ascertained. There is therefore no longer excuse for saying that the reserves retard the legitimate settlement and development of the country. On the contrary, they promote and sustain that development, and they will do so in no way more powerfully than through their direct contributions to the schools and roads. Ten per cent of all the money received from the forest reserves goes to the States for the use of the counties in which the reserves lie, to be used for schools and roads. The amount of this contribution is nearly \$70,000 for the first year. It will grow steadily larger, and will form a certain and permanent source of income, which would not have been the case with the taxes whose place it takes.

Finally, a body of intelligent, practical, well-trained men, citizens of the West, is being built up—men in whose hands the public interests, including your own, are and will be safe.

All these results are good; but they have not been achieved by the Forest Service alone. On the contrary, they represent also the needs and suggestions of the people of the whole West. They embody constant changes and adjustments to meet these suggestions and needs. The forest policy of the Government in the West has now become what the West desired it to be. It is a National policy—wider than the boundaries of any State, and larger than the interests of any single industry. Of course it can not give any set of men exactly what they would choose. Undoubtedly the irrigator would often like to have less stock on his watersheds, while the stockman wants more. The lumberman would like to cut more lumber, the settler and the miner would often like him to cut less. The county authorities want to see more money coming in for schools and roads, while the lumberman and stockman object to the rise in value of timber and grass. But the interests of the people as a whole are, I repeat, safe in the hands of the Forest Service.

By keeping the public forests in the public hands our forest policy substitutes the good of the whole people for the profits of the privileged few. With that result

(Continued to Page 152.)

THE FIELD.

TRACTION ENGINES IN CALIFORNIA FARMING.

Mr. Waldon Fawcett writes for the Farm and Fireside a comprehensive article on the use of tractors in farming, which has so many references to California that it can be fairly looked upon as a sketch of local practice, and therefore unusually interesting:

The traction engine has long had a place in the list of mechanical helpers of the farmer, but of late this type of iron horse has been demonstrating its usefulness in a wide range of new duties. From the single task of hauling thrashing outfits its work has expanded, until now we find the tractable tractor lending the greatest assistance to the tiller of the soil, in clearing his land and in plowing and harrowing, as well as in harvest operations. Moreover, the traction engine has proven a godsend on the great wheat farms of the West, where the grain simply could not be handled by the old-fashioned methods, principally because of the impossibility of securing sufficient harvest hands.

The new responsibilities which have been put upon the tractors have, naturally, resulted in a great improvement of the traction engines themselves. The new traction engines are not radically different from the old-fashioned style, with which our readers have been familiar for years, save that they are larger and obviously more powerful. The up-to-date traction engines are found in several different designs, embodying the ideas of different inventors.

For instance, one very well-known type of twentieth century tractor has a horizontal boiler, whereas another style has a boiler that is a modification of the vertical and horizontal combined. The boilers of these powerful tractors usually have a working pressure of 165 lb., and they are fitted for burning coal, wood, or oil fuel, the latter being extensively used in California and Texas, where these outfits find one of their greatest fields of usefulness.

The approved plan appears to be to fit the tractor with a plain single-cylinder American-balance valve engine, but a double engine is used in some instances. The steel frame of the tractor, well braced to the boiler, and fastened solid to it, is made very rigid, for the flexibility of the two main wheels takes practically all the strain off the frame and boiler. The traction engine, it should be explained, is of the three-wheel type. The front wheel is hung in a circle, guided by friction rollers, and is operated by power. It is very easily handled, and the main wheels are placed so far forward that in working hard there is practically no weight on the front wheel. In such a case the steering is done almost entirely with the frictions. This brings almost the entire weight of the engine on the drive-wheels, and enables the tractor to haul what is, considering the weight of the machine, an enormous load. However, the traction engine is under perfect control at all times, even when working the hardest, pulling a load on a curved up-grade.

In many of the larger traction engines in farm service, the height of the drive-wheels is eight feet, and the tire is from 24 to 26 in. wide and three-quarters of an inch thick, being formed from the best open-hearth steel. The spokes are one inch in diameter and made of the best American refined iron. The front or steering wheel of such a tractor is 5 ft. high, and with a tire 14 in. wide. However, some very powerful traction engines have the front wheel 3 ft. 4 in. high, with a 12 in. tire, and the main wheels 4½ ft. high, with tires 16 in. in width. In any event the wheels act as a road-roller when running over a highway.

Of course, it will be understood that the tire widths mentioned above are those designed for farm freighting and other similar tasks. Traction engines for plowing, harvesting, etc., have tires varying in width from 2 to 6 ft., according to the kind of soil they must travel over, and the work the engine is to do. In the case of the smaller-size wheels, an extension wheel may be fastened on the side of the main wheel when the engine is to be used on soft ground. However, the common practice is to use main wheels 42 in. wide for harvesting, and add auxiliary wheels of the same size for plowing. The tires carry sufficient grousers to give them a good "bite" on the ground, and provision is made for putting on angle-iron grousers when the engine is to be used on very soft ground.

A traction engine of the type described does not require as much fuel as might be imagined. The hourly consumption ranges from one-eighth to one-sixth of a cord of wood, 200 to 225 lb. of coal, or 25 to 28 gal. of oil. The water-carrying capacity of the tank of the engine is from 400 to 700 gal., and where the service in which the tractor is engaged will permit it, extra tanks holding 800 gal. additional, may be carried on

trucks. The water consumption is from 2,500 to 3,000 gal. of water per day.

Farm engines of this class are coming into extensive use, not only in different sections of the United States, but in all parts of the world where agricultural operations are carried on on an extensive scale. In this country the tractors have been most extensively employed on the great farms of the West. Indeed, the type originated in California, and the great manufacturing center for the production of these mechanical farmers is Stockton, California, the home of inventor Holt.

The value of the tractor in harvesting has long been recognized, but farmers who cultivate large tracts are only just now coming to realize the usefulness of these powerful aids in plowing, seeding, and kindred operations. However, most convincing evidence of the possibilities of the field is afforded by the sight of a wide-wheeled farm engine drawing five gangs of six 10-in. plows, with seeder attachment, and harrows behind, and plowing, seeding and harrowing a strip 25 ft. wide. Such an outfit finishes from 50 to 80 acres per day, and the tractor can be kept in almost continuous operation day and night, if desired. The crew consists of four men, namely, an engineer, fireman, plow-tender and water-buck. Four horses are also needed.

At the Fair ranch, at Grafton, Yolo county, California, some interesting records have been made by the use of farm engines in plowing and kindred operations. Here four disk plows of five disks each are used, making 20 furrows, and in ordinary plowing an average of more than 40 acres per day was maintained for a long interval, whereas the area covered was frequently far in excess of the figure given. In harrowing the engine pulled five 18-ft. harrows, covering 90 ft.

On this ranch the cost of operating the outfit above mentioned is set down as follows: Engineer, \$3; fireman, \$1.50; water-hauler, \$1.25; oil-hauler, \$1.25; six horses at 75c. per span, \$2.25; feed for horses at 25c. each, \$1.50; board for men, \$2; fuel oil for engine, \$5; lubricating oil for engine, plows, etc., \$1; making a total of \$18.75 per day. Under the old plan plowing was done on the farm, with eight mule teams, each of which involved the following expense: Eight mules at 75c. per span, \$3; feed at 25c. each, \$2; driver, \$1.25; board, 50c.; making a total of \$6.75. Such an outfit was considered to be doing good work if it plowed five acres per day, or less than one-eighth the work of the present-day farm-engine outfit.

At the 8,000-acre farm of J. Thomas Kerr, in the Perris valley, Riverside county, California, a farm engine is employed to pull 55 plows, taking a swath 41 ft. wide at a depth of 4 or 5 in. The outfit consumes less than three gallons of fuel oil per acre plowed. The plows are operated at a speed of about three miles per hour. On this farm a plowing record of 110 acres per day has been made repeatedly, and on one occasion 75 acres were plowed in 4 hours and 40 minutes. To do this, however, the machine was not slowed down nor stopped during the run, and the field was five miles around, giving long straightaway runs, and comparatively few turns.

The main use of the farm engines of this character is, however, in harvesting operations. With such a steam outfit the grain is cut, thrashed and cleaned without the straw passing through the hands of a single man. With the aid of a power harvester a force of eight men will cut, thrash and clean the grain, place it in sacks and pile the sacks in lots of ten in the field at an average of 1250 sacks of wheat per day. If headers and thrashers were employed forty men and an equal number of horses would be required to accomplish the work performed by the single tractor outfit.

A representative steam harvester with a twenty-two-foot header and twelve-foot extension, take a 34-foot swath, cutting, thrashing, cleaning, recleaning and sacking the grain, and will cover from fifty to one hundred and fifty acres per day. Such an outfit can be used on reasonably level land wherever climatic conditions are favorable. Only eight men are required to operate the outfit, namely, an engineer, fireman, water-buck, separator-man, header, tender, sack-filler and two sack-sewers. Four horses are needed for hauling water. The harvester in a standard steam outfit, such as is described, has a forty-inch cylinder, a fifty-inch separator, and a fifty-inch cleaner, with, as above mentioned, a twenty-two-foot header with twelve-foot extension.

For use on more hilly ground there is a smaller-size outfit, of the same general type, which has a capacity of from forty to one hundred acres per day.

It is not too much to say that the capacity of these steam combined harvesters is almost beyond the comprehension of the average farmer unacquainted with this stances, under all sorts of conditions, they will harvest—stances, under all sorts of conditions, they will harvest—which means cutting, thrashing, recleaning and sack-

ing—an average of 1,000 to 1,200 sacks, or from seventy-five to one hundred and twenty-five acres of grain in one day, at an expense of not to exceed thirty to fifty cents per acre. Mr. John Hoffman, a prominent farmer of Walla Walla, Washington, recently declared that with the aid of a tractor harvester he this year handled his entire crop of something over two thousand acres at a cost of about one half of what he had formerly paid for performing the same amount of work with headers and thrashers.

Moreover, the steam harvester can handle grain in almost any condition, whether it is standing, lodged, tangled or overgrown with weeds, saving the grain satisfactorily. Then, too, the performances of these machines in harvesting on soft ground have been little short of miraculous. A steam harvester of approved pattern costs \$1,700 or more, and such a machine is seldom purchased by a farmer for his own use unless he has one thousand acres or more under cultivation. However, many men have purchased tractor outfits in order to make a business of cutting grain on contract for farmers. Men such as D. J. Nebergall, of Pendleton, Oregon, have cleared from \$2,900 to \$3,500 per year by such operations, and it is worthy of note in passing that this Oregon operator on one occasion thrashed 1,720 sacks of wheat in a day.

No mention of tractors in the rural field would be complete without reference to the use of the engines in logging and clearing land and in freighting. In many parts of the West there are rich farms located some distance (perhaps fifty or sixty miles) from a railroad, the products of which form too great a bulk in the aggregate to be handled easily by the six or eight horse freight teams, yet are not large enough to justify the building of a branch railroad. In this field the traction engines which will do heavy hauling, up to say one hundred tons per day, for less than half of what it costs to do the same work with horses, are coming into extensive use. The road engines, so called, are almost identical with the farm engines, save that most of the parts are made stronger.

The average engine of this type will haul a load of from forty to sixty tons, depending on the character of the road, at a speed of from two to three miles per hour, loaded, and three to four miles per hour, empty, ascending with a full load grades up to ten per cent. In logging or clearing land the tractors travel through the forests without having the roads previously prepared, if only the trees are far enough apart to allow them to pass. On one occasion an engine hauled fifteen thousand feet of logs on two trucks down a seventeen-per cent grade, the route being over ground from which the underbrush had not been removed.

For freighting there are provided three or four wheel trucks, each of which will carry twelve tons or more. A good-sized traction engine will haul a train of four or five of these trucks, fully loaded, and inasmuch as each truck is fitted with an automatic brake operated by the engineer, the outfit is under perfect control on any kind of a hill. The wheels of the trucks are low, so that loads can be taken on or off quickly.

As has been said, these tractors in the form of road and farm engines constitute another Yankee invention that is coming into extensive use in all quarters of the globe. For instance, tractor freighting outfits are in use transporting coffee from the plantations of Nicaragua, Central America, to the seacoast. Numbers of the sixty-horse-power engines are employed in plowing in South Africa, and steam harvesters from American workshops are thrashing grain in Spain and the Argentine Republic.

The President and the Regulation Service.

(Continued from Page 151.)

none will quarrel except the men who are losing the chance of personal profit at the public expense.

Our western forest policy is based upon meeting the wishes of the best public sentiment of the whole West. It proposes to create new reserves wherever forest lands still vacant are found in the public domain, and to give the reserves already made, the highest possible usefulness to all the people. So far our promises to the people in regard to it have all been made good; and I have faith that this policy will be carried to successful completion, because I believe that the people of the West are behind it.

THEODORE ROOSEVELT.

Washington, D. C., August 28, 1906.

THE DAIRY.

ABOUT GOAT DAIRYING.

There has been some effort to exalt the goat along the line of commercial dairying, and it is well to have such a conservative and moderate view as Mr. H. S. Holmes Pegler has prepared for the Womans' Agricultural and Horticultural Union of London, England. He writes:

There are many ladies amongst the members of the British Goat Society, who take a special and personal interest in their goats, and it would certainly be an advantage to the goat-keeping community if this interest amongst the fair sex could be extended. With those I refer to, however, the animals are kept more as a pleasurable hobby than as a means of income, and I judge that those for whose benefit these lines are inscribed, have the latter object in view rather than the former, I consider it my bounden duty before proceeding further with my subject, to warn them that, so far as my experience goes, and it agrees with that of others in this respect, there is no fortune to be made out of goats in this country under present conditions. I am careful to say this, because a year or so ago, some articles appeared from a lady's pen in a well-known paper devoted to rural subjects, which were so highly colored that they led people to believe exactly the reverse of what I have just stated, and I was consequently inundated with letters from people here and in the colonies, desiring to know how to retrieve their fallen fortunes, or extend their slender incomes in the simple, and at the same time, profitable manner they were led to expect from what they had read. Such articles do far more harm than good, and they are generally written by persons who have had no personal experience, and who gather their information at second or third hand, from all sources, and by the help of a brilliant imagination dish it up for the benefit of their readers in so attractive and convincing a manner that the latter are completely dazzled and lose their heads over it. I do not wish, on the other hand, to convey the impression that there is no profit to be made out of keeping a few goats, all I desire is that people may not be deceived by such writings as I have mentioned, and suppose that because one or two goats

pay, goat farming carried out on a commercial scale is likely to be a success. It is much the same with goats as with fowls. We all know that a few fowls, kept to eat up the scraps of a household, where no expense for rent and wages is incurred, give a handsome return under intelligent management, but that a regular poultry farm is often a dead failure. With goats it is worse, because there is no commercial demand for goat's milk and goat's flesh as there is for eggs and poultry, and although one can produce profitably the quantity of milk consumed in a household, it is quite another thing when one possesses a herd of goats and has to find a means of disposing of the surplus milk for which no customers can be obtained. What I always advocated, and still advocate in regard to goat keeping, is that when a family residing in the country have a fair sized garden, with or without—but preferably with—a paddock, or adjoining a common, or other waste land on which a goat or two can be turned out to graze (in summer), these animals can be kept to great advantage and with profit. I have kept goat, pigs and poultry, and I find from experience that for the amateur the question of profit is governed in each case by the same conditions, viz., so long as they are maintained chiefly on waste material from the house and garden, and no more animals are kept than can be utilized for domestic purposes, they are profitable, but as soon as you have to buy the greater part of their food and have to depend on the open market to recoup your expenses for food and wages, even if you pay nothing extra for rent, it requires very exceptionable management and cleverness to make anything like a profit from them. Goats have a special advantage in the matter of domestic economy, in that milk of some kind is practically a necessity in a household, and goat's milk is not only a necessity, but a luxury. No one who has once been accustomed to the creamy quality of goat's milk can afterwards descend to watery cow's milk again without regret. It goes twice as far for household purposes; and for nursing children, and especially infants, there is nothing to be compared to it after their mother's milk. This alone is an immense advantage and distinct economy, for every parent knows

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the expense that is incurred in doctors and nurses when children are constantly ill through being unable to digest their food, to say nothing of the sleepless nights for the mother, the worry and trouble. It is true that in these days of patent foods for children, these troubles are not so bad as they were 40 or 50 years ago, when "pap" and certain biscuits were in vogue, but, after all, there is nothing like milk, and milk alone, with which to rear infants, and when the natural fount runs dry, goat's milk is superior to all other milk. In a short paper of this kind, and especially where I have felt compelled to devote so much of it to start my readers on a sound basis, and to dispel, as far as possible, the misconceptions on the subject that have arisen in the public mind from the cause stated, it is impossible to go into details of management and to advise as to what goats to procure, and so forth. I can only conclude by saying that goat-keeping in a private way is a very suitable occupation for ladies who are fond of animals; the goat can be made a great pet of, is a clean, sweet-smelling creature (it is only the male that is otherwise), very intelligent and easily milked after a little practice.

"BANK NOTE BUTTER."

This is the title that is now given to certain butter being manufactured in Hol-

land, according to the Farmers' Review. It does not mean a butter made by any particular process, but a butter that has received the government stamp as coming from a factory under its control, and from which the butter is warranted by the government to be pure and of high quality. The government of Holland has established certain rigid rules for creameries, but no creamery is forced to accept these rules. Those that do so come under government supervision and are rigorously inspected. No factory is accepted that makes any form of process butter or oleomargarine. The advantage to the creamery is that it receives the use of a government stamp that is very much like a bank note. In fact, these stamps are printed by a banking institution and bear consecutive numbers. They are placed on the butter by a process that makes it impossible to remove them without destroying them. This is for the purpose of preventing their fraudulent use on butter not from the inspected factories. If this were not done, it is certain that these labels would be used over and over, for the government could not protect them after they had passed beyond the boundaries of Holland. The whole movement is a great step in advance, for it is a most effective way of putting a premium on first-class butter and discouraging the use of the other kind.

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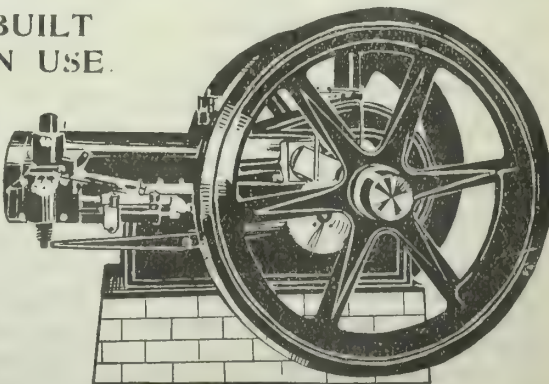
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THE COWPUNCHER'S ELEGY.

I've ridden nigh a thousand leagues upon
two bands of steel,
And it takes a grizzled Westerner to
know just how I feel;
The ranches dot the strongholds of the
old time saddle men,
And the glory of the cattle days can
ne'er come back again.

O, the creak of saddle leather—
O, the sting of upland weather,
When the cowmen roamed the foothills
and drove in ten thousand steers;
Through the years, back in the dream-
ing,

I can see the campfires gleaming,
And the lowing of the night herd sounds,
all faintly, in my ears.

There's a checker-board of fences on the
vast and windswept range,
And the haystacks and the windmills
make the landscape new and
strange;

And the plains are full of farmers with
their harrows and their plows;
On the roadside loiter kidlets who are
"driving home the cows!"

O, the quickly faded glory
Of the cowboy's brief, brief story!
How the old range beckons vainly in the
sunshine and the rain.

O, the reek of roundup battle,
And the thund'ring hoofs of cattle—
But why dream a useless day dream
that can only give one pain?

Where have gone those trails historic
where the herders sought the mart?
Where have gone the saucy cowtowns
where the gun man played his part?
Where has gone the Cattle Kingdom,
with its armed heroic strife—
Each has vanished like a bubble that has
lived its little life.

O, the spurs we set a-jingling,
And the blood that went a-tingling
When we rode forth in the morning,
chaps clad knights in cavalcade;
And the mem'ries that come trooping,
And the spirits, sad and drooping,
When the cowman, looks about him, at
the havoc Time has made.

TAKEN BY STORM.

"I do not believe it is love," said she.
"If it is not love, what is it?"
"Oh, sympathy — attraction — perhaps
you mesmerize me—or I mesmerize you
—who knows?"

"I do. I love you."
"Three days ago you did not know me."
"The plant can spring in a night."
"But it does not always come to flower."
"In this case it is flowering already."
As his eyes met hers they smiled, and
his broad shoulders took a positive set.
She looked at him disdainfully—this
big, handsome, brainy man.

"But a few hours and we shall have
forgotten one another," she remarked.
"Don't think that. I tell you that I
love you. And you—why will you not
acknowledge—the truth?"

His eyes were tender, and, as if com-
pelled, she answered:

"What can I acknowledge? How do I
know that this—"

She hesitated.

"This is love?" he concluded.

A mighty green wave capped with foam
thundered by, almost splitting over the
deck.

"Let me assist you out of the sea-
dust," said the sailor.

The girl laughed.

"Go to your watch," said she; "I can
assist myself."

Miss Nolan had enjoyed the trip up
the coast, starting at Portsmouth, stop-
ping at Plymouth, and now on to Glas-
gow. Life at sea, even at a season when

most women are glad to be safe on land,
had a fascination for this girl, bred
among thinkers and scholars, cultivated
women and professional men. A man
who was all action was an interesting
study to her. That was how she put it
to herself when her ears inclined to the
first officer's impulsive wooing. She did
not take him seriously then. She had read
about sailors and had theories concern-
ing them. The second day out she wrote
in her diary:

"A sailor's life is so filled with perils
and hardships that I can hardly blame
him if he fills up his breathing spaces
with whatever sport comes his way—
even if that sport sometimes means play-
ing at love. Any other man I should de-
spise for making a jest of such a serious
matter, but, considering all things, I think
Jack can be forgiven for having a sweet-
heart in every port."

Miss Nolan, like many an inexperienced
girl, prided herself upon being liberal
and broad-minded.

The fourth day her diary recorded:

"I believe he thinks he is in love with
me, but that's absurd. How can he pos-
sibly care for me when he does not
know? He has the audacity, also, to tell
me that he is sure that I love him. Why,
Dr. Gibson, who, father says, is both
morally and intellectually one of the fin-
est men on earth, and who has been pay-
ing me attentions for two years, would
not presume to hint at such a thing. I
think I will marry Dr. Gibson, after all.
He has such good, kind eyes. They never
make me feel—uncomfortable."

"I wonder why I am so attracted to
him—this sailor man? Even before we
had spoken to one another, before the
vessel left port, when he was superintend-
ing the stowing of the hold, I was drawn
to watch him and listen to his masterful
voice. I never saw a man work like a
king before. How the men under him
obeyed his orders. His strength was
greater than any of theirs. I don't be-
lieve they could have hoisted those bales
without his aid."

"Then he moved with such freedom
and fearlessness, scorning the gangplank,
and passing from steamer to dock and
back again so quickly and carelessly.
How alert he was to catch the captain's
commands, and what a responsibility he
bears. Last night, as I lay awake, I
thought of him keeping his watch above
with all our lives, as it were, in his
hands."

"Then, when the second mate came to
take his place, I heard him pass my
cabin whistling cheerily, even amid the
storm and darkness. What a life his is—
ever contending with perils and hard-
ships! While Dr. Gibson is warm and
safely housed, my sailor keeps his watch,
with gales howling and waves seeking
to devour. Great courage and iron will
must undoubtedly be his. Yes! He lives
a man's life. He is a man. But as to
love! Oh! that is absurd."

It was about three-thirty in the after-
noon. The sea was rolling high; but
Miss Nolan, rocked by wind and wave,
slept the sleep of a sea sleeper, and it
was not until a great shout went up from
some men on deck that she became con-
scious of peril. What was that cry she
heard? There it was again:

"Heywood is overboard!"

She started to her feet, but fell almost
immediately. She crawled to the cabin
door and tried to push it open. As she
did so a sea mightier than had been felt
before struck the ship and capsized her.

The girl realized that something ter-
rible had happened, that death was wait-
ing near; yet, in this awful situation,
closed in alone under the deck of the
steamer, no sign of human life around
her, only the warring elements in her
ears, the only clear thought in her mind
was that the man she loved had gone to

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We want you to see the kind of Poultry Foods that are man-
ufactured from CLEAN, RAW MATERIAL. This means HEALTHY
ANIMAL FOODS for your poultry.

WESTERN MEAT COMPANY
SOUTH SAN FRANCISCO, San Mateo County

HINTS TO HOUSEKEEPERS.

The first thing that ought to be pre-
scribed for a headache sufferer is fresh
air. Avoid sitting in closed rooms as
much as possible. Walk the streets and
lounge in the parks, if you can't do bet-
ter, but keep out of doors. Headache suf-
ferers should never sleep with closed win-
dows winter or summer. Opening the
window in the next room won't do. You
must have fresh air from first hand.

In putting away knives and other steel
instruments oil them slightly, and wrap
them in tissue paper. This will prevent
their rusting.

When preparing biscuits, shortcakes,
or piecrust, do not rub the butter through
the flour too thoroughly. To make them
flaky the shortening should run in streaks
or flakes through the dough.

Stick a few cloves into the meat used
for making stock. It will impart an
agreeable flavor to it.

In packing a trunk, use heaps of paper
with tailor-made garments, and pack
them as much like a man's suit as pos-
sible. Never forget that wrinkle, and
many other wrinkles will be avoided. And
of materials, remember serge and most
woiles pack magnificently, alpaca always
creases, faced cloth wants care, cash-
mere does crumple, but soon shakes out.
velvet, of course, must never be creased
at all; crepe de chine travels very well
on the whole; silks vary, and anyhow
should be treated with discretion.

A solution of oxalic acid applied with a
stiff brush, and a fresh ribbon or a bunch
of flowers will do wonders for the old
white straw hat.

Water should never be put on gilt
frames. They should be wiped with dry
cloth or chamois. This applies to all
metal and lacquered goods.

For those who do not care for colored
ribbons to show through their thin white
waists, they can substitute narrow linen
tape. It launders well and is durable.
The tape can be bought in various widths
and qualities. White ribbon always turns
yellow from frequent washing.

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are given the preference by 80% of Cali-
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The Cutter Laboratory

TEMPORARY ADDRESS

Grayson and Sixth Streets, Berkeley, Cal.
West of San Pablo Ave.

his death. She realized now that she
loved him, else why this pain at her
heart—this indifference to her own fate?

The sound of sharp blows on the plank-
ing above her head aroused her from the
stupor into which she had fallen. A face
she knew looked down.

"I have come for you," said Mark Hey-
wood.

Then Edna Nolan lost consciousness.
The steamer had capsized, with the
side of her deck uppermost under which
was Miss Nolan's berth. The capsizing
was an unexpected happening, for, al-
though the sea had been rolling for hours,
yet before the catastrophe the storm had
apparently abated, and even the captain
had retired with confidence for a little
rest, he and the mate having been up
nearly all the previous night.

The second officer had been swept
overboard just before the coming of the
mighty comber which had destroyed the
vessel; but Mark Heywood, the first offi-
cer, with whirlwind around him and
whirlpool beneath, kept his clutch on life.
How he did it was a miracle. Every man
on deck, including the three male pas-
sengers, was swept away. Even the two
lifeboats had been wrenched from their
fastenings and smashed to atoms as they
went over the bulwarks.

The storm subsided almost as quickly
as it had arisen; but the ship was slowly
sinking, and Heywood's only chance lay
in swimming to shore, which was about
a mile off. He would take the chance if
some one else would take it with him.

The opening to the aft-companionway
was near him. He forced himself down,
and there, under two feet of water, found
a hatchet, with which he crawled to the
deck and set to work with desperate
energy.

When Miss Nolan opened her eyes
Heywood was tying a rope which bound
them together.

"Then it was not you who were swept
overboard?" she cried, in great joy, for-
getting present peril.

"No; that was a mistake the men
made. It was poor Brown," he replied.
Then, looking straight into her eyes, he
said: "There is to be a desperate strug-
gle. Tell me that you love me."

"I love you," she answered him, "so
well that I am glad to die with you."

The endurance and courage of the
man was put to the severest test, but
the shore was reached in safety.

Three months afterward they stood in
their own home side by side, hand in
hand. The bridal party had just left,
and Jack took her in his loving arms.

"I gave in to you, after all," she said,
softly.

"Not so," he replied, "you were taken
by storm."—Illustrated Bits.

HOUSEHOLD HINTS.

Keep Blankets Clean.

To wash blankets allow a large tablespoonful of lump borax to every two gallons of soft warm water. Soak the blankets in this overnight, the white ones in separate tubs from the colored ones. Let the water cover them as they lie loosely in the tub. In the morning squeeze them, wring out with the wringer, rinse in clear, soft warm water, wring and hang on the line.

The Use of Salt.

If any dish, either soup, vegetable or sauce, becomes too salt, dust in a little coarse brown sugar and the dish will again become palatable. Brown sugar is the antidote for salt.

Do not want to rush contents in the inner vessel of your double boiler. Add some salt to the water underneath, half a teacup to about two quarts of water. Boiling salty water generates quickly a strong heat. Salt again can be used to great advantage if the whites of eggs will not froth easily. Just dust in a dash.

Useful Hints for the Toilet.

For hands that are rough and sensitive, nothing better can be found than two ounces of listerine combined with glycerine. The surface will soon become smooth and less sensitive.

Arnica, diluted with warm water, acts like magic in soothing tired, swollen feet.

Dryness of skin and general eruptions call for more fruit to be eaten.

There is no agent so effective in aiding the whole structure of the skin to perform its work and to become less sensitive than the careful cleansing at night with hot water and a pure white soap and complexion brush. Rinse in warm water and apply a skin food or a good cold cream.

A lump of camphor placed in the china closet will prevent any silver which may be in it from tarnishing.

DOMESTIC HINTS.

Canned Peaches.—First prepare the syrup. For canned fruits, one quart granulated sugar to two quarts of water is the proper proportion, to be increased or lessened, according to the quality of fruit to be canned, but always twice as much water as sugar. Use porcelain kettle, and, if possible, take care that it is used solely for canning and preserving, nothing else. Peel and halve the peaches, lay a clean cloth in the bottom of a steamer over a kettle of boiling water, and put the fruit on it, half filling the steamer. Cover tightly and let it steam while making the syrup. When this is ready, and the fruit steamed until a silver fork will pass through easily, dip each piece gently into the boiling syrup, then as gently place it in a hot jar and so continue until all have been scalloped and put in the jar. Then fill with syrup, cover and seal immediately. While filling be sure and keep the jars hot.

Sweet Peach Pickle.—To four pounds of peaches allow two pounds of white sugar, one-half ounce each of mace, cinnamon and cloves mixed, and one pint of the best white vinegar. Pour scalding water over the peaches and remove the skins with a butter knife. Drop into cold water, stick four cloves in each peach. Lay the peaches in preserving pan with sugar sprinkled over them, bring gradually to a boil, add vinegar and spice, boil five or six minutes. Remove the peaches and place in bottles. Boil the syrup thick and pour over boiling hot.

FASHIONS.

Handkerchiefs have come under the sway of the lace rage, and they are most beautifully decorated with frills, insertions, corner motifs, insets and tiny medallions. One of the summer pastimes for the summer porch will be the making of these beautiful, airy creations

which cost small fortunes in the shops. But, so many patterns are now sold for their making, that every woman may have a few of them. There should be a half a dozen with hemstitched borders and the monogram worked into the corner, others may have a narrow point lace pattern worked around the border, and still others may have little motifs set in the corners.

The slightly short waist line, too, seems to find general sanction, and there is an indication that the sloping shoulder may come back to its own, in the wake of the pelerines and shoulder scarfs, etc. Many of the newest sleeves are quite close at the top, continuing the line of the shoulder and flaring gradually toward the elbow. One sees this sleeve effect especially among the little boleros and coats with open sleeves over full sleeves of lace net or lingerie.

Corset covers to wear under muslin or lingerie gowns are now made with an immense amount of work upon them. One of these little garments has a fitted back and underarm gores which give it an exact fit, but front is full. The front is covered with insets and motifs of Valenciennes lace, while about the neck is a frill of lace. Many of the new corset covers are made with a fitted girdle, which helps to give the Princess skirt its nice adjustment. A number of pretty waists are made with full waist fastened in the back. Blind embroidery is used a great deal upon all underwaists which are fitted close to the figure without any fullness, even at the neck.

Steel is the salient feature of the very newest belts; and both those of leather and of silk are finished with steel beads and paillettes, and at the back is a deep buckle that holds the belt to its full depth, while the front buckle is much smaller, and both that at the back and the front are rounded so as to fit the figure. There is a new model called the Paquin, which is very wide and of soft leather, which adjusts itself to the figure perfectly. This belt is usually dyed to match the costume; but the unfortunate part of the arrangement is that it must be made to order to be quite correct, and all things made to order are extremely expensive, as nothing but hand work is used upon them. Buckles like the handles of the parasols are works of art; and no carving, metal work, enameling, or whatever form of decorative work you may mention is too good for them. The white linen belts are best liked for wear with the linen dresses or shirtwaists from the fine lingerie to the tailored blouse. In the case of the colored gown a stitched shaped belt is often worn, but a preference is shown for the beautiful silk ribbons that are so cheap just now, if you watch the counters for sales. All these belts, from the plainest linen to the finest silks, may be made as beautiful as you please, or according to your cleverness with the needle.

No matter how good your lamp, a MACBETH chimney makes it better.

They are made to fit, and do not break from heat.

My lamp-chimneys offer the only practical remedy for all lamp-ills—good glass properly made. That's why they make good lamps better.

My Index is free.

Address, MACBETH, Pittsburgh.

CHAFF.

Customer (to gossiping shop-girls)—I wish you would show me common courtesy. Shopgirl (absently)—Sorry, madam; we ain't got it.

"Do you think that cigarettes kill the people who smoke them?" "Yes," answered the cold-blooded person; "but it doesn't do any good; there are always more to take their places."

"Fie, fie! my boy," said old Mr. Goodley. "I'm surprised that you should tease that cat in that way." "Why?" asked the bad boy, pausing in his inhuman work, "do you know any better way?"

"Hiram," said Mrs. Suburbs, "what makes you say 'by gosh' so much and wear your trousers in your boots?" "I'm rehearsing," answered the farmer, "for the benefit of the summer boarders who are coming next week. If some of us don't talk that way they won't think we're real country folks like they've been readin' about."

The inclination of the San Francisco papers of the day, each to go their competitors one better, is well demonstrated by orders issued by the Call and the Chronicle respectively. French of the Chronicle on the Wednesday evening after the earthquake: "The Chronicle men will meet at the Chronicle tomorrow at 1, if there is any Chronicle." McNaught of the Call ordered that: "Call men will meet tomorrow at the Fairmount at 1, if there is any tomorrow."

FOR SALE

Sixty-nine acres fine fruit and vegetable land in the early fruit and vegetable belt, three miles southwest of Winters and one mile from Putah Creek; 25 acres are in fruit trees, apricots, peaches and plums, 5 acres of grape vines, principally Tokays. On the place there is a fine well, equipped with a good pumping plant from which the greater portion of the place can be irrigated. There is a good plain house of four rooms; wind mill and well finished tank house, barn 40x50 feet, including granary, packing shed and all other necessary out-buildings. There is also about 250 feet of hot beds, and water is piped where needed on the place. Terms of sale One-half cash, balance in one and two years, at 7%. Address, Box 907, Winters, Cal.

EAMES

Tricycle Company's Invalid Rolling Chairs and Tricycle Chairs For the Disabled are the acme of Perfection 2108 Market St. San Francisco, Cal. 837 South Spring St., Los Angeles Send for Illustrated Catalogue

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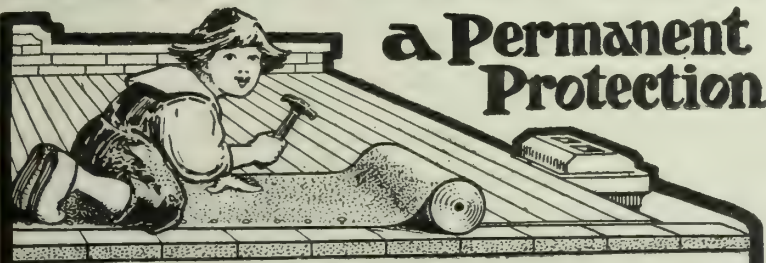
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New York, N. Y.

Dr. S. A. Tuttle, Dear Sir—The Elixir I ordered Nov. 30th of your Mr. C. E. Brewster arrived all safe. Please accept thanks for shipping same so promptly. I bought my first dozen last June and since then have not been without it for a single day and as I have learned how valuable it is I can't afford to get out GEO. B. H. HOLLYER Supt. N. Y. Bis. Co.'s Stables.

AGRICULTURAL REVIEW

Colusa.

ALMOST MOBBED HARTOG.—Sacramento Union, August 28: John H. Hartog, manager of the Colusa County Chamber of Commerce, came very near realizing what it means to be the victim of a mob at Davisville, over in Yolo county, yesterday.

Mr. Hartog was bringing the Colusa county exhibit to the State Fair to this city, and he was bringing it by express. At Davisville, where a three or four minutes' stop is usual, Mr. Hartog was on hand to see his express package shifted from one train to the other. There were great heaps of corn and pumpkins and watermelons and other truck, and it was passed up into three partly filled express cars, until they would hold no more, and then the mail car was backed up for part of the stuff.

The passengers grew weary. Three-quarters of an hour was spent in loading the Colusa county exhibit, and when it was done Hartog sought the smoker, but the passengers were laying for him. He was assailed by hard words and hit with harder books, boots and spittoons, and when he finally made his way into a coach among the women and children, he had time to meditate as to whether a farmer's life, after all, is an ideal one.

Willows Semi-Weekly Journal, August 28: The Colusa County Chamber of Commerce prepared a fine exhibit for the State Fair at Sacramento, and it went down on the express Thursday.

During the month of July the Colusa Butter Company made 29,299 lb. of butter, for which it received 20c. per lb., making the total receipts amount to \$4,981.07.

Fresno.

WINERY GRAPES CONTRACTED.—Kingsbury Recorder, August 29: A number of vineyardists about here, who raise grapes, have contracted them to the winery for a term of five years at \$12 per ton.

PEACH CROPS VARY.—Reedley Express, August 30: Peach crops this year vary very much, even in orchards within a few hundred yards of each other, and on the same class of land. One of the best crops in our vicinity this year is from the orchard of Mrs. Andrews, 2½ miles west of Reedley, in the old Riverbend district. Mrs. Andrews has 330 orange cling peach trees, from which she has sold, this season, 40 tons of peaches at \$45 per ton, or \$1,800 for the crop, and these trees cover only a trifle over three acres of ground. Who can beat it?

The Wahtoke winery started up Mon-

day, and will continue daily to the close of the season. The Reedley winery may not start up until second crop Muscats are ready.

Glenn.

PEAR CROP PURCHASED.—Willows Semi-Weekly Journal, August 24: The Pioneer Fruit Company of Red Bluff, has purchased the pear crop of all the orchards in the Elk Creek country. Yesterday a crowd of girls, who will pack the fruit, arrived from Red Bluff and went to Elk Creek on the Fruto train.

A PRIZE WATERMELON.—Willows Semi-Weekly Journal, August 28: A watermelon, raised by W. E. Germain in the south addition, can now be seen in Belieu's window. The melon weighs 50 pounds.

CATTLE AND GRAIN.—Orland Register, August 25: W. H. Morrissey shipped two carloads of cattle to San Francisco last Tuesday. He departed on the north-bound train that day for northern Tehama county in quest of more marketable cattle.

Grain is still coming into the large warehouse at the rate of 800 sacks a day, and Mr. Slaughter, the warehouse agent, says that the amount of grain stored this season will be largest for several years.

King.

KINGS COUNTY CREAMERY OPENS BUSINESS IN THE CITY AT THE BIG BAY.—Hanford Weekly Sentinel, August 30: The Kings County Creamery Company of this city, has opened the sale of its butter in San Francisco, and Tuesday the first shipment to that city was made, and 11,782 lb. were sent forward. Heretofore Los Angeles has been the great market for the butter manufactured in this county, and the Kings County Creamery Company is the first to ship to San Francisco.

GRAPES ARE GETTING READY.—Hanford Weekly Sentinel, August 30: The vineyardists will be in the midst of the raisin harvest in a few days. The crop is very good, and the price quite satisfactory. The canning of grapes here this year is an innovation, but will help relieve the raisin market a little. The canner is paying good prices for grapes to can, and they will can all they can.

GETTING OUTFIT READY.—Hanford Weekly Sentinel, August 30: The experiments made by the State authorities tell the people that the best way to get rid of the shothole fungus that afflicts the peach trees is to spray with the Bordeaux mixture in December. S. M. Hughes, a practical grower, has ordered a fine spraying outfit, and will have the machine in operation in due time.

GRAPES AND PRUNES RIPENING SLOWLY.—Hanford Weekly Sentinel, August 30: While grape picking has commenced in Kings county, the bulk of the grape crop is ripening very slowly, which fact will ensure a better product, unless an early rain should occur. The prunes are also a little backward in ripening, but the fruit is large, well colored, and the crop will be above the average.

Warranted to Give Satisfaction.

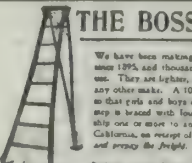
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Has Imitators But No Competitors.
A Safe, Speedy and Positive Cure for
Curb, Splint, Sweeney, Capped Hock,
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We have been making the Boss Ladder since 1895 and thousands of them are now in use. They are lighter, stronger and stiffer than any other make. A 10 ft. ladder weighs 15 lbs. so that girls and boys can handle them. Each step is braced with four wire braces. We will ship one or more to any S. P. R. R. Station in California, on receipt of price—35 cents per foot and prepaid freight.

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DEERE IMPLEMENT CO'S EW QUARTERS

To the Editor:—We hereby notify you that we have moved into our permanent quarters which cover the block bounded by Michigan, Alameda, Illinois & Merrimac Sts. Our office is on the north-west corner of Illinois & Merrimac Sts. To reach us take Kentucky Street car, get off at Fourth & Kentucky Sts., go one block east and one block south.

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REX
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"Thoroughly
Adapted

for any Farm
Building."

The practical farmer here quoted states from experience this truth about Rex Flintkote Roofing. Your roofing problems now were his a little while ago. He experimented just as you're experimenting—wasting money on roofs that invite fire, that expose products to the weather, that damage the buildings themselves and that require frequent replacing. He is at last satisfied because he found

Rex Flintkote Roofing

The test was severe—a dairy where heat, cold, dampness and dust must be kept out. Rex Flintkote Roofing did it. It won't warp, it clings close and fast, and has qualities that insulate against all weather extremes. It resists fire, being made of long-fibre wool, chemically treated, and an ordinary workman can lay it. But what are claims when **THERE'S A PROOF:**

"I am thoroughly satisfied with Rex Flintkote Roofing. I have sent you a picture of the barn from which you can see that it was a very difficult matter, to put a roof on a building of this shape and have it look well. Rex Flintkote Roofing wears well and makes an attractive roof in appearance when laid. I think that Rex Flintkote Roofing is thoroughly adapted for any farm building. Yours truly, (Signed) E. J. Parker, Grand Isle, Vt."

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Mendocino.

WORK IN THE HOP FIELDS.—Sacramento Bee, August 20: In their anxiety to get help to harvest the crop, the hop growers of Mendocino county distributed circulars throughout the various refugee camps Saturday, offering work to men, women and children, and guaranteeing them \$1 per 100 lb. for picking.

Clear Lake Press, August 25: Three hundred or more San Francisco refugees came up to Hopland Tuesday to pick hops for Baron von Horst. Needed transportation, tents and blankets were furnished by the Relief Corporation and the employer.

Modoc.

MODOC WILL HOLD A COUNTY FAIR.—Sacramento Bee, August 25: A county fair will be given in Alturas next month, beginning September 24th and continuing six days. The fair will con-

tain a large number of exhibits of the agricultural products of this county.

At the time the fair is being held the Alturas Jockey Club will run a series of races for all horses presented for entry. This organization has hung up purses aggregating \$3,000 for the six days' speed program. This latter feature has always proved a far more attractive one than the fair proper, and visitors come from great distances to see the races.

PORCUPINES BREAK BRANCHES.—Chico Daily Enterprise, August 28: Martin Henderson, of Davis Creek, Modoc county, reports a remarkable number of porcupines this season. In his orchard he has caught one every night for some time. Frequently he finds two in his traps as he makes his morning rounds. These animals are very destructive to apple and other variety of fruit, as they climb the trees and break the branches.

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It is thought that the disappearance of the large predatory animals, like the mountain lion and cougar, is the reason the porcupines have become so numerous and bold.

Nevada.

PEAR PACKING BEGINS IN NEVADA COUNTY.—Sacramento Bee, August 21: Pear packing begins in this county tomorrow. The crop is considerably larger than last year and prices are considerably smaller. The price paid at Colfax is \$1 per box. This means a net profit of a little over 50c. to the grower. Lack of help exists, and Chinese have been employed as a last resort, though the wages are large enough to tempt anybody. Seven cents per box is paid packers, who can average between 60 and 70 boxes in a day, and the work is easy. A prominent buyer last night stated that he would be glad to hire whites, particularly San Francisco refugees, but was unable to get them. The work will run along for three weeks, after which comes the grape packing season. Two buyers, C. D. Frederickson and J. W. Meyer, have purchased the greater part of the Bartlett pear crop in the county, controlling 43 orchards.

Riverside.

RIVERSIDE APPLES.—Riverside Daily Press, August 28: That apples can be successfully grown in Riverside is proven by a fine specimen of the "Gloria Mundi" variety in the window of the Chamber of Commerce, measuring 13 in. in circumference and weighing three-fourths of a pound. It is from the ranch of G. H. Rogers, Bandini avenue.

NATIONAL BUYS PACKING HOUSE.—Riverside Daily Press, August 28: F. E. Abbott, of the Rubidoux Fruit Company, has sold his large frame packing house on the corner of Sixth street and Pachappa avenue to the National Orange Company. Mr. Abbott has decided not to do a general packing business during the next orange season, but will have his own fruit, which consists of about 30 carloads, packed under the well-known brands of the Rubidoux Fruit Company.

PECULIAR LOOKING PLANT.—Riverside Daily Press, August 28: R. H. Howard, of Myrtle avenue, has placed on exhibition in the Chamber of Commerce, a cluster of three blossoms of a parasol tree. The blossom is about the shape of an inverted tulip, and upon the under side of each of the petals are the seeds, the size and shape of a field pea. There are only two trees of this species in Riverside, the one from which the blossoms was taken being 12 years old.

PEACHES FOR WINTER.—Riverside Daily Press, August 28: The Pomona cannery has turned out about 90,000 cans of peaches thus far this season. The canning of peaches will continue about 25 days longer.

San Joaquin.

WINERIES READY TO CRUSH GRAPES.—Sacramento Bee, August 22: The four wineries of northern San Joa-

quin county will commence next Monday the crushing of grapes. Zinfandels will be the principal variety. Prices to the growers range from \$16 to \$25 per ton, with promise of increase as the season advances.

MANY MELONS SENT.—Sacramento Bee, August 21: Watermelons are moving out of Lodi at a lively clip this week. Loading is going on here and at Armstrong's switch, three miles south of town. Thursday and Friday 10 cars left Lodi and five left Armstrong's. A total of about 50 cars for the week have been shipped to San Francisco, Oakland and the San Jose markets. Good prices to the grower prevail and will likely continue.

Solano.

"RACE SUICIDE."—Willows Journal and Review: The theory of "race suicide" does not seem to find favor in the duck family on the ranch of James Boyd. James Boyd, Jr., tells us that his brother Carlton is the proud possessor of 67 young and healthy ducks, 47 of which are old enough to sell to the Chinese epicures at 50c. each. This vast family of "quacks" have only one father and one mother. Should this flock of ducklings be sold at 50c. each, the mother duck would be the cause of earning \$33.50. The season is not yet complete, and there may be more.

Sonoma.

HOP PICKERS WILL GO TO HOPLAND.—Petaluma Argus, August 21: On Tuesday 200 hop pickers will leave San Francisco for the hop fields at Hopland, Mendocino county. Of these 150 are refugees. The Relief Corporation will furnish tents for them and their fares will be paid by the associated charities.

The Relief Corporation has information that 1,500 pickers can find employment there, but up to date comparatively few of the refugees have availed themselves of the opportunity.

Sutter.

SUTTER COUNTY WILL DISPLAY ITS PRODUCTS.—Sacramento Bee, August 25: C. C. Burgess and W. I. Smallwood, who were engaged by the Sutter Chamber of Commerce, have been busy this week gathering exhibits through the county for the State Fair at Sacramento. Several varieties of choice exhibits were secured, notwithstanding the fact that this was an off year, and grain, fruit and other products are not at their best. The last lot of exhibits were shipped to Sacramento yesterday afternoon, and the Chamber of Commerce deserves considerable credit for the effort put forth to have Sutter county represented at the State Fair.

In the line of green fruits on exhibit, Sutter county will have some choice peaches, pears, plums, apples, figs, oranges, Thompson Seedless, Muscatels, Tokays, currant and wine grapes.

Of vegetables there will be a good exhibit of potatoes, tomatoes, pumpkins, melons, squash, beans and peas, and in the dried fruit line there are choice peaches, pears, prunes and raisins.

In the cereal and grain display will be a collection of wheat, barley, oats, Egyptian and Indian corn and alfalfa.

Tulare.

TULARE COUNTY'S EXHIBIT CAR IS COMING HOME.—Tulare Register, August 30: Tulare's advertising car, which for the past two months has been on the road spreading information concerning this county, is expected to arrive in Tulare next Sunday, September 2, and the present plan is to have it remain here during the day, in order that those of our people who may wish to see the exhibit shall have the opportunity of doing so.

Arno'd, N. D., Feb. 8, 1906.

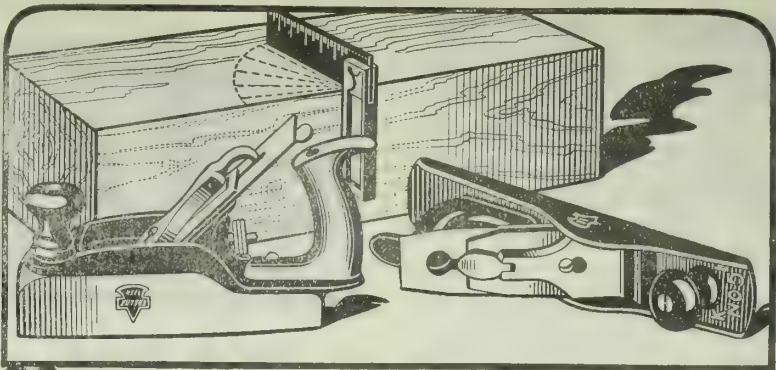
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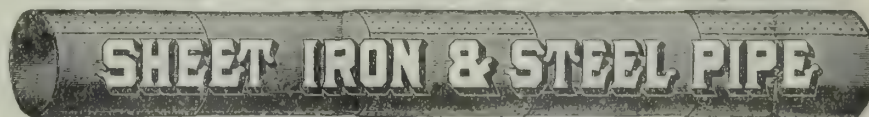
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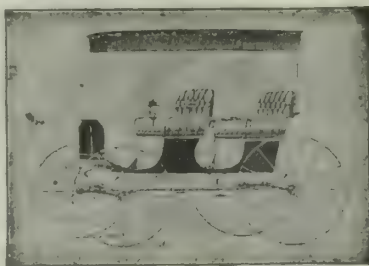
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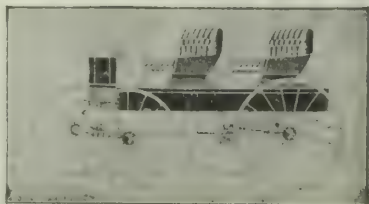
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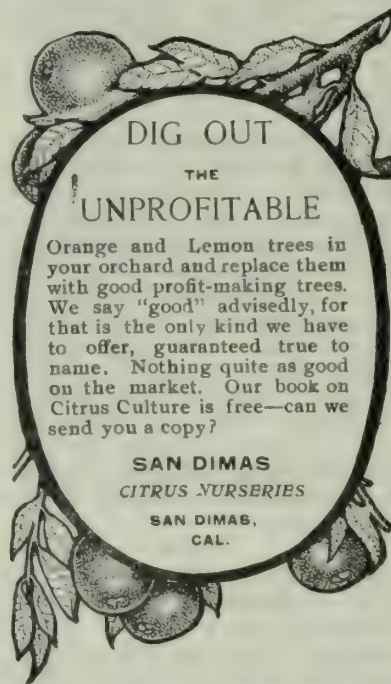
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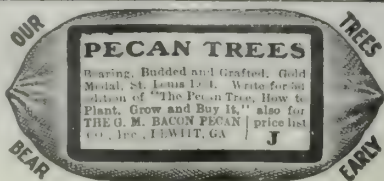
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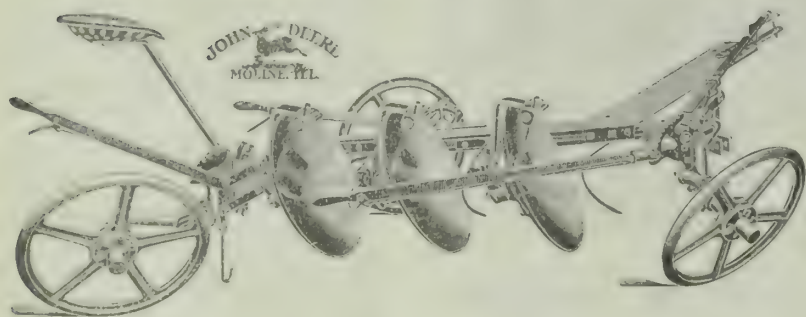
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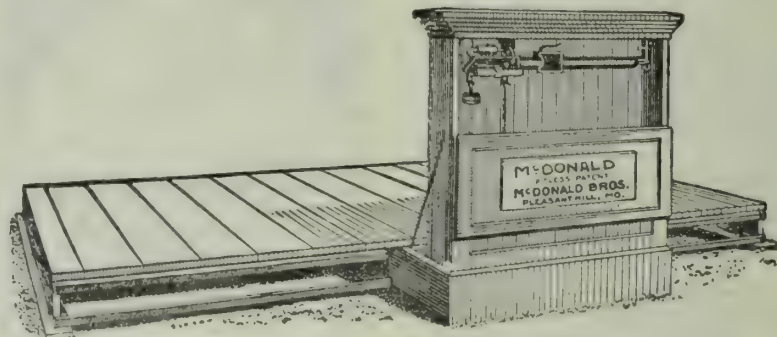


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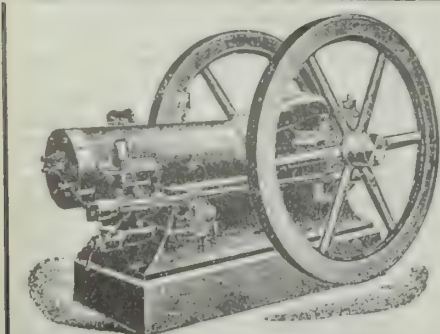
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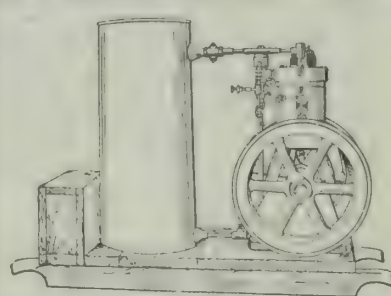
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Vol. LXXII. No. 11.

SAN FRANCISCO, SATURDAY, SEPTEMBER 15, 1906.

THIRTY-SIXTH YEAR

EXPERIMENT IN ORCHARD IRRIGATION.

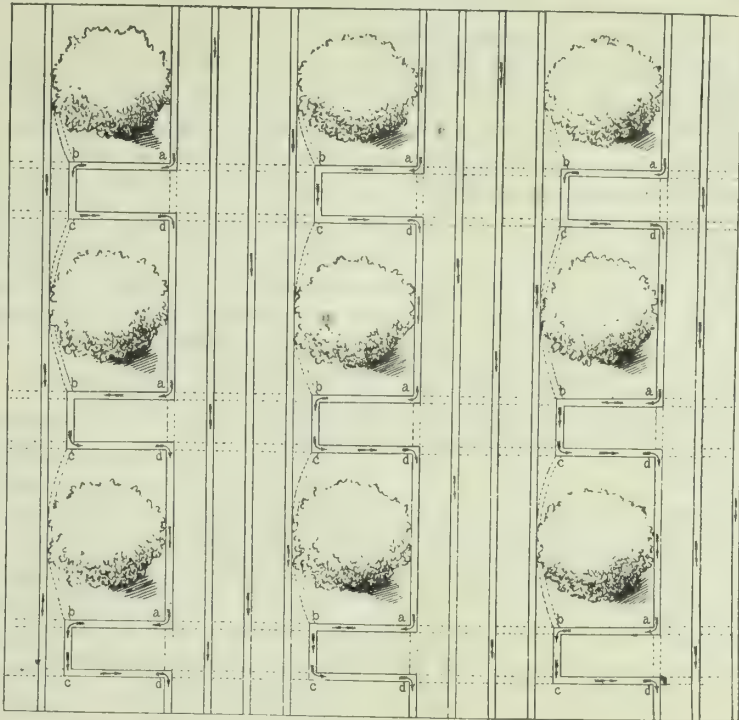
As the dry season draws to its close, questions about the distribution of water in a way best calculated to secure its highest duty to the trees whose growth in the latter part of the season is dependent upon it become timely and interesting. As a contribution to wider thought and experiment along this line, we give herewith the results of an experiment directed by Dr. E. W. Hilgard of the University Experiment Station and carried out by Mr. J. W. Mills, who had charge of the work in Southern California. The work was done a few years ago, but its significance is perennial.

The purpose was to show a contrast between deep and shallow furrow irrigation. The orange grove was divided into two portions, each irrigated by a different method. That portion on which the shallow-furrow system was applied required 1.167 acre-feet of irrigation (one extra irrigation), while the trees watered by the deep-furrow system required but 1.02 acre-feet.

The results of these experiments with deep and shallow furrows were interesting and valuable, justifying more complete discussion here. The first irrigation given to the grove was in the first week in July. The two east rows were irrigated from that time and through the whole of the season, in furrows twelve inches deep, while the three west rows were similarly irrigated, except that the depth of the furrows was but five inches. The soil had been deeply plowed twice during the six months previous and was in excellent condition.

The methods of plowing furrows in an orchard are numerous, and many of them entail a large amount of extra labor in shoveling earth out of the intersecting points. The accompanying diagram will show the proper way in which to plow irrigation furrows, whether deep or shallow. In this diagram the surface is supposed to be graded so as to slope from north to south, and the water is to be applied on all sides to each tree, at the outer circle of branches, in the most economical manner. Therefore, first plow the furrows passing through b and c, running north and south. Next plow all the cross-furrows running east and west; then return and plow all the main water channels running north and south across the orchard. Two of them go down the center between the rows, and two more run close to the trees. The furrows will need some digging at the points a, b, c, and d, so as to have the water follow the trees (a b c d). The water is not allowed to run through the interrupted portions of the furrows shown by the dotted lines.

Mr. Mills reported as follows in regard to the application of water in these furrows: After the water was once run to the end of all the furrows there seemed to be no difference in the amount of water taken in by the soil in the two sets of furrows. The water was longer in first reaching the lower ends of the deep furrows than it was in reaching the lower ends of the shallow ones. This seemed to be due to the soft soil rolling back into the deep furrows, which impeded the flow of water; but after this loose soil was once wet there was apparently no difference in the size of the streams required to reach the lower ends of the two sets of furrows. The entire orchard was irrigated at once; that is, the water was turned on all of the trees at the same time and kept running for the same length of time on them all until the irrigation was completed for each time, except, of course, in the case of the extra irrigation in June."



How to Plow Furrows for Irrigation

The absorbing capacity of the two systems of furrows, deep and shallow, appeared to be about the same, but there was a noticeable difference in the losses by evaporation. At one time, when water was running for eighty-four hours in all the furrows, the surface between shallow furrows became saturated. As soon as possible this surface was cultivated, but for days afterward it showed moisture every morning (an evidence

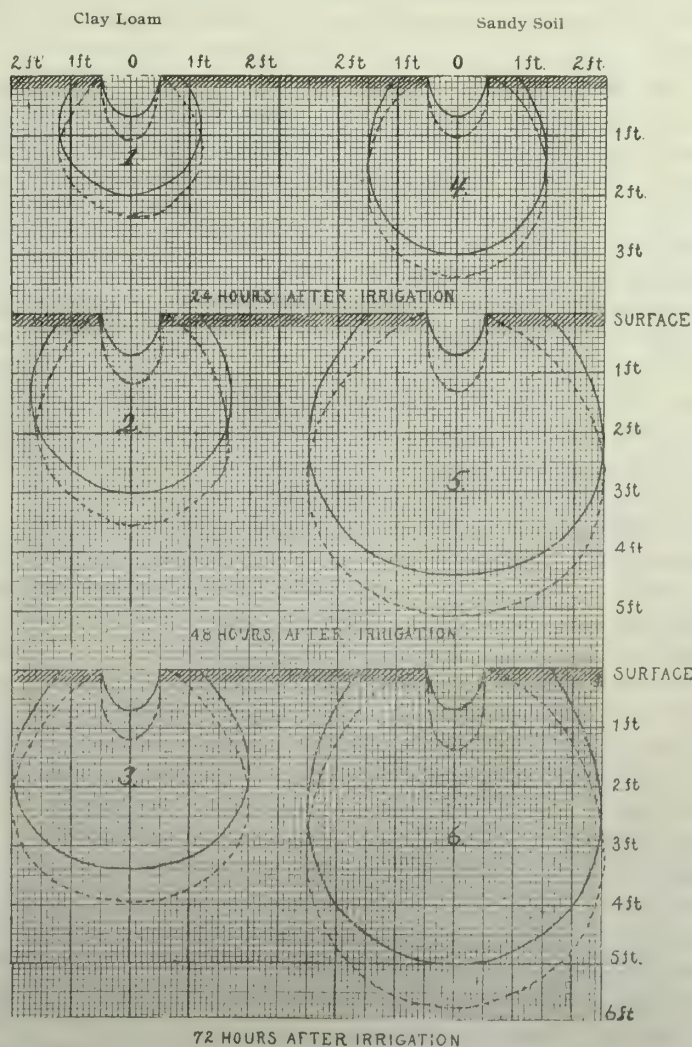
of waste). In the case of the deep furrows, the surface soil showed moisture only near the head of the ditch, at the upper end of the rows, and immediately over the furrows, which of course had been filled as soon as practicable, as was also done with the shallow furrows. The moisture thus saved for the use of the roots by deep-furrow irrigation was sufficient to carry the trees from the first week in May until late in July. On the other hand, the loss by evaporation from shallow furrows compelled the foreman to give an extra irrigation in June. In other words, the trees irrigated by deep furrows went twenty days longer, thus saving cost of extra water and labor, besides keeping in better condition.

The penetration of the water sideways and downwards in the two methods used is very clearly shown by the other diagram on this page. This exhibits cross-sections on the deep and shallow furrows, at different periods of time after the water was applied. The soil in between the furrows was probed daily during these experiments. The spread of water was very slow. Even at the end of two weeks after irrigation the moisture lacked three feet of meeting in the wider spaces (13 feet) between the main furrows next to the trees. Water applied to this strip close to the trunks of the trees would have been to a large extent wasted, and one aim of this experiment was to avoid waste as much as possible.

On the sandy-loam soil of the substation, the irrigation furrows should not be more than four feet apart; on the lighter sandy soil they are better if only three feet apart. The former soil does best with a "run" of seventy-two hours, and the latter with forty-eight hours, these periods saturating the soil five feet deep, which proved ample for citrus fruits, olives, etc.

The weather during the irrigation season was very warm. During the last week in June and the first week in July the daily maximums ranged from 90 deg. to 108 deg. Fahr. In fact, during the forty-five days after June 25th, the thermometer registered from 90 deg. to 100 deg. for twenty-nine days and from 100 deg. to 108 deg. for fifteen days. During this "hot spell," the longest recorded at the substation for ten years, the orange trees irrigated on the deep-furrow system did not suffer, but those irrigated by shallow furrows, as above noted, began to suffer, and were given an extra supply of water in June. The irrigation of August 9th, which the entire grove received, carried all the trees along for forty days, when those on the shallow furrows showed signs of distress. A shower of rain (0.45 of an inch), followed by a heavy rain (1.87 inches) a week later, ended the irrigation season.

Irrigation should be applied in the way which is best to reach the tree rootlets at the depth of several feet below the surface. This is too often not done, and examination will show that the water has, even after two days' irrigation with running water in furrows, not soaked down more than 10 or 12 in., if that much. The percolation of water downward varies according to the nature of the soil; in clayey soils it is extremely slow, experiments showing that when water stands upon the surface of a loose, well-tilled loamy soil it soaks down about 15 in. the first 24 hours, about 10 in. the next, and that percolation is slower and slower downward; but where the under-soil is compact the movement is but a few inches per day, if not almost arrested. It is then the emphatic duty on the part of the irrigator that he make examinations of the depth to which the water penetrates, and to regulate accordingly.



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THE WEEK

Those who read the Pacific Rural Press thirty-one years ago, may remember that at that date there appeared at the head of this page the name "W. B. Ewer, Principal Editor." Mr. Ewer's editorial connection with the paper ceased about that time, but he maintained a proprietary interest until recently, when a complete transfer of ownership occurred. The announcement of the death of Mr. Ewer, which occurred this week at his residence in Oakland, must, however, possess a deep interest to pioneers in California agriculture and publication enterprises, who will be gratified to know that he lived in prosperity and comfort and passed on at ninety-three years of age, maintaining bodily and mental powers to the end. Mr. Ewer was a native of Massachusetts, and came to California in 1849. He was active in the industries of that early day, was a pioneer in newspaper publication in Sacramento and Grass Valley, as well as in San Francisco. His tastes were clearly along scientific and literary lines, and he was prosperous in business affairs connected therewith. He was very genial and appreciative and made many warm personal friends. In the course of nature he outlived most of his earliest associates, although the ranks of his friends were constantly recruited from younger generations by the delightful personal traits which brought to him a green old age, amply attended by those who gave and received constantly tokens of mutual love and esteem. His pilgrimage was not more notable for its length than for the character and spirit of its later stages. It was a long but not a weary journey.

Work in preparation of the University Farm at Davisville for instructional purposes is proceeding as rapidly as possible. The first buildings will include a capacious, up-to-date creamery, a stock pavilion and assembly hall, and needed residence cottages, and the plans for these are finished. It is intended to begin instruction with short courses on dairying and animal industry lines, but the dates for such courses cannot be announced until some progress is made in construction. At the last meeting of the Live Stock Breeders' Association resolutions were adopted thanking the University Farm Commission for its industry and care in the examination of proposed sites, its complete satisfaction with the farm selected and its confidence that it is admirably suited for the purpose for which it was chosen. The association also earnestly recommends to the Regents of the University that they proceed with all reasonable expedition to the preparation of the farm and school for the purposes for which they are intended by law. All of which is being diligently proceeded with as aforesaid.

We do not at all believe in working women in agriculture as they are worked in benighted and poverty-stricken countries, at the same time we cannot withhold admiration for women who have the proper attitude toward work and the ability to rise to an emergency. We have on former occasions alluded to the service of California women in the fruit packing and canning industries of California, and how their help solved the question of labor-famine in these industries, which arose very sharply a few years ago. There comes now a story from New York State which has some sensational coloring no doubt, but which conveys a lesson. Be-

cause the harvest was ripe in the vicinity of Nunda, and the laborers few, Cora Dowling, a Smith College girl, has been working as a day laborer, gathering corn on her farm. Miss Dowling is athletic, fond of walking, swimming, horseback riding, and other out-door sports. Several days ago she found the corn ready to pick but laborers at a premium. Throwing off her summer girl costume, she donned her wide-brimmed farmer hat, her gloves, thick boots and short working skirt and mixed in with the farm hands. Her two sisters, Mabel and Minnie, helped her. The sun was blistering, registering fully 95 degrees, and as they toiled in the midday summer heat their hands became blistered, too. But they did not give up, and now are receiving the praise of the community. Of course, many other girls have done similar things in California and elsewhere. There is, however, a side light upon the readiness for action and point of view of college women. Unquestionably college women gain in initiative and quick appreciation of a situation, which the ordinary society girl seldom possesses. College athletics, when properly pursued, are also promotive of such qualities. The more we see of what college women think and do at Berkeley the more firmly convinced we become of their gain in independent thought and action and in appreciation of the true relation of things. The influence of such women upon coming generations of Americans will be important and valuable.

There is, perhaps, no very close connection between the foregoing remarks and the present shortage in the labor supply in the California hop fields, orchards and vineyards, and yet while San Francisco is drawing all available men by the offer of remarkably high wages, some feature of self help must be worked out in some districts to bridge over the present sharp need. In several localities, the same condition of affairs exists, as is reported from Santa Rosa in these words: "Through the abundant production and the scarcity of laborers to gather the same, Sonoma county will lose many thousands of dollars this season. The loss will be in fruit, hops, and grapes, that must of necessity be permitted to go to waste. The yield this year is good, especially hops, which are producing largely in excess of the record of last season. There is a crying demand for workers to gather these crops, and all who apply are given work. In some hop yards growers are granting an increase from \$1 to \$1.15 per 100 lb. for picking on the low poles. There is a movement on foot to have the schools postpone their opening for two weeks longer, to give the children an opportunity to assist in saving the prune and hop crops." It looks very much as the shortage of labor would not be soon met. The State is very busy in all lines and needs help. This fact should be made as widely known as possible through all channels.

Some people who give only casual attention to the subject may get the idea that inasmuch as many of our fairs become so sporty and are seized upon by the gambling element, therefore fairs are of minor industrial importance. Such a conclusion is a grave mistake for industrial expositions, rightly planned and conducted, are, in fact, a most important educational agency, making for individual improvement in both achievement and understanding, and promotive of general industrial development and progress. If proof is needed of this fact it may be found in the present attitude of the Germans, who are pushing for world leadership in industry. Consul-General Guenther, of Frankfurt, reports the fusion of the three commercial, economic and manufacturing associations of Germany under one leadership, who was hailed with great satisfaction by the numerous interests which formerly worked separately, and sometimes in opposition: The new solidified organization has now decided to establish a permanent board for exposition matters which will take charge of all questions concerning industrial, art, sanitary, and other expositions abroad and at home, for the purpose of promoting German interests in this line of economics,

and of commercial and productive enterprise. This board will make it its business to obtain timely and full information on all exhibitions projected in foreign countries, thereby being enabled to carefully guide and advise German parties who desire to participate. This is rational and the world should take notice. Germany proposes to fill the world's eye as it turns toward what is being done by science and industry, and it will win unless the effort is met by similar understanding and energy by other progressive nations.

Our esteemed friend, Mr. George P. Hall, is certainly a picturesque writer. Speaking of the Wickson plum, he says: "Wickson is a deep, heart-shaped plum, a superior shipper and keeper. You will not be disappointed in its bearing qualities, either, for if any of the plum family is on deck the Wickson is sure to be in the band wagon." The metaphor is a mixture of marine and land affairs, and it makes us feel queer to lead a naval display in a band wagon, but whatever Mr. Hall says has to go, either by land or water, or both. We hope, however, in the event of any such performance in the future, Mr. Hall will give us a place in the conning tower, or at the masthead.

The greatness of American horticulture justifies an undertaking which the National Council of Horticulture, a widely representative body, is arranging for next year. It will be a National Congress of Horticulture to convene at the Jamestown Exposition in Virginia during August, 1907. The purpose of such a gathering is to consider topics of horticultural interest in its broadest meaning, and to bring the more or less scattered branches into more closer union, and with a view that such a gathering would add inspiration and profit to all participants and others who are in attendance, and should be the means of dignifying and advancing horticulture in all its departments. In addition to the representatives of broader interests, it is proposed to include in the assemblage, leading specialists of the various divisions of horticultural work, who will consider topics of interest to specialists. The Exposition company, together with the Norfolk Horticultural and Pomological Society, guarantees every possible courtesy and facilities which will make the meeting place ample and convenient. Any society arranging to meet in affiliation with this Congress may hold their regular sessions independently and without conflicting with any of the sessions of the Congress. All persons interested in any phase of horticulture are therefore asked to co-operate in this movement, and all local, State and national societies are invited and urged to be represented, either by holding their regular sessions or by duly authorized delegations. It is hoped that this Congress will bring together a multitude of horticulturists that could hardly be expected to come together in any other manner, and that a goodly number of the national societies will decide to hold a regular session during the week in which the Congress is in session.

It will interest the Orpingtonians to note that our correspondent, W. S. Sullivan, of Agnews, took all the first prizes for Buff Orpingtons at the State Fair Poultry Show, and all the second and third premiums, except one of each. This is the second time Mr. Sullivan has swept all the first prizes. As he will have about 2,000 birds in his yards during the coming season he will have a great chance to make selections for another year's victories.

Although it is not officially announced, it has been practically decided that the State Fruit Growers' Convention this year will be held at Hanford. Hanford was virtually promised the convention last year for 1906, in view of the fact that that city relinquished its claims for the 1905 convention in favor of Santa Rosa. A convention held at Hanford should be largely attended, Hanford being in the center of a rich fruit growing section,

and very near the geographical center of California. It is easily accessible to nearly every part of the State.

It has been practically decided that the Pacific Coast Association of Nurserymen will hold its annual meeting in conjunction with the State Fruit Growers' Convention. Mr. Isaac states that one-half of the convention will probably be given over to the nurserymen, and this session is expected to be an interesting one. The Pacific Coast Association of Nurserymen has never met in California before, and F. W. Power of Chico, who is the president, is making a strong effort to secure a good turnout of the California members, so as to make as good a showing for this State as possible.

QUERIES AND REPLIES.

DODDER IN ALFALFA SEED.

To the Editor: I am greatly obliged for your information about the vine sent you and knowing from you that it is an annual, I will certainly kill it out. The spots have got large, but I will mow it close and work it and keep it from seeding. It is a great grower and spreads very fast. I got my seed in San Francisco, and it was the cleanest looking seed I ever saw, but the dodder came in several places and is nowhere else on the farm.—GROWER, Sonoma valley.

This doddered alfalfa seed is a tremendous evil. The only way to rule it out is for dealers to inspect the fields and contract only for seed from clean fields. It soon will be impossible to sell doddered seed without ruining one's seed business. Under a new law the Secretary of Agriculture is taking seed samples everywhere, and publishing the names of all dealers who are found to have doddered seed. A large number of Eastern firms were published last week, and California dealers will be caught ere long, unless they handle nothing but seed free from dodder. The regular commercial supplies are full of dodder and must be purged from it.

PRUNING PEACH TREES.

To the Editor: Last year, about September, I sent a photo of my one-year-old peach orchard, for your inspection. You kindly acknowledged it. I take the liberty of sending a view to show you the growths the trees made after 18 months in orchard. In my amateurish way of pruning last spring, I notice now several forms of growth. A tree to the right shows a spreading habit, while one on the left shows what I suppose is the proper form. Now, should I prune next winter those limbs on the first mentioned tree closer in and the center longer, or is there no danger of breaking limbs, when bearing? It looks to me more like an African jungle the way those trees grew. They are on deep rich blackish loam, which had a thick matting of wild pea vines on it, when I bought it.

Behind these five acres I planted this year five acres with Calimyrna fig trees, 35 by 35 ft., which are doing nicely, but make the contrast between the two lots look ludicrous, because the soil where the figs are is of dull, red, heavy soil, underlaid three feet from the surface with hardpan of red porous character. I had every hole blasted out, but the results are gratifying, applying also from 3 to 4 lb. of sheep manure from Roeding's mine, to the tree. That soil seems to be deficient in some plant food.

Now, I would like to ask about the preventive spraying with Bordeaux mixture early in December. What kind should I use, No. 1 or 2, as given in the Pacific Rural Press, June 23? It says for very tender foliage, like peaches, use No. 1, but I expect to apply it when completely defoliated, so perhaps I should use No. 2, and would it be advisable to apply in the spring a No. 1 mixture for curl leaf? The trees have not shown any disease as yet, but I would like to prevent the blight rather than cure it.—GROWER, Fresno.

It is quite usual for individual trees to show such variations of form as you describe, and an approach to uniformity of shape must be secured through the art of pruning. Your trees which manifest too great horizontal growth should be raised by cutting to upper buds to encourage upright branches, and too great density of the tree has to be prevented by removing surplus branches during the winter pruning. It must be borne in mind, however, that there is always a danger of opening the head of the tree too much in the

hot valleys, and one reason why peach trees are sometimes short-lived is due to the fact that the pruners have had too much regard for the open center. We have no doubt that you can accomplish very satisfactory shaping of these trees, and quite as close approach to uniformity as may be desirable by studying carefully the trees during the pruning, both with reference to shape and to the density of the head. The strong Bordeaux can, of course, be used to advantage when the trees are bare of foliage, and spring spraying need not be done for curl leaf unless you see it coming on badly.

WANTS TO REACH ALFALFA GROWERS.

To the Editor: I am owner of one of the largest alfalfa meadows in the Southwest, consisting of some 1,400 acres. I am producing both alfalfa seed and hay in large quantities. I am anxious to come in contact with every producer of alfalfa hay and seed, especially the producers of seed, in the alfalfa growing States and Territories. I have in view the formation of an association mutually beneficial. I would thank you very much to give me the names and addresses of all the growers of alfalfa seed known to you, whether in your State or Territory or not, and I would thank you for such information as would enable me to find those not known to you.—R. E. SMITH, Sherman, Texas.

We know too many alfalfa growers to find time to make a list of their names and addresses and have time to do anything else for a couple of days, so we print Mr. Smith's request and give all who choose, an opportunity to communicate with him. Mr. Smith is a reputable man, president of the Texas State Division of the Southern Cotton Association, etc., and will undoubtedly make good use of correspondence addressed to him.

PEACH BLIGHT.

To the Editor: I send you some twigs from my young peach trees. Two years ago my planting did the same, but fertilizing with ashes and liquid manure seemed to get them out of it. Not so last year and this. The trees make very unsatisfactory growth of long spindling twigs. Most trees are entirely affected, others only in part, some are bare of leaves, except at the tip, and others still retain their leaves. Some say it is the blight (shothole fungus), but I understand that denudes the tree early in summer and by this time a new crop of clean leaves is out. What is it, and how should it be treated?—ORCHARDIST, Penryn.

It is the peach blight caused by the shothole fungus as described in previous issues of the Pacific Rural Press. This disease keeps at work when we have a moist spring and early summer. It is the curl leaf which quits earlier and is followed by a new growth of leaves. Your treatment is with the Bordeaux mixture as described in our issue of June 23.

WHO RECOGNIZES IT?

To the Editor: A lately arrived Chinese missionary told me of a fruit growing on a vine like a grape vine, about 3,500 ft. above sea level, called "Chang Foo," which he interpreted as "He grape." This fruit does not grow in clusters, but singly, and about the size of a small pear.—READER, Santa Cruz.

Your advice about the vine growing in China is interesting. We are unable at the moment, however, to determine what plant was indicated by your informer. He should be requested, if possible, to procure some seed for local trial. We do not recognize the plant from the description. Can any reader recognize it?

WALNUT BLIGHT.

To the Editor: I would appreciate your courtesy in informing me whether any remedy has been found for the "blight" which affects English walnuts in Southern California. I should be glad to know what may be done in the prevention or mitigation of the disease.—ENQUIRER, Los Angeles.

There is as yet no satisfactory remedy for the walnut blight determined upon. Experiments which we have published, indicate that not less than one-half of the crop can be saved by spraying with the Bordeaux mixture before the growth starts in the spring. The Experiment Station has several lines of investigation and experiment in progress, but not yet sufficiently advanced for publication of results. If convenient for you to call at the temporary laboratory, adjoining the

public library at Whittier, in your county, you can get full information on the progress of the work.

ABOUT MILCH GOATS.

To the Editor: Where may milch goats of the Swiss breeds be purchased in or near California? Any information enabling me to secure good milch goats at not too great an expense will be appreciated.—AMATEUR, Pasadena.

The men in California who have manifested the most interest in milch goats are Dr. H. S. Warren Johnson, Los Gatos, Santa Clara county; and Dr. J. S. Hester, Santa Barbara. The leading dealers in goats in California, who may also have some of the milch breeds, are C. P. Bailey & Sons, San Jose.

LIMA BEANS.

To the Editor: Will you please let me know what is the best variety and most prolific of pole Lima beans raised in California. I have heard that California is a great place (certain sections) for the raising of Lima beans. I want to change my seed and get a good variety from California another season, if possible. I mean only those which run up poles.—BEAN GROWER, Bridgeville, Delaware.

The Lima bean grown in a commercial way in California is the old-fashioned pole Lima. Very little has been done with the newer bush Limas, because running varieties are more productive, better size and commercially more desirable. We do not use poles in California, because the beans can safely be allowed to run upon the surface of the ground, which remains practically dry during the growing season. If you will correspond with N. W. Blanchard & Co., Santa Paula, Ventura county, they can furnish you any quantity you desire of our standard seed. Nearly all the commercial product of dry Lima beans is grown in that district of the State.

PEACH TROUBLE.

To the Editor: I send you by to-day's mail a sample of diseased peach tree. Kindly let me know what you call it, the nature and effect of the disease, and what, if any, remedy there is for it.—GROWER, Contra Costa.

There is a little shothole present, but not enough to account for the poor growth, as shown by slim twigs, short nodes and small leaves. Nor is there sign of other disease to cause this trouble. The general appearance of the specimen indicates that moisture is shy, or the soil poor, and that water and manure would help things. It seems to be a case of poor growing conditions rather than disease.

THE CAMPBELL IMPLEMENTS.

To the Editor: In a recent issue of the Pacific Rural Press I read a brief article of the Campbell system of farming (dry farming). Reference is made to the machine for packing the subsoil, but no name or company who has them for sale. I would be pleased to hear you say in your valuable paper where they may be had.—READER, Ramona.

We really do not know where they are to be had. The manufacturers certainly should advertise them, for there is so much interest in this State. An item of interest in this connection is that the directors of the Riverside Chamber of Commerce have decided to raise funds to defray the expenses of a careful examination of the soil in the semi-arid valleys in the county, to determine whether the conditions are favorable to the adaption of the Campbell system of soil culture and cultivation. It is believed that if the new method is applicable to the conditions presented in the Perris, San Jacinto, Moreno and Menifee valleys, the fortunes of the men who have allied themselves with the growth of those sections will take a turn for the better. H. W. Campbell will make the examination in person. What Mr. Campbell can tell by such examination will be interesting, of course, but it ought to be understood that his philosophy of tillage was demonstrated in California nearly half a century before he announced it. What is needed is a trial of the implements which he has designed to reduce that philosophy to practice. We know perfectly already that cultivation will conserve moisture and that "firm below and loose above" underlies all our success in fruit growing. Now we want to know if he can apply it to field crops profitably. We believe he can.

THE IRRIGATOR

THE RECLAMATION SERVICE MUST HOLD FAST.

An address by Hon. George C. Pardee, Governor of California, read at the National Irrigation Congress at Boise, Idaho.

No better work has been undertaken since our fathers laid the foundations for a great republic dedicated to liberty and equality, than the work to which you have put your hands, that of making the deserts fertile and turning into cultivated farms and gardens our arid waste places.

Compared with the tasks which the Reclamation Service of the United States Government has taken up, the construction of the Panama canal is but the digging of a trench wherein to lay the foundations of a great and enduring monument to human achievement. When perfected, the canal will be accepted by the commercial world as an everyday convenience, as though it had always existed. The work of reclaiming the arid regions of the West will be going forward, step by step, project by project, consummation by consummation, with the ultimate end of the work preceptibly no nearer than it is now, and yet in the wake of that work there will spring up splendid farms surrounding prosperous villages, which, in turn, will surround and sustain populous cities; and together, these will sustain strong community ties of love and gratitude in one indissoluble union, and as capable of constructive benevolence as of the preservation of internal peace.

Go Forward, and Only Forward.—If I were able to be present to speak to you in person it would be to entreat you to go forward, and only forward. You have started essentially right, and this is no time to stop to talk new things, or of proceeding on your way by any path other than which you have already mapped out. There may be other routes by which you could attain the same goal—the conservation of water and the irrigation of it, but the way you have chosen is good enough. There is and should be no parting of the ways. We have safely gotten beyond the parting. Let us not now turn back for any purpose whatever.

The inertia of a nation is great in proportion to its size. Our nation, being the greatest on earth, offered the greatest obstacle in the way of an inert disinclination to enter upon a constructive enterprise of such high proportions as the reclamation to cultivation of more than half of its entire superficial area; but, thanks to the thirteen persistent and consistent national irrigation congresses which preceded this one, a start has been made, a start as splendid in commencement as it will be in fulfillment, if we but press forward, swerving neither to the right nor to the left, nor yet halting to see how far we have got. The pressing need at this hour is to finish the enterprises now under way in order to get the water onto these new lands, to get things to growing and the construction funds to revolving that new works may be undertaken.

Could Not Be Done Better.—Perhaps this work might all be done as well by a commission of engineers, working through committees and sub-committees, as by the department of the interior working through the honorable and responsible Secretary of the department, working through the responsible Director of the United States Geological Survey, working through the head of the Reclamation Service, working through hundreds and even thousands of technically trained young men more ambitious to make names for themselves in their chosen calling than to grow rich in enterprises involving plunges in high finance of doubtful morality and patriotism. I say that the commission scheme of construction work might result as well as the present service. I am not saying that it might not, but I feel very certain that it could not have done better than the Reclamation Service has done so far, and I doubt if it would have done as well.

Must Be Individualized.—The commissioned land did not promise well for the construction of the Panama canal, and since the canal has been placed in the custody of the War Department of the United States Government, with its distinguished Secretary as its responsible head, it has made better progress. I think that executive power, in order to be productive, must not only be centralized but individualized. The individual to whom any constructive work of great magnitude is confided must be given plenary powers and then be held to a strict responsibility for results. That is the theory running all through the reclamation service as it stands. It is the true theory, and any change of policy would, in my judgment, retard the reclamation enterprise instead of advancing it.

Opposition Not Dead.—The beginning that has been made, through the invaluable aid of the national irrigation congress, has not been made without opposition

That opposition may be sleeping, but it is not dead. There are, I am sorry to say, indications of its coming to active life again. In my judgment the field of operation is broad enough and long enough to afford limitless opportunity for both private and governmental enterprise to do their uttermost for centuries to come, and there is no good reason why either should encroach upon the domain of the other. Whenever it is possible for private enterprises to enter upon the reclamation of lands with a reasonable investment, without exacting more than a reasonable rental from the users of water there, and in such instances, private enterprise will surely take up the work. But I take it that this great, and not always prudent, Government of ours has grown weary of a policy of reclaiming swamp and overflowed lands which has resulted in nothing more than parting company with the titles to such lands without accomplishing their reclamation, and that it will not wish to pursue a similar policy with regard to the reclamation of so much of its arid lands as are still vested in the Government.

The Property of Settlers.—The word has gone out that the reclaimed lands shall become the property of the people who are to make homes on such lands, and at no greater price than the actual expenditure in reclamation works shall impose upon such lands. If development by private enterprise is to mean that the investment is to be quadrupled in the sale of the land to the tiller of the soil, in addition to exacting, perpetually, a high interest on the investment in the way of a charge for the use of water, then development will do well to await the beneficent investment of the revolving fund of the Reclamation Service. The water should belong to the land, and the land to the man who is to cultivate it, and he should pay for neither, more than a reasonable return on a reasonable investment. Let me repeat: Where private enterprise has a reasonable opportunity to engage in a reclamation project on a basis reasonable and just, private enterprise will do the work, but the right of way should never be conceded to private enterprises where the result is likely to be the witnessing of a dizzy flight in high finance, for the virtual enslavement of a farming community to the cruel exactions of a greedy corporation.

Wide Field of Endeavor.—How wide this field of endeavor is, and how great the harvest, may be imagined when we reflect that the Reclamation Service already has surveyed and approved reclamation enterprises that will involve the expenditure of a round hundred million dollars, whereas the estimated total for the reclamation fund by the end of 1908 is only \$21,000,000. Montana alone is said to be awaiting the expenditure of a hundred million dollars in this work, but two hundred million dollars will not adequately reservoir the western slope of the Sierra Nevada mountains of California. There is not the smallest need that private and governmental enterprise shall get in each other's way in reclamation work, or, what is equally important, that private enterprises should sit idly down on some arid plain and do nothing worth while in the hope that the reclamation service will presently come along and do its work for it.

I perceive, too, that our friends of the South would like to share our revolving fund in the reclamation of the swamp and marshy lands of our Southern coasts, not to speak of the everglades of Florida. I trust that they will not be in a hurry to break in upon our irrigation enterprises. I venture to hope that they will let our revolving fund revolve long enough at least to grow unwieldy. It may some time grow so large that its very bulk will embarrass the department in its efficient management, but that is not yet. Let us first produce fruits from the work already undertaken. "First in time, first in right," has been found a salutary rule in water distribution. Reclamation of arid lands was first in time and should be first in right, at least until there shall be more of accomplishment than is now in sight.

Be steadfast. Gentlemen of the National Irrigation Congress, my heart is with you in this stupendous undertaking, and if I were with you in person, my advice should be, "Don't tinker with the reclamation act or meddle with the reclamation service, but be steadfast and go forward until reclamation has proven, by the completion of a number of irrigation works, that it is, as we know it will be, a success. Any modification of the present plan of procedure will open up the way to numberless modifications, and this will result in disaster to the whole enterprise. Let your motto be "Hold Fast."

THE MARKETS.

Wheat.

The wheat yield this year is estimated by the local dealers at about the same as last year. The crop is now fairly well bought up throughout the State, but some is being firmly held by farmers who are expecting an increase in prices later on. It is estimated that about two-thirds of the wheat crop is now out of first hands. There has been very little activity in the market here during the past week and prices have been dull, with a tendency to go down. Speculation is being indulged in only in a very moderate degree. Very little wheat is reaching San Francisco as all the warehouses are burned and no others have been substituted as yet. The wheat receipts at Port Costa have, however, materially increased, as that point is getting most of the wheat which ordinarily comes to San Francisco. Very little exporting is being done, although there is a good European demand. The wheat situation in Oregon is a little more exciting than here, though this week the Portland market has been rather inactive. Oregon and Washington farmers are holding out for higher prices. The wheat in the Northwest is of mixed quality and prices for it vary accordingly. Some six thousand tons of club wheat is booked to leave Portland in October for Hongkong. Exporters, in view of the big movement which is expected from the Northwest to the Orient, are finding an active demand for grain charters.

Barley.

The barley market shows more activity than the wheat market, and the farmers seem to be more anxious to dispose of their barley crop. The barley yield is about 20 per cent greater this year than last. The yield per acre is about the same, but the acreage has been considerably increased. The quality, on the whole, is good, but the price has a tendency to weaken. Some little interest is taken in chevalier barley, a good deal of which was raised this year. This is bringing as high as \$1.70 per hundred. The barley crop is pretty well bought up throughout the country, especially in the southern end of the State. Although there has been some little buying and selling going on here during the past week, there is but little change. The offerings have been of about equal volume as those of last week.

Flour.

Flour transactions have been very limited in San Francisco and very little interest is being taken by local handlers. All the flour is coming in from the interior or from other States. Some particularly large shipments are arriving from Stockton. Flour is weaker, sympathizing with wheat, and very little speculation is being done. There has been an increase in the foreign demand and large shipments of flour are leaving northern ports. The demand in San Francisco is nothing like the demand in past years. There are no storehouses and the shipments coming in are only equal to the every day consumption.

Oats.

Oats are in abundant supply this year or will be as soon as the new crop, which is now coming in, gets fairly started. The crop is of fairly good quality and the price holds up wonderfully well under the circumstances. Some samples coming into the local houses show a good bit of cheat and squirrel grass, but as a rule the quality is good. The crop of oats north has fallen short of its usual size, but the crop south is forty or fifty per cent greater than last year. The acreage has also been somewhat increased and this has run the total to almost double the yield of last year.

Corn.

Not much is to be said about corn in this market. San Francisco offerings are few and the market is exceedingly dull. Some little corn, however, has come in from the East, but so far this has met with a slow demand.

Millstuffs.

The millstuffs market with the exception of rolled barley, is very uninteresting here. Many sales of rolled barley are, however, being made, and the demand for this for feeding is good at a good fair price. From reports up the coast the market for feed stuffs there is gradually working to a lower basis and offerings are becoming fewer.

Beans.

As the time for the harvest of the new bean crop advances, much interest is being taken in this line. Samples are constantly being examined and some sales have already been made. Some shipments of beans in the shape of mixed cars are leaving this point for the middle West and East, and a limited trade is being carried on in San Francisco. Prices continue firm, with very little change. Spot bayos are steady at the recent decline and limas are limited in stock and unchanged in prices. Growers are showing a tendency to hold

their crops, and very little buying has so far been done. Large offerings of limas are expected after harvest and a decline in price seems inevitable. Blackeyes are plentiful and cheap. Lady Washingtons and small whites are unchanged. Red kidneys are quiet and about cleaned out.

Seeds.

Seed growers report a fine season for harvest. They are generally getting seeds ready for the market rapidly. Prices remain unchanged as a rule, though there has been a sharp advance in different varieties of radish seed. Owing to a shortage of these seeds in Europe, onion seed has also taken a turn to the good, but unfortunately most of the growers have already contracted their crops and are receiving no benefit from the raise. The onion seed crop is very short and as there was practically no crop last year, these are very scarce and high. Yellow mustard seed is also very scarce. Seed growers and San Francisco dealers are interested in the action taken to induce Congress to abandon the practice of giving seeds away.

Hops.

Advices from the Sacramento and Russian River hop fields are to the effect that the scarcity of pickers is delaying shipments, and that early crop reports of a large yield will be fulfilled. Many hop growers have contracted their crops at from 19 to 20c. Present prices, while no higher, have taken a firm position and an early advance is expected. The quality of the yield is good. The first sale of spot hops in Oregon was made last week at about 18c.

Wool.

The feature of the wool market here this week was the determination of the dealers to rebuild the wool warehouses in the southern part of the city. Local handlers expect that the fall clip will be handled in this city. The spring clip was largely handled in Stockton. Last year the total wool clip amounted to 14,000,000 pounds, this year it is expected that the clip will fall somewhat short of this. Some wool has already been sold at a range of from 20 to 25c. The big wool county of Humboldt is holding most of its clip, amounting to not less than 700,000 pounds. Early in the season flock masters were offered from 2 to 3c. per pound more than present quotations, but very few sold, owing to a strong belief that wool would advance. The fall clip of Humboldt county is expected to be less than the spring clip.

Bags and Bagging.

The bag men of San Francisco report a falling off in the demand for all kinds of bags except bean bags. A large demand for the latter is, however, reported. Some trouble is reported by the bag factories in securing help, and this is making it hard for dealers to fill orders. The price of wheat bags has dropped from 10½ to 9½c. under a very slow demand. Cotton goods are firm with a fair demand.

Hay and Straw.

Arrivals for the week have been 7,460 tons. This is the largest week's arrivals for a year, and may not be equaled again this season. With the resumption of hay traffic on the railroads, arrivals by Southern Pacific cars have been heavy throughout the week. On one day the arrivals by railroad were 117 cars. The railroad hay yard is now entirely blockaded with cars of hay, in process of unloading, and there is not track room enough to receive all of the cars that are being landed there. Under these conditions, the market has declined, during the week, and at the present time the feeling is decidedly soft and weak. There is a great deal of hay in the fields, baled, waiting shipment, by both rail and water. Transportation is limited, and it is feared early rain will do a great deal of damage before the hay can be removed. It is unquestioned that under above conditions, arrivals of hay here must continue excessively heavy, until the hay is cleared from the fields. This knowledge causes an added weakness to the present market. Choice grades of hay are the exception to the general dullness, and when offered on the market, sell readily at established quotations. The poorer classes of hay are those that are at present neglected, dull and slow to move. The shipping demand for hay has continued about normal, both for foreign and coastwise shipments. Alfalfa hay is arriving freely and the market on this article, while not any lower, is just a shade softer, although there are no accumulations. All that is offered on the market moves off fairly well. The one article that the market is positively bare of, is straw. There is absolutely none coming in to supply the demand. The demand is decidedly light, but even at that there has not been enough coming to take care of it.

Poultry.

Poultry prices are just about the same as heretofore,

with a slight improvement in the demand for young stock. A good demand for large fat hens is causing poultry dealers to scour the country round about. There is very little demand for old stock, especially for old roosters. Pigeons are in good request, extra fancy selling at \$1.75. Turkeys are scarce, and the demand for young stock is increasing daily. Ducks and geese remain about the same, with a fair demand for young stock.

Butter.

Butter is about the same as last week, being a little easier in tone. Receipts during the week have been larger than last week, but otherwise conditions have not altered.

Eggs.

Eggs are not so plentiful as last week and prices are quoted a little higher. Many eggs are coming into the market in a bad condition, and dealers are obliged to sell some lots at figures below quoted prices.

Cheese.

Cheese remains unchanged, except for a slight advance in extra fancy. Buyers are showing a little more inclination to buy, and on the whole the situation is probably a little firmer than last week.

Vegetables.

The general run of vegetables remains about the same, with a good demand and a fair supply in nearly every line. Green corn is selling at a very low figure, owing to heavy supplies. There has been a sharp advance in tomatoes. Reports from Anaheim are to the effect that the new crop of Chile peppers is beginning to move out. This is estimated as fully twice as large as last year. The local market for onions remains unchanged. The yield is estimated at about that of former years and the quality is pronounced good. Reports from Northern States point to a heavier crop of onions than usual, but sizes will probably range a little smaller.

Potatoes.

The present crop of potatoes is reported to be somewhat smaller than was expected and prices are higher and firmer. The later crop is expected to be better. This will probably be about two-thirds of the average. The market is strong. Salinas Burbanks at this time last year were selling at \$1.10, as compared with \$1.50 at present. Last year river Burbanks were selling at from 50 to 60c., while this year they are bringing from \$1 to \$1.10. Oregon potatoes will undoubtedly have to select other markets this year, as there will be no demand from San Francisco. The Oregon crop is estimated considerably lighter than usual.

Fresh Fruits.

The fresh fruit market is about the same as last week, with receipts ranging a little less. Grapes are plentiful and prices easier. Peach receipts remain small and prices are stiff. Pears are plentiful and are selling at \$1.35. Receipts of plums are large and prices are unchanged. Apples remain about as before, with few offerings.

Dried Fruits.

The market for dried fruits is beginning to open up and various kinds are beginning to come in in fairly liberal quantities. The peach crop is short, but the quality is doing much to make up for the shortage. Prices for peaches are firm and holders are not anxious to sell. The prune crop is falling short of what was anticipated, but the quality is slightly better than was looked for. Prune shipping has begun from various points, San Jose shipping its first carload last week. The shipment went to Minneapolis. The pear crop is light and is being largely held by the growers.

Raisins.

The grape crop is undoubtedly lighter this year than usual in some localities, though the acreage is probably greater, and will have a tendency to relieve the shortage. Picking, in most sections, is fairly under way. Reports from Fresno county are favorable. Prices are expected to be better than were anticipated a few weeks ago.

Nuts.

Prices for walnuts have been fixed at from 1½ to 2c. less than last year. The walnut crop is opening up, and the Southern California Walnut Growers' Association has fixed prices as follows: Softs, 11c.; No. 2 softs, 8c.; standards, 10½c.; No. 2 standards, 7½c. Growers seem to be pretty well satisfied with the outlook, as the prices fixed insure a paying harvest.

Honey.

The supply of honey in San Francisco is very limited, and the price is good. Reports from the South are to the effect that the amount of honey made this year will be very small, and that prices are as yet unsettled.

THE STOCK YARD.

RECREATION AS RECREATION, OR EXPERIENCES OF A NOVICE.

By Hon. Carroll Cook at the California Live Stock Breeders' Association Meeting, Held at Sacramento, August 28, 1906.

To write anything about Shorthorns, that will be of interest to such experienced breeders as assemble at meetings of this sort, I realize will be a difficult task. When requested, about the first of the month, by officers of this association, to prepare a paper for you, I hesitated, feeling that a beginner could say nothing that would interest experienced breeders, but finally concluded that I would try to be accommodating and, to that end, would jot down a few of the experiences of a beginner. There may be a few beginners here, as well as myself and such experiences might be of interest to them and might also be of some interest to old stagers, in calling back, to memory, their early trials and tribulations.

It was the sight of such sick cattle as we see at a State Fair that first fascinated me. I attended several expositions here at the State Fair, and each time had a yearning to be the owner of such beauties, in the bovine line, as those I saw there. The longing grew and finally I concluded, as a recreation from my judicial duties and cares, to engage in the re-creation of animal life. To this end, I screwed up enough courage to purchase from one of the exhibitors, a bull and two cows, that were not at the fair, however. When the three animals purchased reached my ranch—after awaiting their arrival with great anticipation, with a picture in my mind of three such slick animals with a picture in my mind of three such slick animals as I had seen at the fair—I stood aghast, when with three measly looking animals, with rough coats, scaly horns and no fat. The bull looked to me more like some scrub calves that I had running in my pasture, growing for the butcher, than the pure-bred that I had pictured seeing and anticipated owning; one of the cows had a crumpled horn and a sickly looking calf at her side—the calf had to be carried, by the way, it was so weak—and the cow was all bones; the other cow was a roan and looked better, but her horns were rough, her hair long and her bones plainly visible.

I looked at the trio and the baby with huge disgust and then turned to the registration papers that had been sent to me, to see if some mistake had not been made. I found each cow numbered on the horn with the number called for by her certificate and found the certificate to trace her lineage back to the purest stock that I had read of, in the Shorthorn beefs that had been studying. One of the cows—the worst looking one, with the calf—traced back to imported Bracelet and she, herself, was sired by Elmwood Lavender, while the calf by her side was got by Royal Scott; the other cow, I found to date her ancestry to Brawith Búd, one of the celebrated Scotch families mentioned in Sanders; while the bull was from an equally good family and sired by a bull that I had seen take first prize here.

I was considerably non-plussed, when I compared their appearance with their pedigrees. I was, however, but a beginner and decided to await an explanation. The explanation I found during that first winter; I was familiar with the surface only.

I put the new bull, the two cows and the calf with my other scrub cows and treated them just as all the other cows were treated. Milk was not the purpose for which I had been keeping my cattle; the raising of young stock for the butcher was all that I had tried to do and the cattle rustled for themselves, from one end of the year to the other, on about 400 acres of hill land, on which the feed was green in spring and early summer and dry in the late summer and fall. In the dead of winter, a little hay was furnished them, until the grass should come again. My pure-breds did not fare well on this bill of fare. On one of my weekly visits to the ranch I had all the cattle driven down to the corral at the barn, that I might see them and see how my pure-bred calf was growing. The scrub cows and calves—that had been used to such fare—looked fairly well, but my poor pure-breds looked like skeletons from some museum with cows' skins drawn over them. Something was wrong; what was it? I started in to find out; first from books and live stock magazines and then from friends older in the business. From all that I could learn, I concluded that the cattle, bred for beef, inherit that which makes the beef, namely, a good appetite, and that when that peculiarity which produces that which gives them their value,

is neglected, they pine away and show the effects of the deprivation of that for which they crave—proper food.

I concluded that a pure-bred and a scrub were two different kinds of an animal and that if I expected to succeed, it would be necessary to house my stock and to feed more than nature gave. To build a cow barn for four animals would hardly pay, so I decided to add to my pure-bred family and build a barn large enough for all that I intended to keep; and to get rid of all my scrub cattle.

This program I put into effect at once, and besides adding several young heifers to my herd—making ten females in all—I exchanged my first bull for one of the cows added and purchased a bull more like the type that I had pictured owning. My second bull cost me \$500, but I never regretted the purchase. His calves all showed where they came from. I also paid good prices for several of the cows added, and their calves, compared to the calves from cheaper animals, showed the wisdom of the extra expenditure.

The barn finished and the pure-breds installed therein, I filled the loft with bale upon bale of alfalfa hay, and the granary with rolled barley, bran, middlings, shorts and oilcake meal. Then I discharged the man who had had charge of the cattle, as incompetent, and employed a new herdsman, giving him specific instructions how to feed. Two months' time produced some improvement, but not sufficient to satisfy me or meet my ideal as to the appearance of the cattle. I looked for a new foreman of my ranch and found him and then left the selection of a herdsman to him. He changed herdsman several times, but, with each, he gave the cattle his personal attention and saw to it that his orders were carried out. From his advent and proper feeding, the cattle took on the appearance that, to my mind, should go with blooded stock and showed their breeding in their looks, as well as in their several certificates, and I was not compelled to produce for my friends whom I drove down to the cow barn, the certificate of the animals that they might know them to be pure-bred.

Finding that I now had in my barn what—in my aircastles, prior to becoming a breeder—I had pictured having, I added a few more females to my herd, making a total of 18 purchased stock—just a dozen and a half, including my bull.

During the transition period—from bone to flesh—not fat, however—I lost one cow and a calf that she had dropped but could only nourish for about a month. The only other mishap, was the loss of my Scotch bull "Ramsden Lad." He was but two years old when I became his owner. He served me well for two years and then died, as I thought, from over exertion, but an autopsy revealed the fact that he had been fed too well and that fatty degeneration of the heart was the cause of death. The autopsy surgeon having rendered that verdict, the indictment ready to be filed against the cows accused by me, was dismissed. In nine months from the date of his death, however, I shall have another calf to take his name and perpetuate his blood and memory.

Before the Lad died, I had purchased another and a younger bull, for several young heifers were ready to be bred and a smaller animal was required. The successor of the Lad is here now and, although under 2 years of age when I purchased him, is now a few days over that age and I believe the youngest of the 2 year old class at this exposition.

In narrating my experiences and disappointments as a breeder, the story would not be complete, did I omit to say that three days before the Lad's death I had sold him back to the breeders from whom I purchased him and was to deliver him at the end of the week. Greed, however, lost me my sale, for before letting him go, I wanted just one more of his calves and the exertion was too much for his lordship.

Beginning with a herd consisting of one bull, two cows and a puny calf, adding seven more females and then another seven, I have today a herd consisting of: 1 bull; 9 cows over three years; 5 cows over two years; 5 cows over 1 year; 1 cow nearly one year; 3 heifer calves under 6 months; 1 bull calf just 1 year; 2 bull calves nearly one year; 1 bull calf under 6 months; a total of 29 animals and my herd returns to the ranch with the red ribbon.

Seven of my cows were sired by Ramsden Lad (the bull that died) and as none of them could be purchased for less than \$150, and as one died in teaching me how to care for my stock, I consider that my gross receipts for the \$500 invested in the Lad amount to \$1200.

The sickly calf that ran beside one of the cows that I started with, has developed into the prettiest cow in my entire herd—a dark roan—and \$250 would not change her owner—in fact I was offered that for her today.

The first calf dropped by the other of such cows, was a heifer, and is now nearly two years old and one of my pets that I would find it hard to part with; she, like her dam, is a light roan. The dam now has another roan calf by her side, the latter having afforded me the pleasure of uniting the two Scotch families Ramsden and Brawith, by naming the calf "Ramsden's Brawith Bud."

Another of my special pets is a red heifer, to my mind, the queen of the herd—named "Queen Bess," not yet quite one year old, but a beauty in every line. Her dam was sired by Sharon Valentine and she, herself, by Ramsden Lad.

Among my young bulls, that I have had the pleasure of watching as they develop from week to week, I number three by Ramsden Lad, namely: "Sonoma," out of Diana, she by King Spicy; "White Stockings," out of Lady Lioness 6th, she by Nominee; "Charles Miel" (not the Reverend) out of Miss Rose of Maple Hill, she by Color Bearer; while my calf "Daisy Burbank" is a full sister to my young bull "Sonoma"—so that the name Burbank and Sonoma are related in more ways than one. Two of my other young bulls were sired by the Rush and Plence bull Nonpareil King, namely, "Walter King" out of Waterspout 6th, she by Noxeebee Duke; and "Ogolala," 2nd in his class, out of Duchess of Humboldt 49th, she by Humboldt Victor.

The increase in my herd has enabled me to bring here this year, for exhibition, not only individuals to the number of 20, but an Exhibitors' Herd, a Calf Herd, four animals, the get of one sire, all bred and owned by me; and four animals, the produce of two cows, bred and owned by myself.

I have made a beginning; time and experience will enable me to progress. I started with two cows and a bull and was anxious to increase my herd as fast as nature would permit. Experience, however, has taught me that a guiding mind can sometimes direct the operations of nature, so that results will be more satisfactory and now, instead of having calves dropped promiscuously through the year, I allow no cow bred until she has reached the age of two years, nor at any time that would bring a calf in the summer or fall. I find that all of my calves dropped in winter and spring well compensate me for waiting a while and, for a few months each year, insisting on celibacy on the part of my bull.

I do not pretend, at the ranch, to keep my stock in show condition; I merely endeavor to keep them in such shape that they may be pleasing to the eye when I look at them and that they may not forget the habit, bred into the blood, of eating and getting fat; also that when a friend visits me, or when a purchaser calls, I may not be ashamed of the stock to be seen in my barns. To this end, I have found Mr. Henry's book, entitled "Feeds and Feeding" a most valuable book and one well worthy of careful study by any breeder, be he a novice or such an old stager at the business as our friend Glide.

The animals which I have brought here this year, are as they can be seen in my barns. It was impossible to fit them for this exposition. The earthquake and fire upset everything. Cars for hauling hay could not be procured; the late rains in June so filled the hay with weeds that the right kind of alfalfa could not be had; the uncertainty as to whether there would or would not be a State Fair; so delayed starting to prepare, that about all that could be done was to polish up their horns a little, wash them a few times and send them as they were, without any expectation that they could compete with cattle the preparation of which had commenced a year ago, and with young stock nourished not by the dam, but by nurse-cows some of which are smaller than the calves they suckle. They are here, however for the good of the State, and that the public may see what Shorthorn cattle are, when not forced, but when properly cared for, and as they may be seen any day—fair or no fair—on a ranch where they are loved as a man loves his horse and his dog, and are raised and cared for to give pleasure to their owner and his friends in looking at them and afford him and his the greater pleasure of watching them grow and—being properly cared for—develop from the puny calf to the magnificent animal that a pure-bred Shorthorn always is. Without supplying four cows for each calf to suckle, we go home with 2nd prize for Exhibitors' herd, and, in all, one 1st, two 2nd and four 3rd prizes.

To watch the growth of animal life, is, to my mind, the most pleasing thing in life. Whether it be my Shorthorns, my Berkshires, or my colts, in it I find recreation and delight. We watch our children from babyhood to manhood and womanhood, and the breeder who, with his mind directs the reproduction of animal life, watches with almost equal interest the products that he is responsible for, and feels that he, himself, is a part of nature.

The charms of nature are beyond description. Nothing is better adapted to turn man's thoughts from his own self-sufficiency, than the works of nature. Put his attention where he will, on the soil, the vegetable kingdom or animal life, there he will discover convincing proof of his own ignorance, and at the same time, the omnipotence of a first Great Cause will be impressed on his mind and influence his understanding.

It has been well said by Streeter, in that most interesting little book "The Fat of the Land," that "ninety-five per cent. of those who engage in commercial and professional occupations, fail of large success, more than fifty per cent, fail utterly and are doomed to miserable, dependent lives, in service of the more fortunate. That farmers do not fail nearly so often, is due to the bounty of the land, the beneficence of nature and its ever-recurring seed-time and harvest, which even the most thoughtless cannot interrupt. * * * Choose the country for your foster mother; go to her for consolation and rejuvenation, take her bounty gratefully, rest on her fair bosom and be content with the fat of the land."

HORTICULTURE.

THE WAR AGAINST PEAR BLIGHT.

A large number of prominent pear growers of the Sacramento valley and surrounding territory met in Sacramento August 30 and formed what is to be known as the California Pear Growers' Association. The purpose of the organization is to promote a campaign against pear blight in the pear and apple orchards of the state.

The following outline of the proceedings is prepared from the Sacramento Union:

The meeting was held at Pioneer hall under the auspices of the Sacramento Valley Development Association, and Senator Marshall Diggs, president of the valley association, explained the object of the meeting, saying that it was called by the development association because that organization is much interested in the pear growers, and he hoped that great good might be the result of the conference.

Edgar Sheehan offered resolutions which he desired the meeting to consider. These he considered to be in line with the questions which had been suggested. The resolutions suggested the organization of those present as a body to be known as the California Pear Growers' Association, which should co-operate with the pear growers throughout the State in providing the interest of the pear industry. One resolution was as follows:

"Resolved, That it shall be the authority of this association to promote the organization of affiliating county organizations, to co-operate with State and national agencies in the work of pear-blight control; to urge upon State and county officials the proper enforcement of the horticultural laws pertaining to this effort; to formulate and present to the legislature for enactment into law any measures deemed necessary to the promotion of the purposes of this association."

Alden Anderson said that the resolution just passed should be followed up by the organization of the meeting into a pear growers' association, and suggested the appointment of a committee of five to present plans for organization. A motion to this effect was adopted and the following committee was appointed: George M. Cutter and Edgar Sheehan of Sacramento county, B. F. Walton of Sutter, Fred Blake of Vacaville and M. Tudsbury of Loomis. The committee retired for deliberation.

Mr. Cutts of Sutter county was called upon for remarks, as the first of a number of speakers, in regard to the situation. He said that his orchard of 400 pear trees bore 60 tons of pears this season, but that if Professor Waite's method of abolishing the blight had not been employed the orchard would have borne nothing. He thought the blight cannot be eradicated, but can be controlled. He favored organization.

Justice Gammon of Isleton said much success had attended the fight against the blight in his vicinity, but he thought an organized effort should be made in all districts. He favored invoking the law on those who will not clean up their orchards.

Professor Waite Favors Plan.—Professor M. B. Waite, the well-known pathologist of the United States Department of Agriculture, was greeted with applause. He said he had talked about the blight so generally over this section of the state that he would not go over the methods of work in the field, and he devoted his attention to the relation of associations as proposed by the meeting to the blight. He was pleased, he said, to see those present eager to organize.

Professor Waite said the national, State and county

horticultural officers would be highly gratified at such an organization, as it would enable them to facilitate their work. Perhaps nine out of every ten owners, he said, were eager for such an organization. The other one grower, however, declined to conform to the uniform plan which had been adopted by the other nine.

Pear blight, said the speaker, must be eradicated entirely. Many methods of doing this work he had already suggested. The tendency of modern medicine, he said, was toward the eradication of disease. He cited the stamping out of the yellow fever epidemic at New Orleans, and showed how the physicians had to contend more with the people of New Orleans, who concealed the cases, than with the disease itself. He proper authorities and that the people should co-operate to destroy such diseases. He told of a number of other diseases affecting men, animals, plants and trees, all of which must be treated on the eradication theory.

Campaign is Difficult.—Professor Waite discussed the difficulties of the war against the blight under three headings. The bacteriological difficulty he considered the worst, as it is extremely hard to locate the blight on the trees, the difficulty growing greater if the disease is in the root. Then the workmen do not always know how to treat the trees, but must be instructed. This difficulty is increased by the scarcity of labor in California, and the question of Chinese and Japanese labor is a burning one, as these classes are not easy to educate. The experienced man does not grow discouraged when he fails to find the seat of the disease, however, but continues with a second or third cutting to locate the trouble. Late summer cutting is more effective than early.

The Personal Phase.—The personal phase of the work, said Professor Waite, is one in which he is deeply interested. Many people need to be converted to the doctrine of the eradication of pear blight, but their neighbors who are already educated to the work should endeavor to convert them and secure their co-operation. He held that the pear growers cannot lose out as a whole, although some few orchards may be destroyed. A prompt, effective, co-operative fight will save a majority of orchards to the farmers.

The legal side Prof. Waite considered an important phase. The law, which demands the eradication of the blight in trees, or an attempt to eradicate, is not questioned, but the question is one of its enforcement. This has been found a difficult matter, but a united effort of an organization would tend to overcome all personal and legal difficulties, leaving for the scientific men the work of education.

In answer to a question, Prof. Waite said he had not been able to see what work against the blight was done last winter, except in the river districts, where he knew from personal observation it had proved effective. There are districts, however, in which the blight has increased during the year.

To another question he replied that bees, wasps and other insects carry and scatter the blight. He said he did not know how the number of people keeping bees might be reduced.

Practice, Not Theory.—Prof. Ralph Smith of the experimental station at the State University said that the question before the meeting is not how to control the blight in theory, but in practice. He said the final responsibility must come on the State Department, which he represents. The Legislature appropriated \$10,000 for investigating the blight. The idea of controlling the blight was somewhat different then from what it is now. Meetings were held to see what should be done with the money, and after long discussion it was decided to apply it in the furtherance of Prof. Waite's method. Without discussing the work, it is certain that the State has gotten its money's worth. The department has nothing new to offer, as Prof. Waite's method has not been improved upon. The question is what is the best way to do that? Prof. Smith thought that the suggestion to organize an association was excellent and that an organized effort against the blight will prove effective.

Mr. Boalt of Butte county told of a fight against the blight in orchards in San Joaquin valley, where the same difficulties were met with as have been encountered in other parts of California. Most of the orchards were lost. The disease has extended to nearly all portions of the State in which there are pear trees, and he thought bees were not responsible for its spread, but men. He spoke in favor of organization.

Alden Anderson said he had taken a great interest in the crusade against the pear disease. He thought the work should not be directed so much by personal interest as through organized effort. He told of a meeting of Isleton growers, at which it was decided to ask

the supervisors to compel a few delinquent growers to comply with the law. He thought it ought not to be necessary to go to law in the matter, but that the national, State, county and individual interests should co-operate in the work, and that the results would then come easily. He said the Sacramento county supervisors had agreed to give \$6000 or \$8000 to the horticultural commission for the furtherance of the work.

John Isaac, secretary of the State Horticultural Commission, said that an organization of growers would prove a benefit to the State organization. There is ample authority of law to have the orchards cleared of the disease, and the pear growers might aid the commission in locating the derelicts.

The Constitution.—The report of the committee and the constitution submitted, which were adopted, provided for the organization of the California Pear Growers' Association.

As stated in the constitution, the objects of the association are to "promote a systematic and comprehensive campaign for the control of pear blight in the pear and apple orchards of California; to promote the organization of affiliating county associations; to co-operate with State and national agencies in the work of pear-blight control; to urge upon State and county officials the proper enforcement of the horticultural laws pertaining to this matter; to formulate and present to the Legislature for enactment into law any measures deemed necessary, and to otherwise promote the purposes of this association."

Some of the provisions of the constitution are as follows:

The officers are to be a president, a vice-president from each county having members, a secretary and a treasurer. The vice-presidents are to be appointed by the president. All officers are to hold office for one year. Anyone who signs the membership roll may become a member of the association. The meetings of the body are to be held on the first Saturday in August of each year, at such place as the president may name. The vice-president of the county in which a meeting is held is to preside in the absence of the president. Twelve members shall constitute a quorum. An executive committee will act as the managing board.

Election of Officers.—Following the adoption of the constitution election of officers was held. Alden Anderson was the only nominee for the office of president and was elected by acclamation, as were the other officers, as follows: W. A. Beard, secretary; George W. Peltier, treasurer.

President Anderson took up the administration of the organization by thanking the members for their appreciation, and assured them of his hearty desire for the furtherance of the campaign that had been taken up. He asked all present to sign the membership roll.

The Membership.—The membership of the Pear Growers' Association, formed yesterday, is as follows:

J. J. Brennan, J. N. Barton, Jr., Loomis; J. H. Lewis, Newcastle; T. McCauley, Rio Vista; E. M. Shehan, Sacramento; A. D. Cutts, Live Oak; W. J. McCann, Rosemont, Placer county; Gustave Ehrenberg, Olivina farm, Placer county; W. C. C. Van Loben Sels, Vorden ranch, Sacramento river; George S. McWilliams, Vacaville; Oats of Williamson & Oats, Sacramento; J. G. Boggs, Newcastle; J. Thomson, Penryn; E. Booth, Cosumne; H. E. Butler, Penryn; W. E. Rippey, Penryn; R. J. Currey, Dixon; T. M. Gates, Vacaville; J. R. Snead, Dixon; H. C. Blake, Vacaville; R. I. Blowers, Woodland; E. R. Thurber, Jr., Vacaville; W. H. Tudsbury, S. C. Day, Loomis; A. C. Eastman, Walnut Grove; Henry Remick & Son, Winters; L. L. Crocker, Loomis; J. L. Aldrich, Ryde; George McCullough, Vorden; H. D. Kercheval, Courtland; W. G. McRoberts, Yuba City; L. A. Walton, Marysville; H. E. Chick, Oakland; James Millar, Dixon; T. B. Hull, Tudor; W. J. Smith, Vorden; J. W. Anderson, Davisville; T. D. Morrin, Rumsey; August Brinck, Winters, Eben Boalt, Palermo; John Isaac, Sacramento; James A. Hill, Hanford; L. D. Greene, Vorden; Alden Anderson, Sacramento; M. B. Waite, Washington, D. C.; L. W. Myers, Courtland; Peter J. Shields, Sacramento; Ernest A. Gammon, Courtland; J. J. Pet-tyes, Plainfield; M. E. Van Piper, Newcastle; Thos. G. Meckesell, Hanford; Victoria Orchard Company, Woodland; R. E. Barton, Vacaville; J. H. Barber, Woodland; M. A. Henry, Penryn; C. W. Geoble, Placerville; John McKay, Placerville; R. E. Smith, Berkeley; George H. Cutter, G. L. Simmons, Sacramento; B. T. Walton, Sutter county; C. C. Royce, Butte county; J. W. Kearth, Colusa county; Dr. C. A. Oliver, Chico; George W. Ashley, Stockton; Matthew Walker, Penryn; J. G. McBride, Biggs; J. S. Brown, Suisun; Wm. Veerkamp, Granite Hill; Alexander Craig, Fair Oaks; M. R. Struble, Penryn; Miss M. B. Johnston, Rose Bud ranch, Courtland; F. A. Edinger,

Sacramento; Ernest L. Smith, Yuba City; E. L. Hawk, Sacramento; H. B. Mayo, Folsom; Elmore Chase, Fair Oaks; G. Geraldson, Alfarata R. Hall, L. J. Kinney, Newcastle; Charles B. Ellis, Sacramento; G. H. Hecke, H. Harburg, Woodland; Wm. Pierce, Suisun valley; E. H. Bauman, Suisun; C. L. Stetson, Chico; Mrs. Sol Runyon, Vorden; A. R. Sprague, Sacramento; Miss Lucy Bancroft, Walnut Creek; George Thershu, Contra Costa county; J. R. Chadbourne, George Reed, Suisun; A. T. Reynolds, Walnut Grove; Charles Carlson, Newcastle; R. C. Kells, Yuba City; W. A. Beard, Sacramento.

THE APPLE ORCHARD AS AN INVESTMENT,

I am pleased to write of apple growing in one of our Sierra Nevada neighborhoods, believing it representative of a considerable area of mountain land that may be made to blossom as the rose, profitably. It is no ornate exaggeration of rhetoric to speak of the apple's inflorescence as the rose, since it is of the family, Rosaceae, and dignifies the esthetic reputation of its kinfolk by sturdy utilitarian character.

In the eastern end of Madera county, at an elevation of from 2000 to 4000 ft., there are some orchards worthy, at least, of casual mention. Four miles from North Fork is the orchard of H. S. Williams, containing 4000 trees. Mr. Williams pointed out one medium-sized apple tree from which he sold 25 boxes last year. His varieties are choice, and he has had but one failure of crop in seven years. His orchard is just above the line of the yellow pine, where the sugar pine fails to reach the development perfect enough to make clear lumber. He is succeeding with the newer varieties, Black Ben Davis, Stayman Winesap and Apple of Commerce.

Mr. Williams tells me that it is an easy proposition with trees over ten years of age to net \$5 per tree clear each year. He reckons that to be a fair profit—20 per cent on a valuation of \$25 to the tree. Two miles below Mr. Williams' place is the old Geddes place with nearly 1000 trees. Two miles from North Fork post-office on the North Fork of the San Joaquin, is the Joe Goode ranch and orchard, now owned by the San Joaquin Power Company. Also two miles from North Fork is Forest Supervisor Shinn's headquarters, on the old Malum homestead. Though named after the first settler, it fitly designates the place, as I have seen trees fruit well there with but slight irrigation. Then about six miles from North Fork is the Captain Dunlap orchard of 500 trees, now the property of Supervisor George Teaford.

I regret that I cannot refer to other Madera county orchards, notably the Crooks, the Thornberry, and the Home orchard near Gertrude, not having seen them. The latter belongs to Mr. Frank Femmons, ex-county horticulturist, and is reputed the best in the county. But I have seen enough to demonstrate the fact that apple raising can be made a profitable industry. While the amount of land devoted to apple culture can be largely increased, yet the belt of adaptable land is limited; and as apple raising is a business in itself, it is never likely to be overdone.

It is no longer a question of the production of excellent apples in abundance, but of transportation to market, and that question we consider fortunately settled. With two railroads entering Yosemite Valley, the one from Merced and the other projected from Fresno, good market facilities will develop the orchard industry of the mountain region through which they pass; and the slopes of the fruitful Sierras will smile back benignantly upon that great hive of human habitation, the valley of Central California.

AARON W. FREDERICK.

North Fork, Madera County.

[We have seen Mr. Femmon's orchard and can assure Mr. Frederick that as he likes to see good trees well cared for he should seize an opportunity to see the Home orchard. We count Mr. Femmons as one of our most able and discriminating pomologists.—Ed.]

THE APAIRY

THE MANUFACTURE OF HONEY VINEGAR.

The University of Arizona Agricultural Experiment Station has issued a very satisfactory account in its "Timely Hints for Farmers," of the making of honey vinegar, from which the following is taken:

Hitherto only a small amount of honey vinegar has been produced in Arizona, although cider and distilled vinegar demand an unusually high price in the home market, and are supplied by eastern makers. The vinegar usually retailed is made by diluting "Triple extract" with two or three volumes of water. It retails at 15 cents per quart, including the bottle, and varies

greatly in strength. On the other hand, the local producer is usually discouraged by the length of time required to put "the sparks" into his product. This delay requires the long investment of his valuable capital. In the meantime the hoops rust off his casks, and they begin to leak. Moreover, the intense heat of summer, where proper protection is not given, occasions the evaporation of alcohol and acetic acid. It retards the activity of the ferments and finally degenerative fermentations take place, which decrease the strength of his product.

The method of making honey vinegar, now in use among farmers, often results in the loss of enormous quantities of saccharine material, which would have been fermented, had they been treated differently.

The Alcoholic Fermentation. The process of changing sugar to acetic acid, or vinegar, takes place in two principal stages. First, sugar to alcohol; second, alcohol to acetic acid. The first stage is the work of the yeast cells; the second, that of the acetic acid-forming bacteria. In attempting to shorten the time required for these changes, we must, therefore, provide those conditions which are most favorable for their development in the order named. The most essential conditions for the rapid development of any micro-organism, are a complete nutrient medium and a suitable temperature.

Honey diluted with ordinary well water falls far short of meeting the first requirement, i. e., providing sufficient and proper food for the yeast. For their best development, yeast cells make the same demand for sufficient potash, phosphoric acid and nitrogen on the medium in which they grow as the field crops do. The time in which yeast will convert a given amount of sugar into alcohol depends not only on the temperature, but upon the quantity of each of these fertilizing substances present.

Experiment shows that the addition of ammonium chloride alone accelerated the fermentation in the early stages, but that complete fermentation was secured very little sooner than with unfertilized, diluted honey. When both ammonium chloride and potassium phosphate were added, the fermentation was practically complete at the end of the third week.

The vinegar bacteria require, above all else, abundant supplies of oxygen, best furnished as fresh air. They tolerate rather strong alcohol, but do not flourish in solutions of over 10%. They develop only slowly in very weak acid solutions, but increase in activity, as the acid becomes stronger. At about 2% acetic acid and 75 to 85 degrees F. they find their optimum conditions.

Rapid Process.—By the rapid process, these conditions are so well fulfilled that complete acetification takes place in a very few days, or even hours. One part by volume of ordinary alcohol is diluted with 10 parts of water, and sufficient strong vinegar added to give the total about one per cent of acetic acid. This mixture is allowed to percolate slowly through rather deep vats, filled with beech-wood shavings, which have been boiled and afterwards inoculated with vinegar bacteria. The vat is provided with a perforated false bottom, between which and the real bottom rows of holes, slanting downward, are bored through the sides of the vat. When the generator is working properly, a match flame will be drawn into these holes. The rapid oxidation of the alcohol generates much heat, which, if not controlled, will result in the volatilization of alcohol, aldehyde and acid. When there is danger of loss by heating, some of the holes are plugged. No metal can be used in such a factory, as the acid vapors corrode it very rapidly. The piping is all of glass with rubber connections, and the necessary pumps are of hard rubber. The dilute alcohol is distributed evenly over the surface of the shavings with a glass Barker's mill.

A very good vinegar was produced in this laboratory with a simple apparatus, consisting of a keg filled with beech-wood shavings over which dilute alcohol was allowed to trickle from a vessel arranged above. Due to the small size of the apparatus, the dilute alcohol had to be passed through it several times, to accomplish complete oxidation. The temperature frequently reached 95 degrees F., and there was, consequently, considerable loss. A small rapid process apparatus, while quite effective, would hardly prove satisfactory in the hands of the farmer, as it requires too much supervision. A large plant, however, located in a good bee district, should prove remunerative, as the washings and low grade honeys for that region could then be worked at a central factory. This should prove especially successful if worked in connection with a local pickling works, since an adequate supply of good vinegar, at a reasonable cost, is essential to that industry.

Cask Process.—On the farm, however, the most practical method is the open cask. In this case the formation of vinegar is most rapid when the bacteria from a film on the surface of the liquid. Under such conditions, the writer has observed the formation of

acetic acid at the rate of one-tenth per cent a day. The film, however, rapidly becomes heavy, and is submerged, after which the acetification takes place much more slowly. The film, therefore, should be preserved. Shaking, or adding fresh wine, is sure to destroy this film if present and for that reason the vinegar barrel should never be disturbed. To obtain a good supply of air, the cask should not be more than two-thirds to three-fourths full.

A modification of a French generator, devised at the Arizona Station, will prove especially serviceable where only small amounts of honey wine are to be made into vinegar from time to time. A good wine or alcohol barrel is carefully painted on the outside to prevent corrosion of the hoops. A hole is now bored in each end of the cask near the chime on the side next the bung and covered with a fine screen to keep out insects. At the bottom of one end, a spigot is fitted and a perpendicular row of gimblet holes bored and fitted with wooden plugs to act as a gauge. Fresh wine, which must first be fully fermented, can be added from time to time through a tube passing in at the bung-hole and ending near the bottom of the cask. In this way the active film will not be disturbed by drawing off a little vinegar, or adding a little fresh wine. The tube must not be of metal, but can be of glass where available. In this region, a large stalk of native cane, the joints of which have been perforated with a hot iron, makes a very serviceable tube. A tin funnel may be used in pouring the wine into the tube. A similar apparatus has been found very serviceable in France for converting table wine waste into vinegar. Such wastes, under suitable temperature conditions, yield good vinegar in ninety days. The generator is started with a mixture of about three-fourths wine and one-fourth good vinegar. When once started, no new vinegar need be added.

Degenerative Fermentations.—After vinegar has become strong enough for ordinary use, about 4%, it should be poured off from the mother, filled into casks, and tightly bunged. Just as the vinegar bacteria oxidize alcohol into acetic acid, so other organisms, in turn, destroy this acid and the vinegar loses its strength. Air is necessary for this degenerative process, as well as for the formation of acetic acid, and, consequently, its exclusion preserves the strength of the vinegar. In this laboratory, honey wines which were progressing nicely and contained as much as one per cent of acid, have suddenly become infected and lost all acidity in a few weeks.

The Making of Honey Vinegar.—Apple juice of good quality contains, usually from 10 to 12% of sugar and yields a vinegar containing 6 or 7% of acetic acid. In making vinegar from honey it is desirable to start with a solution containing as much or more sugar than apple juice. When low grade honeys are used, as the raw material, it is very easy to obtain the proper dilution. Most honey produced in the arid region contains about 80% of fermentable matter and may be weighed off and diluted with the requisite amount of water. Where washings are used, however, they may need strengthening or diluting. This can be easily governed by the use of a specific gravity spindle, which may be obtained at small cost. The Brix saccharometer is such an instrument, arranged to read percentages of sugar directly at 17.5 degrees C (about 65 degrees F.), but for the present purposes no attention need be paid to temperature. In case an ordinary hydrometer is used, it should read from 6.8 to 8.5 degrees Baume, or from 1.048 to 1.061 specific gravity. This will give a sugar solution of from 12 to 15%, which is a very advantageous strength for fermentation. If the finished product is stronger than necessary, it can be watered just as honestly, in this case, after as before the fermentation is complete. The yield will depend largely upon the purity of the fermentation, and upon the extent to which degenerative processes are absent.

Having prepared the diluted honey of proper strength, we next add the fertilizing materials and a little yeast. As previously shown, the best material is ammonium chloride and potassium phosphate, about one part of each per 1000 parts of solution. Unfortunately, potassium phosphate is seldom to be had in the drug store, and we must rely on other chemicals to take its place. This is best done by using sodium phosphate and potassium sulphate; of each about one part per 1,000. This combination is much cheaper than the rather expensive potassium phosphate, and is to be recommended where large amounts of honey vinegar are made. These chemicals can all be obtained in large quantities for about 15 cents per pound. The small producer, who cannot afford to buy large amounts at wholesale, will experience much difficulty in getting potassium sulphate, but experiments in this laboratory have shown that potassium bicarbonate, a chemical to be had in every drug shop, can be substituted with nearly as good results. The chemicals are absolutely harmless,

and are in no sense of the word to be considered adulterants. Care should be taken to secure well water of good quality, preferably hard but not too salty.

Formula.—When a barrel of honey vinegar is to be made for family use or by the small producer, we offer the following formula:

Strained honey.....40 to 45 lb.
Water30 gal.
Ammonium chloride4 oz.
Potassium bicarbonate2 oz.
Sodium phosphate2 oz.
One quarter cake of dry yeast softened in lukewarm water.

The chemicals for making thirty gallons will cost about 25 cents in a small way, but on a large scale not more than 10 cents. Somewhat larger amounts of potassium bicarbonate and sodium phosphates would give even better results, but the amounts are here cut to the minimum to bring the cost low enough to make it profitable.

In from three to four weeks all visible fermentation will have ceased and the yeast settled out. Now rack off the wine, add ten gallons of good vinegar, containing a little mother, and let stand undisturbed in a place having as nearly as possible an even temperature of from 75 to 80 degrees F. The acetic fermentation may be started by floating mother or the scum from an older cask on the surface of the mixture by means of thin cork shavings. Carried out in this way and at a suitable temperature (temperatures over 85 degrees F. will retard the process and cause loss of both alcohol and acid) good honey vinegar can be produced in from four to six months.

A. E. VINSON.

Tucson, Arizona.

THE POULTRY YARD.

NUTRITIVE VALUE OF GREEN LEAVES AND BLOSSOMS OF THE LOCUST.

To the Editor: An examination has been made in accordance with the request of Mr. C. H. Dwinelle, Fulton, California, who writes "Hens are very fond of the leaves of the locust (*Robinia pseudacacia*) either green or when they ripen and fall to the ground in autumn. They will also eat the blossoms when they can reach them, or if stripped off and thrown to them, with as much avidity as though they were corn."

The result of the chemical analyses are presented herewith:

	Leaves.	Blossoms.
Water, per cent....	78.00	90.00
Protein, per cent....	6.71	2.92
Fat, per cent.....	.91	.51
Starch, sugar, etc., per cent.....	10.81	3.67
Crude fiber, per cent.....	2.03	2.00
Ash (mineral matter), per cent.....	1.54	.90
Totals, per cent	100.00	100.00

These figures indicate that both the leaves and the blossoms are very desirable as green food for poultry. This point is more prominently brought out by a comparison of the analyses of the locust with those of some other commonly used foods, as shown in the table following:

	Water	Protein	Starch Sugar, Etc.	Fiber	Fat	Ash
Alfalfa	80.00	4.94	7.90	4.70	.74	1.72
Clover, red.....	70.80	4.40	13.50	8.10	1.10	2.10
Alfalfa	80.00	2.83	9.81	4.72	.92	1.72
Cabbage	90.00	2.40	3.90	1.50	.40	1.40
Locust leaves	78.00	6.71	10.81	2.03	.91	1.54
Locust blossoms	90.00	2.92	3.67	2.00	.51	.90

It is thus seen that the locust leaves are richer in protein than any of the foods above mentioned, and the blossoms contain a very satisfactory amount. It would seem that as protein is such an important item in poultry feeding, that a comparison on that basis is a fair one. Even with the difference in the per cent of water, the starch content of the leaves compares very favorably with that of clover, and if the water-free materials are considered the leaves would rank higher. The per cent of crude fiber, the least digestible of the materials, is lower in the leaves than any of the other foods, except the cabbage.

M. E. JAFFA.

University of California, Berkeley.

[The communication of Mr. Dwinelle calling attention to the desirability of locust flowers and foliage for poultry feeding was published in the Pacific Rural Press of May 26, 1906. The analyses fully justify his claim.—Ed.]

THE DAIRY.

DAIRY TYPE STEERS MOST PROFITABLE TO BUTCHER.

The Iowa Experiment Station recently published a bulletin which gives the results of a feeding test, in which beef and dairy type steers were compared. The object of the experiment was to produce definite data as to the cost of producing a pound of gain in beef type steers, and to compare this with the cost of producing the same gain in dairy type steers. The experiment was begun January 1, 1903, and was conducted for an entire year, or until January 1, 1904. Two pure-bred Holstein steers, 24 months of age, and two pure-bred Jersey steers, 18 months of age, were selected from the college herd as representatives of dairy type steers. The average weight of these was 574 lb. Two high-grade, 16-months-old Herefords were purchased from the Stanton Breeding Farm, Riverside, Neb., and two 18-months-old Angus steers were purchased from W. A. Helsell, of Odebolt, Iowa, as representatives of beef type steers.

The steers were all given the same treatment. They were stall-fed for the entire 12 months, so as to make it possible to keep track of every pound of food consumed. They were fed hay and some green sorghum as roughage. Corn meal, bran, oil meal, and gluten feed constituted the grain ration. All were fed as much as would eat up clean. The bulletin gives a detailed statement of the amount of feed each steer consumed. Hay was valued at \$6, sorghum at 40c., corn meal at \$14, bran at \$14, oil meal at \$23, and gluten feed at \$21 per ton throughout. The following table gives in concise form some of the results of the test for each class of steers:

	Beef.	Dairy.
Av. initial wt. of steers, lbs.	675.00	574.25
Av. feed cost per steer.....	\$47.27	\$45.18
Av. total gain—lbs.....	606.00	597.75
Av. daily gains—lbs.....	1.66	1.63
Cost per lb. gain....—cents	7.81	7.63
Selling value per lb.cents..	4.88	3.72
Total value per steer.....	\$60.63	\$42.66

From the above table it will be seen that the dairy type steers made more economical gains than the beef type steers, but that the gains made were not as profitable for the reason that, as is well known, dairy type steers do not put on gains in places where the most expensive cuts of an animal occur. Notice that the beef type steers sold at an average of \$4.89 per cwt., while the dairy type steers sold at \$3.75 per cwt., giving an average of \$1.14 per cwt. in favor of beef type steers. The total average gain made by the beef type animals was slightly higher than that made by the dairy type animals, although the difference was small, amounting to only 8.25 lb. during the entire 12 months. The bulletin says: "The beef type steers distributed a large proportion of their gains on the back, loins, and hind quarters, greatly increasing the thickness of the prime cuts, while

the dairy type steers showed but very little increase in thickness on these parts."

We do not in any way wish to be understood as claiming that dairy type steers are not as economical feeders as beef type steers. This they are not, and never will be. At the same time, we do not believe that there is much prejudice against dairy type steers, some of which is not always well founded, and that for this reason they sell on the market at a price below what they ought to bring as compared with beef type steers. We believe that the Iowa experiment bears out this assertion. It is stated in the bulletin that the Herefords sold at \$5 per cwt.; that the Angus brought \$4.75 per cwt. At this price both lots brought \$242.52. Killing charges are given in the bulletin at \$1.50 per head; commission for selling is charged at 5c. per cwt., and freight is figured at 8c. per cwt. Adding these charges to the selling value of the steers in foot, we have a total cost of \$255.08. Deducting from this cost price, the value of the hides, tallow and tongues, which for the four beef steers amounted to \$36.13, we get the cost of dressed beef, equal to \$218.95. The actual returns at wholesale prices given are \$232.61. Deducting from this the cost price, \$218.95, we have a balance of \$13.66, or an average of \$3.41 per head for the beef steers. According to these figures this is the profit they netted the butcher.

Now, turning to the dairy type steers, the Holsteins sold at \$3.85 per cwt., and the Jerseys at \$3.65 per cwt. At these prices both lots brought \$170.67. Using the same killing charges as are given for the beef type steers, and the commission and freight charges as reported in the bulletin, and adding these charges to the selling value of the steers on foot, we have a total cost of \$182.56. Deduct from this cost price the value of the hides, tallow and tongues, which for the four dairy steers amounted to \$30.27, we have the cost of dressed beef, equal to \$152.29. The actual wholesale returns for the dairy type steers is given in the bulletin at \$179.83. Deducting from this the cost of the dressed beef, \$152.29, we have a net profit to the butcher of \$27.54, or an average of \$6.88 per head. In other words, the dairy type steers netted the butcher over 50% greater profit than the beef type steers. Hence the conclusion we draw, but which is not given by the station, that the prejudice which exists against dairy type steers is taken advantage of on the part of the packers to bear down prices.

Here is a chapter on milking from C. E. Peck's new book entitled 'Profitable Dairying,' a notice of which appears on our page devoted to new books:

So far as possible, the same persons should milk the same lot of cows. No greater nonsense was ever promulgated than that all talking and whistling should be prohibited in the stable. The cow should be familiar with the voice of her attendant, and she should never hear it in other than kindly tones. She should be called by name, and talked to individually when he has occasion to speak to her. Whistling and singing to a moderate degree are not objectionable in the stable.

H. B. Gurler says that the cows invariably fell off in their yield under the care of a certain attendant. The man was kind, and seemed to give the same care as others. Still, he could not keep up the flow of cows under his charge. It was noticed that he rarely spoke in the stable, and still more rarely to the cows milked. His attention was called to the fact, and he was asked to change his methods and familiarize the cows with the tones of his voice. He did so, and the problem was solved. The cows had never be-

come acquainted with him. Cows like to hear the voice of the attendant, especially when in a kindly manner he speaks their names.

Milking should be done quickly, kindly, and cleanly. If a part of the flow is left in the udder each time, the cow soon learns to secrete just that amount less, and there will be a corresponding falling off in the flow. The same sequence of milking should be followed each day, so that each cow will know when her turn comes. Attendants have probably noticed that when they sit down to milk one cow, the udder of the next one will begin to fill, and milk will soon begin to flow from the teats before they get to her. If she is not milked in order, she will manifest her displeasure by her nervous actions, indicating disappointment. The first few streams of milk from each teat should not be put into the pail. Bacteria gather in the end of the teats between milkings. These in the milk will increase with great rapidity, often seriously injuring its quality for butter and cheese. As soon as drawn, the milk should be removed from the odors of the stable. There is nothing that will more readily absorb noxious odors than cooling milk.

The cow is a creature of habit. If regularly fed before milking she will, when this order is changed, be restless and often refuse to give down her milk. It is better to feed after milking. If silage, at all defective, be fed before milking, the odor is likely to appear in the milk. Odors from food reach the milk in an incredibly short space of time. Two minutes will serve to take the odors of food to the udder and milk-pail. If fed after milking, silage will not, unless very bad, taint the milk. Milking should be done at periods as near 12 hours apart as practicable, and at the same time each day.

TO RESUME INSPECTION.

The members of the State Dairy Bureau of California held their last meeting in San Francisco. Among the business transacted was that of providing for the resumption on September 1 of the inspection of dairies and factories under the sanitary law. Owing to lack of funds, the work has been suspended during the past three months. At the meeting, which was attended by the members—J. A. Bliss, W. Frank Pierce and George R. Sneath, Secretary Saylor was authorized to re-appoint several of the old inspectors. Among them will be J. L. Starr, the inspector for the southern part of the State, and H. J. Faulkner. Other appointments will be made later, as the bureau proposes to engage in an active campaign against dirty dairies during the coming rainy season. Since the bureau began work along this line its inspectors have served the 30-day notices required by law upon the owners of many dairies and a few creameries, commanding them to clean up. In most cases they have been complied with. Those that have failed will receive drastic attention at the hands of the inspectors.

Another feature that will come in for attention will be the condition of the cream that some creameries are reporting to be accepting. Warm weather is still on in some parts of the State, and the dairy bureau wants some light on the reports that any 'old thing' in the way of cream is acceptable. To this end the creameries are going to come in for some early attention.

VALUE OF COW COMFORT.

Professor Oscar Erf, of the Kansas Experiment Station and State Dairy School, says:

Two years ago the dairy and animal husbandry department of the Kansas Experiment Station undertook to determine the loss that could be attributed to ne-

I think too much of my name to put it upon poor lamp-chimneys. Evidently other makers feel the same way. Good lamp-chimneys bear my name, and the poor ones go nameless.

Let me send you my Index to chimneys. It is free.

Address, MACBETH, Pittsburgh

glect by not sheltering the cow. The relation of the comfort of the cow and the cash received for her products is one that every dairyman should study. Enough good food and pure water, shelter from storms in winter, and heat in summer, kind treatment, are just the conditions man demands for his own comfort, and just what is due to every animal from every owner from an economical standpoint.

On several occasions some of the cows were exposed to a temperature ranging from 18 to 50°, for several days at a time. A previous record was taken of the cows to get their approximate average daily production when kept in a comfortable stable. The milk was weighed, the test was taken, the amount of food, and the weight of the animal was determined. The experiment indicated a loss of 12% on the quantity of milk and 11% on butter-fat. The animals were fed 3 lb. more of the grain ration, but their weight was approximately the same. The loss, including feed, amounted to \$.04 per cow per day. There were 52 days when the thermometer registered 32° or below. Accordingly, the total loss for the year, per cow, is \$2.44, or \$48.80 on a herd of 20 cows. This represents 8% interest on a \$620 cow stable of 20 cow capacity. This past winter, during the coldest spell, when the temperature reached a point 20% below zero, cows stabled in a well constructed stable and properly bedded, decreased 8.9% from their normal flow. No cows were kept outside during this cold weather, but judging from the result obtained in the stable where the temperature was never lower than 28° during this time, it seemed entirely impracticable to expose a milk cow to such extreme temperature and storms.

SUMMERLAND DISTRICT.

There is in British Columbia, in the vicinity of the beautiful Okanagan Lake, a district which is showing much interest in fruit growing and in which much satisfactory development may be expected. They compliment us by calling their district the "California of Canada," and they are trying to learn all they can about our ways of growing fruits so that they may develop their plantings on up-to-date lines. There is certainly a great opportunity in favored districts at the north to build up production of fruits which suit the local conditions and to the whole development of the northwest there will be local markets which will make good prices for good fruits. The way to grow good fruit is to watch closely, read diligently, think hard and work. From what we know of the Summerland people they are up to this program.

FINEST THING EVER USED

Cherry Run, W. Va., Feb. 7, 1906
B. J. Kendall Co., Enosburg Falls, Vt.
Dear Sirs:—Please send me your book called "A Treatise On The Horse". I have used your Spavin Cure and find it the finest thing I ever used.
I remain, Yours truly, EUGENE G. BUTTS.

Clayville, N. Y.

S. A. Tuttle, Boston, Mass.
Dear Sir:—Your Elixir worked to a charm on the enlarged leg and took all inflammation and swelling out of the leg. Enclosed find \$2.00. On receipt send me at once a half-dozen more bottles of your Elixir
W. H. DEWING.



Lameness
Great Success on Bone Spavin.
Corono, L. I., N. Y. March 20, 1906.
Dr. B. J. Kendall Co., Enosburg Falls, Vt.
Gentlemen:—I have been using your Spavin Cure with great success on a horse that had a bad Bone Spavin; he went very lame for about one year, after using two bottles of Kendall's Spavin Cure he now goes without any lameness at all.
Yours truly, Joe Barrad.
Kendall's Spavin Cure
will cure if anything will. The world has never known its equal for Spavin, Curb, Splint, Ringbone and all forms of Lameness. Price \$1.00 for \$5.00. Greatest known liniment for family use. All druggists sell it. Accept no substitute. Book "Treatise on the Horse" free from druggists or Dr. B. J. Kendall Co., Enosburg Falls, Vt.

THE OLD MAN TALKS.

Somehow these later days, the earth has lost its grit;
There ain't no satisfaction in cultivatin' it,
The produce that it yields is spindlin' like and small;
The old time joy of harvest is lackin' in the fall.
Tain't like 't was in the sixties when as a farmer boy,
I raised the biggest pumpkins in the state of Illinois.

The county fairs seem tame; they lack all git and snap;
There ain't the interest to 'em there was when me and pap
Would drive in twenty miles to show our flocks and herds,
And carry off blue ribbons, mid judges' flatterin' words,
From stock pens on to side shows there was twice the joy—
I raised the fattest cattle in the State of Illinois.

The boys ain't half the hustlers they was when I was young;
By bees of idle livin', every one of 'em seems stung.
The girls—O Land o' Goshen! they simply can't compare
With those we used to spark, in the old school district there!
Hearts they had of pure gold, without a hint of base alloy,
When I had the prettiest sweetheart in the state of Illinois.

—C. E. Walters.

MAKING SURE.

"And you have not seen him for many—
for some little time? I had hoped that—that—that is to say, I—well—"

She waited for him to clear away ambiguities.

There was a singularly attractive droop to her eyelids, and a slight suggestion of determination in the pressure of her lips.

"You had hoped?" she said tentatively.

"I checked my words," he replied quickly. "Please recollect that I checked my words! And it must be obvious to you that I did so because they would have been inexcusable in the circumstances."

"How tantalizing you are, to be sure!" she exclaimed. "After an hour's talking and pausing—chiefly pausing—you arrive at the point of saying something complimentary, and then, by way of a change from pausing, I suppose, you check yourself. Could you reach my book, do you think?"

He shot a quick side glance at her, and his eyes gleamed angrily as he leaned forward and picked up the volume.

"May I, then, tell you that I hoped the rumor was not true?"

"Did you?" she inquired, a gentle smile rippling her pretty cheeks. "But it is," she added softly with a modest sigh.

"Perhaps the prospect is not altogether inviting to you?" he hazarded, with insinuation.

"Oh," she murmured, brushing something imaginary from her skirt with a nervous gesture, "well, you see, it is necessarily something like a risky speculation after so long a separation, isn't it? I mean that time works great changes in men, and the friends of our youth are apt to degenerate into bores and cranks in maturer years; and since it is possible that my fiance could have changed altogether from what he was when he taught me how to care for him—and it is quite possible, of course it is!—well, the marriage lottery becomes a lottery indeed. I may draw a first prize, and I may draw something distinctly more discouraging than a blank."

"Then why put yourself into such a lottery?" he asked, after a stifled gasp for breath.

"Oh," she responded, in a far-away tone, "a promise is a promise, isn't it? And he is awfully fond of me, or of his recollection of me as he knew me."

"And," he said, after biting his mustache viciously, "you are prepared to fulfill your promise even at the risk of spoiling your whole life, and rendering his unutterably wretched with the knowledge that you have done so?"

"Yes," she responded, with a little sigh of resignation. "I suppose I shall run the risk, hoping for the best, as everybody does hope. You see, when a woman has waited so long as I have, she—well, she becomes shop soiled, so to speak; the gloss goes off her, and she gets faded in parts. I am not as young as I was five or even three years ago, and there is not much demand for unseasonable goods."

The man opened his mouth to draw a great breath. There was a long pause. Eventually she broke the silence, brazen-facedly enough.

"What are you thinking about?" she inquired.

"That—that a girl who may charm one man, and would not appeal to him when she's a woman, might seem intolerable to another man as a girl and adorable as a woman."

"I know what you mean," she returned "though you are not quite so lucid as complimentary. The worst of it is, Mr. Murchinson, it's the girl who becomes a woman, not the woman who becomes a girl; so that the man who might adore her arrives too late."

"Yes," he responded, in a sepulchral undertone—"yes." He was not fully conscious of his wasted opportunities, for his mind was somewhat pre-occupied. And then they turned to commonplace topics.

II.

Later in the day, in the secrecy of his own cabin, he indited a letter to his sister in England:

"Dearest Sister: You will be surprised to see that I am aboard this mail ship. The fact is, since Madeline consented to come out to marry me I have had grave doubts of the wisdom of the idea, even though it was originally my own. It is so long since we last saw each other that I felt sure changes must have occurred in me which might possibly not accord; might, indeed, quite possibly prove absolutely antagonistic to changes which time and distance must have wrought in her.

"I decided, therefore, as my appearance has been completely changed since I sat for the last photo I sent home—I have grown a beard and mustache—to join this boat at Port Said, and get to know Madeline's disposition and tastes, and, if possible, the view she took of her approaching marriage with me, without her knowledge of my identity. It was not quite scrupulous, I know; but surely the end justifies the means, for any steps which might be taken to obviate a possibly unhappy marriage were as fair to her as to myself, and so justifiable.

"And the result?"

"I thank heaven that I have done what I have done. If I have suffered a sense of meanness, I have suffered a thousand times more intensely by the revelation made to me.

"I had not been aboard more than an hour when I saw her, and the sight of her dear— But I am barring sentiment in this letter. I recognized her, of course, and it seemed to me she was of more attractive appearance than ever. But the change within her! Well, she is just the same bright, witty girl, with all the dear old ways, the same delightful smile.

"She is as young as ever, but she is immeasurably changed, for all that. She has flirted with me most fiercely for days that she cares for me a little. I offer her that excuse for the way she has thrown herself at me. Yet at the same time it ruins her in my eyes. Constancy—surely that is woman's greatest virtue! And this

BEEF SCRAPS

GUARANTEED: 65 per Cent PROTEIN

RAW BONE

GUARANTEED: 25 Per Cent Protein and 45 Per Cent Bone Phosphate

PURE ANIMAL MATTER

POULTRY FOODS

Write us for price list and samples; they are free.

We want you to see the kind of Poultry Foods that are manufactured from CLEAN, RAW MATERIAL. This means HEALTHY ANIMAL FOODS for your poultry.

WESTERN MEAT COMPANY

SOUTH SAN FRANCISCO,

San Mateo County

Madeline is as inconstant as the wind.

"It is scarcely fair to him or to your marriage today, and the result was extremely painful. It is quite clear to me that she is coming out to marry John Marvin—I am registered as James Murchinson—only in fulfilment of her promise to do so, and because she feels that a bird in the hand is worth two in the bush. Indeed, she practically told me so. And I feel convinced that she would as lief marry James Murchinson as me."

That very evening he arrived at the crisis, with Miss Madeline's cordial co-operation.

They were alone together in a corner of the upper deck, which was shaded from the bright moonlight. She had inveigled him there, of which fact he was perfectly conscious. She was unusually grave and taciturn. At length she betrayed the secret of her mood.

"I have been thinking over what you said this morning," she volunteered, with a long, soft sigh. "I'm afraid you consider it rather reprehensible of me to make this voyage to marry a man I no longer love?"

"It is scarcely fair to him or to yourself," he answered in a hard voice, after a pause. "Nor is it fair to any other man who may love you, and might make you happy; who would endeavor to his utmost to do so."

"But what can I do?" she murmured, rising slowly and advancing to the rails. "You have shown me it is wrong," she added, when he joined her. "Can you tell me what would be right?"

She stretched out an arm languidly, and laid her hand on the rail under his very nose.

After a moment's hesitation he decided he had no alternative to covering it with one of his own, and he leaned toward her.

"Mad—Miss Havers," he whispered, in a hollow voice, "will—will you marry me if I can convince you that my rank and position are satisfactory?"

She drew close to him, and involuntarily he took her in his arms.

"You love me?" she asked timidly, tilting her face up to his.

To evade the question, which needed consideration, he kissed her.

She sighed deeply, and half turned away as his arms relaxed.

"I must say," she murmured gently, apparently addressing the moon, "a nice soft beard and mustache give a delightful piquancy to a kiss." She turned to him again, with blushing face and downcast eyes, as he drew a hard, deep breath. "Don't you think you've been silly long enough, Jack? Do you fancy a beard and mustache can disguise a man from the woman who loves—is very fond of him? I should know you in a monk's cowl! I

knew you instantly, and almost betrayed my recognition before I understood your plan. At first I felt indignant, but then I knew you only did it because you loved me, and for that I could forgive anything."

It is doubtful whether he heard what else she had to say just then, for her words were mumbled into his fateful beard and mustache.—London Answers.

CHAFF.

Landlord—"I tell you this; I shan't let you move out of my house until you pay your rent."

Tenant—"Ah, a permanent home is what I have always wanted."

"I suppose it's always hog-killing time in your town, Miss Packer?" sneered the New Yorker.

"Oh, yes," replied the fair visitor from Cincinnati, "but do not let that keep you from visiting us. We always protect our guests."

Mabel—"Where does Madge get her good looks from, her father or her mother?"

Edythe—"From her father, he's a druggist."

Katherine—"I never gave you any encouragement."

Johnson—"Yes, you did. You led me to believe your father was wealthy."

Lady (at bookstore)—"I want to get a good novel to read on the train—something rather pathetic."

Salesman—"Let me see. How would 'The Last Days of Pompeii' do?"

Lady—"Pompeii? I never heard of him. What did he die of?"

Saleman—"I am not quite sure ma'am—some kind of an eruption, I've heard."

Mrs. Wilks—"It be kind of you, doctor, comin' so far to see Wilks."

Doctor—"Not at all. I have a patient on the way, so I can kill two birds with one stone."

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TEMPORARY ADDRESS

Grayson and Sixth Streets, Berkeley, Cal.
West of San Pablo Ave.

Domestic Hints.

English Muffins.—Dissolve half of a compressed yeast cake in six tablespoonfuls of lukewarm water. Have a pint of milk scalding hot and stir into it a heaping teaspoonful of lard. Boil until the lard is dissolved, then take from the fire, and, when the milk is blood warm, stir it gradually into a pint of flour that has been sifted with two saltspoonfuls of salt. When the milk is all worked in, add the dissolved yeast cake, and blend thoroughly. Turn the batter into a bread raiser and set to rise in a moderately warm room for six or eight hours, or until light. When light, turn the mass out upon a floured pastry board and break off bits of the dough, having them of uniform size, and each about as large as an ordinary tea biscuit. Handle very lightly, and roll each muffin in flour. Have a soapstone griddle thoroughly heated and lay these muffins upon it. Bake them without touching until they swell to twice their original size. When brown on the under side lift carefully and turn. When the other side is baked to a delicate brown, the muffins are done. When ready to use, tear them open and butter generously.

Deviled Lobster.—One pint lobster meat, four tablespoons butter, one teaspoon curry powder, one teaspoon prepared mustard, one-half teaspoonful of Worcestershire sauce; put into hot pan three tablespoons butter, mix a paste of one tablespoon curry powder, Worcestershire sauce, mustard and a little salt. Put this in the butter, and when it bubbles, add the lobster. Cook two minutes.

Stewed Prunes with Orange.—Soak three quarts of prunes over night in enough water to cover them. Add one cup of sugar and a sliced orange or lemon. Cover with water and stew two hours. Prunes cooked in this way have a rich color and flavor.

Pumpkin Pudding.—Press a pint of dry, cooked pumpkin through a colander; let one-half pint of milk get scalding hot and add to it one-quarter pound each of butter and granulated sugar; when the butter is melted, beat in very gradually eight eggs, which have been whipped until very light, flavor with the juice of a lemon, a grated nutmeg and a large teaspoonful of powdered mace and cinnamon mixed. Line a shallow pudding dish with good pastry, pour in the pumpkin mixture and bake in a quick oven. This is delicious.

Nut Cake.—Beat one-half cup of butter to a cream, add one cup of sugar, two well-beaten eggs, then alternately one-half cup of milk and one and one-half cups of flour sifted with three level teaspoons of baking powder. Add one cup of chopped walnut meats and bake in a sheet in shallow pans. Turn upside down on a cake cooler, cover with icing and mark into small squares when partly firm. Garnish each square with a whole walnut meat.

Hints to Housekeepers.

When beating any mixture stand in the fresh air as much as possible that pure oxygen may be incorporated.

Tomatoes are most hygienic when not cooked.

Grease the upper inside edge of the pan with butter; then milk, cocoa or anything of this kind will never boil over.

The sooner clothes are washed after being soiled, the easier they wash.

When ham is hard and salty soak it—sliced—in milk over night. Next morning it will be sweet and tender for breakfast.

Dust carved furniture with a soft paint brush; it reaches into every crevice better than cloth.

Herbs to be used for seasoning should be gathered just before they bloom.

PATRONS OF HUSBANDRY

TULARE GRANGE MEETING.

To the Editor: Tulare Grange met in regular session on Saturday, the 1st. After reading and approval of the minutes of the last previous meeting, the Special Committee on County Co-operative Fire Insurance, through Brother Thos. Jacob, reported that he had interviewed E. Myron Wolf, Fire Insurance Commissioner, but could obtain no satisfaction from him as to why he persistently refuses to approve the application sent to him for his approval about the middle of March last, for the formation of a County Mutual Fire Insurance Association for Tulare county.

Mr. Wolf said, a couple of months after the application was sent to him, that he wrote to the attorney who prepared the application and sent it to him, that it was not in accordance with the provisions of the law, but the attorney denies ever receiving any such letter, and denies that it was not strictly in accordance with the law authorizing the formation of county mutual fire insurance associations. The attorney further states that he has twice written to Commissioner Wolf, both letters in envelopes having the attorney's own address on, with the usual directions, to be returned if not delivered in 10 days; as the letters were not returned to the writer, the commissioner must have got them. After waiting over two months, during which time no word was received from Commissioner Wolf, the attorney then wrote to Governor Pardee, complaining of the neglect, this letter the governor sent to the commissioner, who then answered that the application was not in accordance with the law, and said it, the application, was in a pile with other papers belonging to his office, in a room at the Ferry Building. The commissioner does not pretend to specify any specific or particular defect in the application, and the attorney, who prepared it, claims there is none, nor can there be, inasmuch as at the time he prepared it, he had before him the approved applications of 10 other county co-operative county insurance companies of California, and also the act of the Legislature providing for their organization.

Since then two other parties have interviewed Commissioner Wolf to ascertain the defect in the application sent in, or a form of application that he will approve of; neither of those got any satisfaction on either point from him. The last one to see him, Mr. Thos. Jacob, showed him a form of application, which he had prepared and submitted to him for his approval, but he refused to give his approval to it, although the only specific objection he raised was to using the word "proposed" articles of incorporation, saying the word "proposed" should be omitted, when, in fact, the words used are the exact words the act provides shall be used.

Brother Emmett Barber read an able paper on the subject of the day for discussion, 'What progress has been made in co-operation and in promoting co-operative principles, among farmers, in the last year?' The subject was freely discussed, co-operation among farmers being a leading purpose of the Order of Patrons of Husbandry. The success of the Tulare co-operative creamery, which pays out about \$20,000 per month for cream, and of the Tulare Rochdale co-operative store, with its 160 members, was cited as proof that the work of co-operation amongst farmers is making progress, that it is made on business lines, and will grow as long as carried on on strictly business principles.

Committees were appointed to draw up and report obituary notices of the deaths of Brother Julius Forrer and

Sister Myra Field, on amendments to the constitution of the State Grange, Patrons of Husbandry, and protesting against the further wasteful congressional distribution of garden seeds.

Brother Thos. Jacob was elected alternate to the State Grange to meet in Santa Rosa in October. J. T. Tulare, Cal.

THE HANFORD FAIR.

To the Editor: Everything is looking favorable for the biggest district fair ever held in the State, on October 1st to 6th, inclusive, at Hanford. We would like a representative of your paper there on the above date. JAS. W. McCORD.

Hanford, Kings county, Sept. 1.
[We can fully commend the Hanford Fair to those who like to see good stock and other things worth looking at, and we hope it will draw readers of the Pacific Rural Press from long distances.—Ed.]

MEASURING HAY.

We recently answered a question on this subject. Another statement by Prof. A. M. Ten Eyck in the Kansas Farmer, describing practice in that State, may be interesting.

An average bale of alfalfa hay, sold on the market at Manhattan, weighs about 85 lb., the average length of the bale is about 40 in., and the other dimensions are 15x20 in., making the total volume of a bale about 7 cubic feet. Twenty-three and one-half bales will make a ton, figuring 85 lb. per bale, and 164.5 cubic feet of space will be required to store these 23½ bales, that is, figuring actual volume; doubtless, we should add 10% more space for room lost between bales in storing, making about 180 cubic feet of space required for storing a ton of baled alfalfa hay. Ordinarily, 512 cubic feet is figured as the volume of a ton of hay in the mow or stack soon after stacking, or about the time hay is well settled. The volume of a ton of baled hay is, therefore, equal to about one-third the volume of a ton of loose hay in the stack or mow. If the total space in the barn holding 25 tons of loose hay could be used for storing the baled hay, the barn would hold in the neighborhood of 75 tons of baled hay.

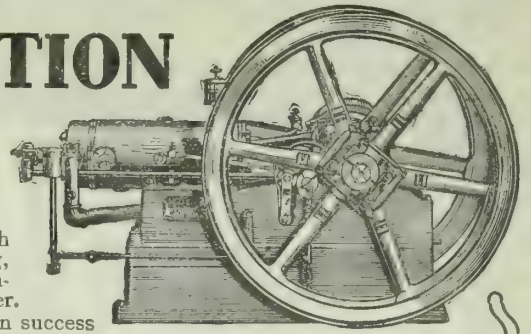
WORK OF PROMOTION COMMITTEE.

The exploitation of California throughout the East is being carried on most effectively by the California Promotion Committee, and the result of this work has aroused even a greater interest in the State than existed before.

Inquiries are pouring into the commit-

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For all those who wish to irrigate by pumping, the I. H. C. gasoline engine is the one best power.

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(INCORPORATED.)

tee headquarters, and indications are that thousands will take advantage of the prevailing low rates to come to California.

The latest move of the committee was the establishment of an Eastern bureau with offices in New York City. The metropolitan papers have been most generous in publishing information about California since the bureau was established, and the prestige thus gained has been of immense value. The demands on the Eastern bureau have already become so great that larger quarters must be secured and arrangements made to care for the rapidly increasing business.

Rufus P. Jennings, chairman of the California Promotion Committee, leaves for the East on September 10, and on his arrival in New York, he will make a study of conditions, and arrange with the committee's representatives there for increased facilities to carry on the work.

Literature from all parts of California is being distributed from the Eastern bureau, and arrangements have been made to give illustrated lectures throughout the Eastern States during the fall and winter months. All localities are urged to send photographs and lantern slides to the headquarters of the committee in San Francisco, in order to assist the committee in its policy of exploiting all parts of California.

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The Bee-keeper's guide to success. The Weekly

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tells how to make the most money with bees. Contributors are practical honey producers who know how. Interesting—Instructive. \$1 per year; 3 mos. (13 copies) 25c. Sample free.
AMERICAN BEE JOURNAL,
334 Dearborn St., Chicago.

AGRICULTURAL REVIEW

GLENN

MONEY IN MELONS.—Orland Register, August 25.—Several persons, who own small farms near Orland, are bringing vegetables and melons into town almost daily, and find ready sale for their products. One lady, who has a garden near here, brings in a large load of melons twice a week, and she was heard to remark the other day, that she had brought in a load of 113 melons a few days before, and sold every one of them. These melons sell for from 25 to 35c. apiece. It certainly looks like there ought to be money in melon raising.

SUGAR BEET PULP FOR CATTLE.—Orland Register, August 25: It is understood that the Hamilton Sugar Company will, as soon as it begins to run, make arrangements for the accommodation of a large number of cattle, to be fed upon the pulp from the beets, from which the juices essential to sugar-making have been extracted, and that they will offer to care for as many head as can be attended to at a price not exceeding \$1 per month. In this connection, one of the most prominent men in the company is asserting that he is anxious for a trial of the comparative merits of this feed for cattle as against any other known fodder, and is willing to back his opinion with a substantial amount of coin.

SAN JOAQUIN.

WOODBIDGE WINERY.—Lodi Sentinel, August 25: In about another week the winery of the Woodbridge Vineyard Association will be crushing this season's vintage. It is all ready now, but the grapes do not show sugar enough yet. Cary Bros. this week installed another motor in the fortifying room to operate the wine pump, which the law requires must be used in this particular room.

SHIPMENT OF GRAPES.—Stockton Daily Record, August 23: The first carload of grapes to leave Lodi for the season of 1906 was shipped yesterday by the Earl Company to El Paso, Texas. The shipment was an f. o. b. order of 925 crates and was made up entirely of Black Prince. The price paid to the grower was 65c. per crate, or an average of about \$30 per ton, which is a good price for that variety.

The Southern Pacific's new freight tariff on grapes this season lists crates at 26 lb., instead of 25 lb., the heretofore recognized shipping weight. This plan will necessarily lessen the number of crates per car, at the same time materially increasing the grape tonnage hauled over this road. The crop of Black Prince in this county is less than 50% of last year's yield.

West & Son have set prices on the following varieties of grapes for the season of 1906. Whether these figures increase or decrease, these prices will be maintained. Rates on other varieties will be published when the grapes are ready for the winery: Berger, \$16; Boncha, \$19; Zinfandel, \$17; Carignon, \$17; Matero, \$17.

James Concannon, who has been spending the week here endeavoring to buy grapes for the Livermore valley wine-makers, returned yesterday to his home

near Livermore. Mr. Concannon reported that he was unable to make any purchases, stating that the growers were holding out for \$25 a ton for Zinfandels, a figure Mr. Concannon believed the market would not warrant.

San Bernardino.

NEW RIALTO ORANGE COMPANY.—Evening Index, August 28: A new orange company has been tacked onto the long list that have been incorporated in this county during the past year. This morning the articles of incorporation of the Rialto Orange Company were filed with the county clerk.

Interested in the floating of the new company are the announced directors, who have subscribed the sum of \$25,000 in the following particulars: W. Buxton, Rialto, 200 shares at \$10,000; A. A. Cox, San Bernardino, 200 shares at \$10,000; N. L. Way, Rialto, 50 shares at \$2,500; A. L. Wright, Rialto, 25 shares at \$1,250; W. J. Curtis, San Bernardino, 25 shares at \$1,250.

The total capital stock of the corporation is \$25,000, and it has been divided into 500 shares with a par value of \$50 each. The capital stock has all been subscribed.

The principal place of business has been designated as Rialto, and the articles of incorporation call for all the usages of an orange packing company.

REDLANDS ORANGE RANCH HAS CHANGED HANDS.—Evening Index, August 28: Lester E. Shaw has sold his 20-acre ranch on Lugonia avenue, Redlands, to C. F. Goring, the consideration being \$21,000. This is one of the oldest and best paying groves in Redlands, and last year yielded a crop of oranges that sold for a figure approximating \$4,000. Mr. Goring will take charge of the ranch, coming from Bellview, Idaho.

Santa Clara.

FIRST CAR OF PRUNES SHIPPED FROM VALLEY.—San Jose Herald, August 29: The first car of this season's Prunes was shipped by the Sorois Fruit Company, on the Saratoga road, to-day, the destination being Minneapolis, and the purchaser being a wholesale house in that city. The shipment consisted of a full carload of the graded fruit, all of first-class quality, although not averaging large sizes.

Manager Crandall stated to a Herald representative this morning that large sizes are scarce this season throughout the valley, notwithstanding the belief some time ago that large sizes would be abundant. He stated further that the packers and growers will have to revise their figures, at least so far as this valley is concerned, as the prune crop here will be much less than has been estimated. Now that the harvesting is fairly under way, it is evident that the crop will fall considerably under the figures that were generally conceded several weeks ago.

The 445 boxes shipped by Manager Crandall ran as follows: 25 boxes, 40 to 50; 110 boxes, 50 to 60; 170 boxes, 60 to 70; 65 boxes, 70 to 80; 50 boxes, 80 to 90; 25 boxes, 90 to 100.

RUCKER.—San Jose Herald, August 29: Nearly all of our growers have sold their prunes. They sold on a 2 1/4c. basis. Prune packing is now the order of the

day, and the fruit is unusually large, and the yield much greater than was thought several months ago.

CAMPBELL.—San Jose Herald, August 29: The Fruit Growers' Union is a very busy place just now. About 75 tons of prunes are being handled daily, besides the peaches and pears, which require about 40 pitters to prepare for drying. A big shipping business has been done this year. Fifteen hundred tons of peaches were shipped green by the Union, as well as 350 tons of apricots, and a quantity of pears. A few days ago three cars of pears were shipped in by outside canneries, necessitating an increased force of women and girls.

SUNNYVALE.—San Jose Herald, August 29: Madison & Bonner have nearly completed enlarging the dried fruit packing house and are installing new machinery. This enterprise will be second to none in the county.

San Diego.

BIG TOMATOES.—San Diego Weekly Union, August 23: Three tomatoes, weighing 3 lb. 9 oz., were placed on exhibition at the Chamber of Commerce yesterday by J. A. Bailey of 724 Twelfth street.

PLENTY WATER.—Oceanside Blade, August 25: The recent heavy rains in the mountains have brought the river down and the farmers in San Luis Rey are irrigating, with a full head of water, for the first time at the end of August for some years.

Shasta.

SHIPPING BARTLETT PEARS.—Sacramento Union, August 25: The green fruit packing-houses of Anderson packed and forwarded to Eastern points this week 25 carloads of Bartlett pears. These shipments have cut a very small figure with the crop on hand.

Solano.

EXPECT GOOD PRICE FOR DRIED FRUIT.—Sacramento Bee, August 25: Owing to the exceptionally light crop of apricots this year, there will be a lively demand for dried pears, and orchardists on the Sacramento river anticipate a good price for the dried product. Peaches have sold at high prices this year, and it is thought other dried fruit will realize remunerative figures.

DOES ITS WORK ON ALL KINDS OF BAD LEGS.

Ascot Park, Los Angeles, Cal., Feb. 4, 1906
Dr. B. J. Kendall Co., Enosburg Falls, Vt.
Dear Sir—I have been using your Spavin Cure all winter, and find it is the best liniment I have ever used; I use it on all kinds of bad legs and find it does the work, and I would like you to send me a book to direct me how to use the Spavin Cure.
Yours very truly,
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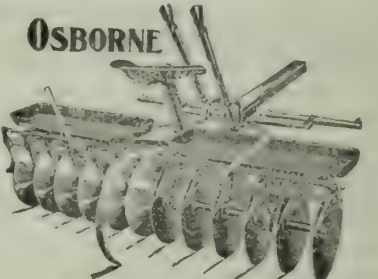
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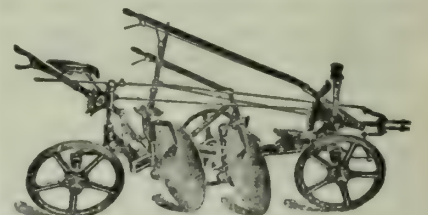
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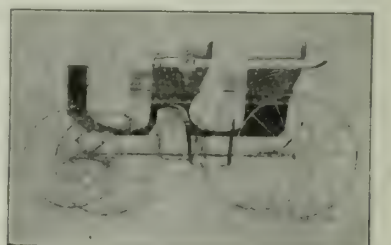
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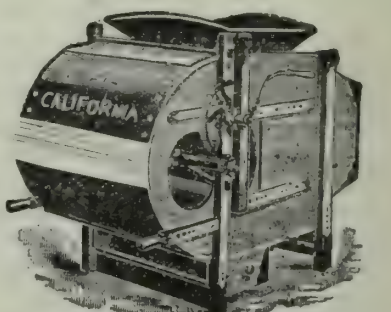
La Crosse Disc Plows.



Pontiac Surreys and Buggies.



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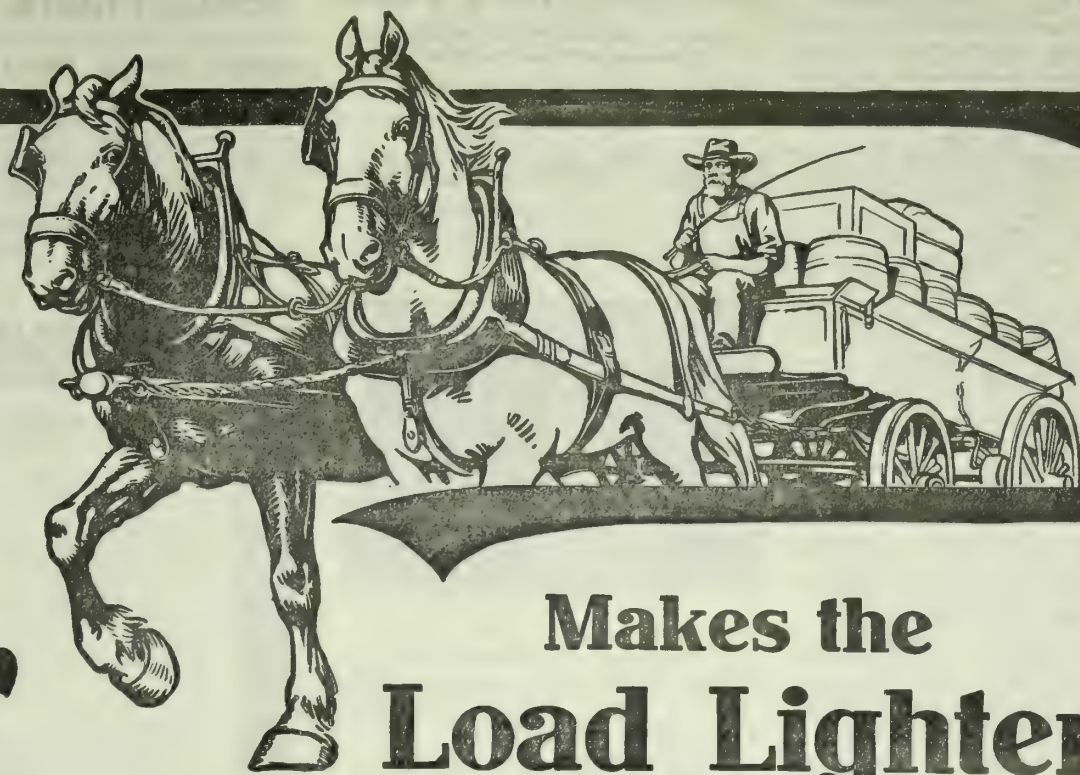
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STANDARD OIL COMPANY



Sonoma.

INCUBATORS FOR JAPAN.—Petaluma Weekly Courier, August 22: The Petaluma Incubator Company has received an order to ship a machine by way of Japan to Kyung Kaiu Do, Korea.

HOP GROWERS JUBILANT.—Sacramento Bee, August 20: The hop growers of Santa Rosa are jubilant at the prospects of a big crop this season, and the advance in prices. Growers are refusing 18c. per lb., and it is believed the price will go higher. The yield is estimated at 33,000 to 36,000 bales, and the sales will bring much money into this section. Hundreds of refugees from San Francisco are being employed as pickers in the hop yards.

Stanislaus.

STANISLAUS GRAPES AT \$20 PER TON.—Lodi Sentinel, August 25: The Modesto Herald contains the following regarding the grape situation in Stanislaus county: "We learn that T. W. Kerwin of Salida has sold his crop of wine grapes at the price of \$17.50 per ton f. o. b. Salida, the buyer to furnish the boxes. The Kerwin vineyard is now in its fourth summer, or a little more than three years old. This first crop, to speak of, will yield a comparatively nice profit. We learn that buyers have obtained a few crops in the Lodi district at \$20 per ton. Most of the growers there are disposed to hold for a higher price, and since there is a winery there, they are safe in doing so. In the Livermore district, noted for the excellence of its wine grapes, the crops are all contracted for for a series of years at from \$20 to \$30 per ton. The yield this year, however, is hardly more than half a full crop.

Tehama.

HOP PICKING. — Corning Observer, August 30: Hop picking is on in full blast at Tehama, and several Corning people are making good wages. A couple on Tuesday earned \$6, and others are averaging \$2 to \$3 per day apiece. The crop is much better than last year, and better wages are being paid. There is a demand for several hundred more pickers, and a special invitation is extended by the management to Corning people.

Creed McDougall has just completed harvesting 950 sacks of excellent wheat on his ranch west of town.

The Stanford winery will begin crushing grapes next week. The estimated output of wine from this fall's crop is 1,000,000 gallons.

GOATS FROM AFRICA.—Corning Observer, August 30: D. M. Hull, of the firm of Hull & Osborn, prominent goat raisers in the Lowery section, came in to-day to receive a trio of fine Angora yearling bucks, which arrived here Friday night by express from Kansas, having been four days on the road. The expressage on the mohair producers alone was \$50.30.

This trio of young bucks is considered the finest ever imported into Tehama county and the direct offspring of an importation of 150 head of fine South African goats made in 1904 at a cost of \$30,000.

In size the young bucks are a little larger than the average goat, and the mohair covers the body well down on their legs, with a big topknot on the forehead, hangs in ringlets and is very silky and soft. They were taken to Freeman's stable, where they were admired by many spectators.

They will be taken to the Hull & Osborn goat range, where they will be used to introduce new blood in their large band of already well-bred goats.

The three young bucks cost Messrs. Hull & Osborn, laid down at Red Bluff, \$500.30, and their introduction into the goat industry of this county will be watched with considerable interest by the goat men.

SOIL SURVEY EXPERTS HAVE COMPLETED WORK IN THIS SECTION.—Willows Semi-Weekly Journal, August 28: Clarence W. Dorsey and Macy H. Lapham, of the Bureau of Soils of the Department of Agriculture, spent several days in Red Bluff last week.

They have been in this section for several months and have just completed a soil survey of the land between Moulton, six miles north of Orland and Willows, the work covering a scope of country containing about 375 square miles.

Both are experts in their line. Their work is preliminary to the reclamation work which the government has undertaken. The soil survey is made after the geological survey is completed and is very thorough. Soundings are made in the earth eight feet deep at intervals, and where necessary a chemical analysis of the soil is made. Every change in the grade of soil is noted and marked on maps made especially for that purpose.

The work was commenced first in the region of Stony Creek watershed, because of the proposed storage reservoir which the Government contemplates building in the mountains west of Orland.

Where possible, in addition to the quality of the soil, general information

as to its adaptability is given by the men who have the work in charge.

It is the plan of the Agricultural Department to extend this work as fast as possible in all sections, so that ultimately every foot of agricultural land will be mapped and platted, so that investors at a distance can accurately tell the nature of the soil and what it is best adapted for.

Yolo.

THE WINTERS CANNERY MAKES GOOD RECORD.—Winters Express, August 25: The Winters cannery made a record for speed work this week that probably marks the limit. A hurry order was received for tomatoes in the morning, and the tomatoes were in the field. About 4 o'clock in the afternoon the tomatoes arrived at the cannery and all the force there was room for went at them. The next day at 11 o'clock 200 cases of the goods were delivered at Sacramento, put up in gilt edge shape. That was less than 20 hours from the field to the consumer, and the tomatoes hardly had time to get cold after canning. Muir peaches are coming in now and are pretty good. This is early for Muirs to be coming on in quantity.

Yuba.

TALK OF SUGAR FACTORY.—Sacramento Bee, August 25: The latest to be promised this section in connection with the boom that is coming is a sugar beet plantation and factory. It is given out that the intending promoters have been here quietly looking over the ground. Some of the land will be procured in Yuba county and some in Sutter.

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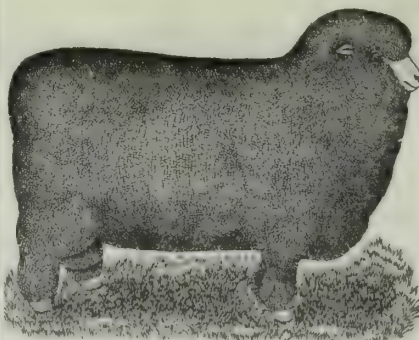
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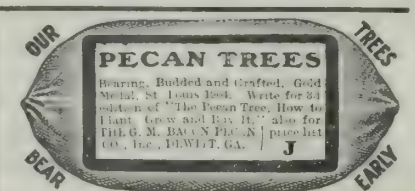
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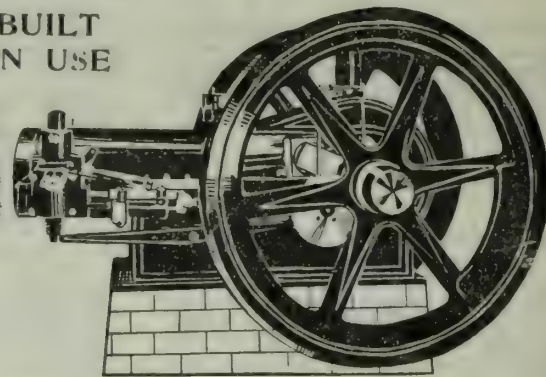
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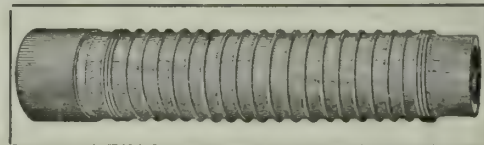
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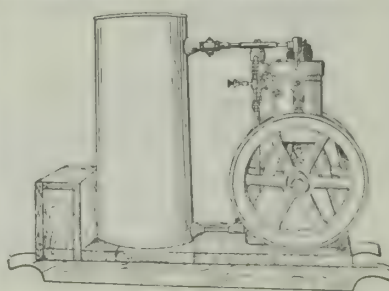
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AND CALIFORNIA FRUIT BULLETIN.

Vol. LXXII. No. 12.

SAN FRANCISCO, SATURDAY, SEPTEMBER 22, 1906.

THIRTY-SIXTH YEAR.

DREDGING FOR GOLD IN DISTANT PARTS.

So much is being done in dredging for gold in California, and the work of the dredgers is so conspicuous in some of our best agricultural regions, that no doubt much interest will pertain to sights of the same lines of work in distant parts.

Two pictures illustrate rather primitive operations in the Ural mountains in Russia. The mineral resources of the Urals are very great, and there is an immense field for dredging in the Russian Empire. When the present political troubles have passed away, the indus-

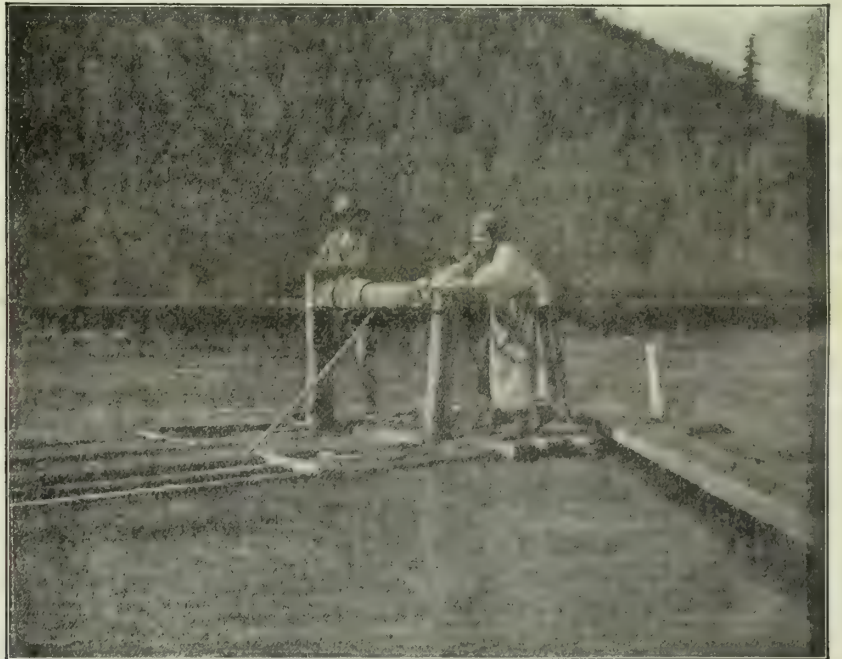
try will exhibit a rapid development. The Russian laborer is good, considering his wage; and the officials, although sometimes troublesome, yield to tact and other influences. They have queer ways of prospecting for gold in the bottoms of the rivers, which can best be done in winter, by sinking shafts on the Siberian system, that is, allowing the water to freeze, sinking a short distance, waiting for the water to freeze again, and eventually reaching the bed of the river, even through running water. This method sometimes fails in the Urals, owing to unfavorable weather, or the presence of warm springs. Hand-dredges, worked by parties of six men, or of three men and a woman, and washing a few yards daily, are useful for prospecting river beds.

Judging by the picture, the woman is taken along to do the work, for in this case she is busy, while the lord is making an elbow study of the landscape.

Another picture shows a dredger at work in the Lozva river, which is a clear-water stream owing from an altitude of 4,000 ft., and through a densely wooded country; it is navigable for good-sized steamers as far as Ivdell. Temperature ranges from -60° F. in winter (early November to late April) to 90° F. in summer. Rainfall is 20 in. Communication is all over the new railway from St. Petersburg, through Viatka and Perm to Goroblagodatskaia, thence by branch-railway to Bogoslovsk, and by post-horses to Ivdell; north of this, travel is by boat in summer and reindeer-sledge in winter.



A Family Arrangement for Gold Dredging in Russia.



A Gold Dredger on the Lozva River in the Ural Mountains.



Prospecting for Gold-Bearing Gravel with a Keystone Drill in the Blue River, Colorado.



Dredging for Gold in the Valley of the Swan, Colorado.

Conditions are not favorable for dredger building. The dredger shown in the picture was built in the winter in a pit on the river bank. During the construction, chips, shavings, hay, and manure from the teams employed in hauling the dirt, covered the ice in the pit, and by protecting it from the sun's rays, retarded the spring thawing a full month. During this delay, the river fell 10 ft. lower than the dredge. Instead of digging a diagonal canal to the river, the pit was deepened vertically and the tailing was removed by teams. Another month was occupied in this work, giving a total loss of two months, due to bad management. So the Russians have not only hard conditions, but hard ways of working, also, both being in sharp contrast to what one finds in California.

Another brace of pictures shows dredging operations in Colorado, near Breckenridge, in the valley of the Blue river, some forty odd miles from Leadville, on the line of the South Park railway, the trip thither being one to be remembered for its scenery. The little train winds around the cliffs, climbs the Fremont Pass and fairly rattles down the steep grades past Kokomo, Robinson and Dillon; then up the little valley to Breckenridge, the scene of the pictures. One shows the operation of a Keystone drill, prospecting for gold, or rather, testing the gravel of a known placer. The mill-men are just dumping the sand-pump, the contents of which are being caught in a pan by the chief, whilst a visitor makes notes on the side, and the panner washes the material obtained in the previous pumping. The rocker, in the middle foreground, is used to clean up all the material taken from the drill-hole, and the tailing from this rocker into a box, and is thus measured.

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E. J. WICKSON Editor
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THE WEEK

The advance of the season is shown by the play of hot north winds which has reached across the great valley and brought high temperatures to the coast region. The on-shore breezes from the Pacific seem to have reached the end of their reign for this year and the season of early rains is at hand. One shower at San Diego has fallen, but that is rather an extension from the Mexican system than significant of the seasonal change in the upper part of the State. Though rains are to be expected soon, they are not always realized and may be delayed to advantage this year, for the interference with the old storage places and the lack of labor leaves more produce under the sky than is usual, and it will take some time to properly protect it. Besides, the later fruits are in good amount this year and need a dry sky. Let the newcomer, therefore, who pines to see the face of nature washed of dust be patient for a time longer. The very early rains are chiefly of sentimental value and can well be late and light.

How busy everyone is and how widespread is the activity! There is a rush everywhere in town and country and everyone seems to be rushed to live two years in one. A prominent Eastern business man makes this report on his return to New York: "The people in the East cannot realize the enormous business being done in the West unless they actually see it. All lines of business are active, with, of course, the crops as a basis. In many instances people are unable to find storage room immediately for their grain. Why, on certain parts of the Southern Pacific I saw grain warehouses which were so thoroughly filled that the grain had to be piled up in sacks outside. In San Francisco there is great enthusiasm and optimism. The work of clearing away the debris is proceeding, but it is a task that will continue months yet." Such reports are not new to us, nor is the grain outside of the warehouses such a surprising thing, but the report is good in the place where it is put.

It is gratifying to note that the Irrigation Congress acted fully in accordance with the urgent suggestion of President Roosevelt and Governor Pardee (both of which we have already published) that the proper thing to do is to make the Reclamation Act work out in success and not adorn it with so many projections and extensions that it could not go through the requirements of practicability. It seems very clear to us that nothing more should be bitten off from the problem of difficulty, but that there should be hard and unrelenting chewing upon what is now between the molars. To spread schemes all over the arid region and not locate successful and prosperous settlers anywhere would constitute the Reclamation Service the most iridescent and tenuous bubble since the South Sea scheme bamboozled our grandfathers. But the Irrigation Congress not only fled from all such danger, but did the best it could to make such danger impossible. It did the best it could to promote the effort to bring people upon the land and get at work to

demonstrate what can be done on the reclamations. A committee was appointed at the congress to spread information relative to the work throughout the East. The special aim of the committee will be to induce families to come to the new irrigated districts and settle. Professor Samuel Fortier of Berkeley is chairman and L. G. Sinnard of San Francisco is secretary. This committee is called the publicity committee, and will work in all the States of the Union. Thousands of acres will be supplied with water, and stretches of land now barren will form some of the richest country in the United States. This country will have to be settled, and the Government will give large opportunities to families wishing to live permanently on the land. We shall probably have further reference to this matter from time to time.

It looks as though we might be ruined by cheap Asiatic peanuts; in fact, if current tales be true, there is to be a great peanut battle fought on California soil altogether unmindful of the fact that California has really no need of either the contestants nor the product they will fight over. The story goes that a descendant of Homer, Damianakes by name, aspires to be the peanut king of California, and to control the trade all the way from San Diego to Seattle. Shiploads of peanuts will be brought from Japan, put through a great roasting machine in Oakland and distributed to retailers the whole length of the coast. Something like five tons a day can be roasted, if the trade warrants it. The present Chinese product and Chinese traders will have to go when the Graeco-Japanese combination gets under way. Such is the plan of Damianakes the Greek. All this goes for general entertainment and a suggestion perhaps that the new American citizen takes as kindly to combination and monopoly as the natives of Ohio. But what makes us particularly sad is that the California peanut is made a thing of no account. California growers have always had a hard time between the Virginia surplus and the Asiatic imports and are likely to have it harder if the Greek scheme works well. And yet the well-grown California peanut is great and might be produced in vast volume if the trade avenues were smoother. Nothing quite equals the "triple-jointed, humped-back, full-meated California peanut," as the train boy cries it out to enraptured tourists, but it makes us weep to think that this grand fruit is to be crushed by a Greek combination and not by the teeth of luxury, as nature manifestly intended that it should be.

After all, what are we Americans going to do? Even in this later day we are still in the same fix with Bret Harte's Bill Nye without the ability to settle the matter as Mr. Nye is said to have done. What, then, can we do when we teach our new citizens how to be smart and they make us smart for it, commercially speaking? This situation arose first in manufacturing lines, but it is arising now in agriculture. This is one phase of the peanut problem to which we have just alluded. In potatoes it arises somewhat differently. According to a Stockton exchange one of the largest leases in recent years in San Joaquin county was secured by two Japanese, George Shima and M. Naka, covering the Sargent canal farm of 3200 acres in the New Hope section for five years at an annual cash rental of \$15,500. Mr. Shima is the potato king of San Joaquin. He has nearly 6000 acres of potatoes this year, and he was fortunate enough to escape the floods. Although the potato crop is generally light this year, still Mr. Shima's yield is heavier than the average, and he expects to clean up a large sum of money on them. "Twelve years ago," says the local paper, "George Shima was a Japanese laborer. He had brains and nerve, however, and he started in farming for himself. Now his fortune is estimated at \$150,000. He employs several hundred men and owns nearly 600 head of fine horses." What can we do to protect ourselves when thrift, good farming and far-sightedness turn out that way?

QUERIES AND REPLIES

GROWING AND TRANSPLANTING EVERGREENS.

To the Editor: I have raised from seed planted last spring some coniferous trees—pines, firs and spruces—native varieties. These seedlings are now from two to three inches in height, and an inch or so apart in the seed bed. I should like to know if this fall is the proper time to transplant them, and whether to put them in boxes or open ground. Part of these are designed for home planting and part for sale. I should like also to know at what time eucalyptus seeds are planted as a rule, and when they are transplanted in the commercial style of 100 to the box. I have tried planting eucalyptus seed early in March and transplanting late in April, when the trees were about three inches high, with indifferent results. Can any coniferous trees be grown from slips, and if so, how are they handled?—SUBSCRIBER, Contra Costa county.

Evergreens should be transplanted at the approach or early in their growing seasons, of which they have usually more than one in California. The soil should be warm and moisture ample for quite a quick start of growth after moving. For this reason transplanting can be done all through the late spring or early summer until autumn, providing you do not continue too late, and too near the time when the soil becomes too cold and too wet. Small seedlings like those you mention are too weak and delicate to put in the open ground, unless you want to coddle and protect them from everything. Transplant to boxes like those you mention for commercial eucalyptus trees, or to nursery rows, if you have soil just right and are ready for protection against hot wind or blazing sun, with boards, lath covers or something of that kind. You can usually do better in boxes with proper shelter until the seedlings are twice or three times as large. You started you eucalyptus too late for spring transplanting. Better begin now under the lath or brush shelter, thin out or shift to give more room in the boxes as needed, and get a stock to plant out when the ground becomes dry and warm enough after the heavy winter rains. Many conifers can be grown from cuttings with bottom heat, but seedlings are better and rather more easily handled.

WATER NEAR THE SURFACE.

To the Editor: Will peach trees on myrobolan roots do well on good loam with water, and if they would be likely to do well on sub-irrigated land 3½ ft. to hardpan, or would grape vines do better? Will lippia, as a lawn plant, succeed on ground that sub-irrigates to within 1½ ft. of the surface, without watering?—READER, Stanislaus county.

We have already given our opinion as adverse to the myrobolan root for the peach for commercial planting at least, and no has yet taken issue with the statement. Of course, the peach can be worked on the plum root, and they do it in Europe for shallow, heavy soils, which the plum root will stand. In California, however, it seems ill-advised to undertake the peach at all for profit on such shallow soils resting on hardpan, or water, while there are so many better conditions for peaches, and other fruit, also. Until California is more densely settled it will be better policy to find the best place you can for a fruit, rather than try how hard a place a fruit will endure. The next generation can wrestle with that problem. Lippia ought to thrive without irrigation under the conditions you describe, unless the water brings up too much alkali.

TANGLEFOOT ON FRUIT TREES.

To the Editor: Last spring for the purpose of protecting my orchard against the ravages of caterpillars, I placed Tanglefoot around the trunks of about 50 apple and pear trees, ranging from two to five years old. I now find at least a half dozen of these trees have been seriously injured, if not destroyed, from the effects of the Tanglefoot, which was placed directly on the bark encircling the tree, covering a space of two or three inches, a little below the forks of the tree. The outer bark, or cuticle, is dead wherever the Tanglefoot covered it, but is unaffected above and below the Tanglefoot. In cutting away the cuticle the inner bark seems sound and healthy as yet. Will you kindly inform me whether in your judgment the outer bark will grow again, or should the trees be pulled out and replaced with new ones? The trunk of the tree apparently has not expanded where the Tanglefoot covered it, although

the difference is so slight as to be hardly perceptible. I am unable to account for this injurious effect of the Tanglefoot on these few trees only, in view of the fact that all of the others which were treated in the same manner remain unaffected. It is not due to any effects of the sun attracted by the black color, for the injury is as great on the north as on the other sides of the trunk. I shall appreciate your advice as to what should be done with these injured trees.—OLD SUBSCRIBER.

If the injury is only to the outer bark, as your examination seems to indicate, it may be disregarded. A healthy inner bark will carry the tree all right. You should certainly not think of sacrificing the trees. If the outer bark is hard and seems to act as a ligature, slit it vertically in several places with a sharp knife, going into the inner bark as little as possible. Why the application should have affected a few trees in that way and not others is probably attributable to the difference in age or some other bark character of the trees.

TWO APPLES FROM HUMBOLDT COUNTY.

To the Editor: I am sending you two apples—a Gravenstein, I believe, although the original tree came from the nursery labeled Duchess of Oldenburg, and a Manx (Codling).—The Manx is a kitchen apple of finest quality, a good eating apple and a long keeper, for an early apple, and does not become mealy, and never has shown the brown speck or Baldwin spot. The tree is a dwarf, and exceedingly prolific, and ought to become a favorite garden apple, where space is limited. The tree here is healthy, and a close, upright grower, blooming much on the new wood, as well as on old spores, and I am favorably impressed with it. The Gravenstein, however, I believe is going to be the mainstay in the list for August and September market. The sample sent is about half as large as some we had, but I suppose the quality is there, all right. The tree in growth is perfect, and very strong, both in growth and mechanical strength.—A. F. ETTER, Ettersburg, Humboldt county.

The apple is the Gravenstein, all right, and the sample is good size, large enough for most trade. The Gravenstein is well known, high and characteristic quality, and worth trying in locations where it bears well, because there are districts where it is rather shy. The upper coast valleys usually suit it well. The Manx or "Manks Codlin," as Hogg lists it, has a general resemblance to the Bellefleur form. It is an Irish apple, which in its home records justifies Mr. Etter's observations, and should evidently be better known in our apple districts.

PAPRIKA—AGRICULTURAL STUDIES.

To the Editor: Are the paprika peppers mentioned in the year book for 1905, page 539, the same species as those raised in Southern California? Who does one address for information concerning the agricultural course in the University of California, entrance requirements and studies?—SUBSCRIBER, Kern county.

The commercial crop of peppers of Southern California is not of the paprika type, which is of Hungarian development, while California is proceeding with the Spanish types. It is probable, however, that the paprika peppers are grown in Southern California, for the people are quick to try everything that comes into favor. Will some grower tell us what has been done with it?

For general information about the agricultural courses at the University, apply to Mr. James Sutton, Recorder of the Faculties, Berkeley. Any questions that may arise after perusal of this announcement may be addressed to the Dean of the College of Agriculture, Berkeley.

MEXICAN PROBLEMS.

To the Editor: How can I grow nut trees from pecan nuts? I have planted them several times in loose soil, covering with about one inch soil, and keeping sufficiently moist to insure germination, but the nuts would not open, except in very few cases. How can I grow orange trees from seed? The importation of orange trees from California to Mexico is a very costly and difficult matter, so that we have to try to grow them here. Can you recommend me a good book on orange culture, a general treatise on the subject?

My property belongs to the semi-tropical zone of Mexico, where I raise sugar cane, oranges, corn, wheat, etc. Wheat, however, does not grow well, the ears won't fill, except five to ten grains at the bottom, while the upper part will not even blossom, and if it does the fruit will not form. Sometimes, however, we obtain on some patch of land ears well filled and without any defects

whatever. We have heavy black loam soil. Can you tell me what the matter is with our wheat, and can you recommend me any good sort from California suitable for my land?—SUBSCRIBER, Toluca.

If you have been trying to sprout pecan nuts as they are sold in stores for eating, you will naturally get few to grow. The drying of this nut, as of other nuts, is at enmity with germination, and nuts for seed should be kept in moist sand until time for planting out. Then you should plant about twice as deep as you mention, and thus secure again a more uniform condition of moisture. Pecan seed nuts, sold for that purpose by dealers who keep them in good condition, usually germinate quite readily when suitably handled. Orange trees also grow very readily from seed, taking the seed from the ripe fruit, planting at once, and treating them just as you did the pecans. You will, of course, get a lot of seedling fruit by starting in this way, and will have to bud them if you wish particular varieties. The latest work on orange growing is 'Citrus Fruits and Their Culture,' by H. Harold Hume, West Raleigh, N. C. It is written from a Florida point of view. An up-to-date account of California growing will appear in our fourth edition of 'California Fruits and How to Grow Them,' which is now in preparation. We cannot answer your question about wheat growing. It would certainly be desirable to introduce some different seed for trial, but you will have to work out the problem under your own conditions. California conclusions would be of little importance to you.

A FINE YELLOW CLING.

To the Editor: I send a small box of clingstone peaches. I took notice of your article in the Rural Press of July 21 on "New Varieties in California Fruit Growing." I will state that this fruit is, as far as I know, from a seedling tree. You say we need two good clings to ripen between the Tuskena and Phillips, as good as they are. I will say that this cling is far superior to either the Tuskena or Orange as a home canning peach. It follows the Lovell, and comes ahead of the Phillips; in fact, just fills the gap between the Lovell and Phillips. The good qualities of this cling are as follows: Free from curl, never double, medium small pit, never splits, yellow flesh and no red center, hangs on tree well after ripening; tree a strong grower. If this peach has a name I never heard it. Kindly let me know if you consider it of any value.—A. T. FOSTER, Dixon.

It is evidently a splendid peach. The color is a medium yellow, the pit is quite smooth and leaves a neat cavity on removal, with no reddening of the flesh. The fruit is a little inclined to be irregular in shape and does not seem to us to have quite the finish of Phillips, but with its ripening season it would seem to have a place. Its origin should be looked into, and the fact that it is not already known and named should be determined. Mr. Foster will do a service by following back the tree as far as possible and make out the historical aspect of the fruit as he finds it as fully as possible.

BLUEBERRIES.

To the Editor: I take the liberty to ask you for information where blueberries (the German blaubeeren or Heidelbeeren) grow in the United States, and what use is made of them?—ENQUIRER, Berkeley.

It is very doubtful whether the German species of blueberries are grown anywhere in this country. Mr. Hall, assistant botanist at the University, informs us that the blueberries and bilberries are all species of Vaccinium, and are most plentiful in the central and northeastern parts of the United States. They are used as other berries and are commonly preserved by canning. The average annual output of canned blueberries from the single State of Maine is valued at \$100,000, and the annual shipments from Northern Michigan are said to amount to from 3,000 to 5,000 bushels. New Jersey, Pennsylvania and West Virginia also make large shipments. In California we have native species in the redwood belt and shipments are made, especially from Marin, Mendocino and Humboldt counties.

THE PEAR SLUG.

To the Editor: Does the same slug that attacks leaves of pear and cherry trees also operate on peach or almond

leaves?—READER, Niles.

We have never seen it do so, nor can we find any record of such occurrence. This slug has a range of the pear, cherry, plum and quince.

THE NORTHFIELD BEAUTY APPLE.

To the Editor: By to-day's mail I am sending you a couple of Northfield Beauty apples. This is an apple of unusual merit for an early apple. In general appearance of the tree in fruit, it looks much like Jonathan, and so far as I can see, it is very productive. It has neither the quick breaking down of over maturity or tartness characteristic of so many early apples. It is of Vermont origin, and I believe is little known, as compared with the Duchess of Oldenburg grown here. It is a trifle less juicy, less acid and higher flavored, and, on the average, about half as large.—ALBERT F. ETTER, Ettersburg, Humboldt county.

It is a splendid apple, handsome as a picture, with a brilliant red overlying a creamy, waxen under tint. A little more size might be desirable for fancy fruit, but it is of good serviceable size for a table fruit.

FORAGE PLANTS FOR OVERFLOWED LANDS.

To the Editor: Can you tell me of a grass that will grow on overflowed bottom land? The land is bottom land on the Feather river, near Gridley. While alfalfa grows in great abundance, it is drowned out each year in the low spots. What I would like to know is, if there is any kind of grass (good for cattle), which we can plant in the low overflow places that the water will not kill out each year.—ENQUIRER, San Francisco.

Probably the best grass for your purpose is the perennial rye grass which is now being used to a considerable extent on the river lands of the interior valley. It will stand any amount of water and also is quite resistant to drouth. Red clover could be sown with the rye grass if you desire, because it also will endure considerable overflow.

PEACH PITS FOR FERTILIZING.

To the Editor: Will you please let me know if peach pits are good for fertilizing purposes, and how much would they be worth as such per ton?—SUBSCRIBER, Healdsburg.

Peach pits certainly have some fertilizing value. The kernels are available; the shells have plant food also, but in insoluble form unless reduced by the use of strong acid, as phosphate rock is, for instance. What there is available would be too little to pay for hauling a ton of the whole pits two miles. This last remark is largely a guess.

A START IN GARDENING.

To the Editor: I am just in from Cuba, and have bought some sandy land at the foot of the mountains. I have water and engine. It is claimed that there will be no frost until January which will hurt gardens. We want plenty for family use and some to sell. What would you recommend to plant before frost, and what to stand a light frost? Do I need to use muck and some kind of fertilizer for English peas and beans? What kind of grain shall I sow for winter pasture for milk cows?—BEGINNER, Los Angeles county.

It is just the time to get busy with gardens in preparation for the first rains, or to use irrigation water for fall and winter growth. There are only a few vegetables generally known to be tender which cannot be planted in the fall in such a place as you describe, and full directions as to how to proceed and when to plant are given in our book on 'California Vegetables in Field and Garden.' You will not find muck in California, as muck is understood in humid climates. Whether you will need fertilizers or not will depend altogether upon the present fertility of your land, and the coming winter's experience will enable you to determine that. As a rule, it is not necessary to use fertilizers at the beginning with California soils. Ample moisture and diligent cultivation usually bring astonishing results without fertilizers, until the land becomes reduced by continual cropping. The grain which is chiefly grown for winter feeding green is rye, but nearly all small grains will make good winter growth if the moisture is present. Corn and various kinds of sorghum are generally relied upon for summer green forage.

HORTICULTURE.

PICKING AND PACKING APPLES.

Numerous inquiries are reaching the Horticultural Department of the Kansas Experiment Station in regard to the prospects of the apple crop, the probable price and possibilities of storage, and Mr. Albert Dickens has made a general statement which is of interest to California apple growers. From observations in many parts of the State the writer believes that the estimate of the U. S. Department of Agriculture, 78%, is conservative. In regard to prices, one man's guess may be as good as another's, but there seems to be no doubt among shippers and dealers that good fruit will bring fair prices. The market for culls and windfalls in localities where neither evaporators or cider mills are established, is always poor when fruit is plentiful. Many growers do not sort closely, and this improper sorting is a cause of frequent loss. Many times a barrel or box that contains two-thirds No. 1 fruit and one-third No. 2 is rated as No. 2; in fact, that is the usual custom—to rate fruit as low as the poorest part of the package—and the dealer is justified, for the one-third may damage the entire lot, if stored for any length of time.

A form of contract that has been in use in recent years specifies the minimum diameter for the variety and the other conditions the same for all sorts. For example, "No. 1 Winesaps must not be less than 2 1/4 in. in diameter, well colored for the variety, free from all blemishes, fungous, and insect injury." This is a high standard, of course, but fruit that can make this grade, can be depended upon to make a profit. Close culling is necessary, and when fruit is culled so closely, the second grade is frequently suitable for storing. Some buyers will accept as second fruit that which has an "end worm," others insist upon freedom from insect injury. There has been some quibbling as to what constitutes "insect injury," some buyers holding that even the slightest mark or sting is a blemish, but most packers are satisfied if the fruit is "serviceably sound," that if the sting has only marked or slightly discolored the skin, the fruit is eligible to first class.

Fruit for storage should be picked while yet firm, as fruit that has advanced to a stage of ripeness to be best for eating will almost invariably "break down," and even if it looks well when taken out, will be decayed at the core. Some growers of high quality fruit pick their orchards more than once, gathering the fruit as soon as it is well colored, leaving the poorly colored and immature fruits until they have become well colored. Unless this is done some fruit will fail to grade No. 1 for this cause, but each grower must decide whether or not such a course will pay.

The best storage is that in which the temperature may be absolutely controlled by means of refrigerating machinery. A temperature which varies but a degree or two from 32 is best. The price of storage varies with supply and demand, but from 10 to 20c. per bushel has been the range of prices. Where fruit is kept in common fruit cellars great care must be taken to keep the temperature as cool as possible, never allowing air which is warmer than the fruit to come in contact with it. Fruit and store-room should be as cool as possible when storing and the temperature carefully watched. Good ventilation, that may be absolutely controlled, is a necessity.

The packing of fruit is a great factor in successful marketing. Fancy fruit is being largely packed in the bushel box and fruit packed in layers, fruit all faced one way, makes the most approved package. For this work the fruit must be uniform in size, and the color as nearly one shade as possible. The cost of the package per bushel does not vary largely, but boxes store more economically than do barrels. A barrel or a box is "faced" for two reasons: to allow the cover to be more easily and securely fixed, and to make the fruit appear attractive when the package is opened. But every apple in the package should be of good honest quality for its grade. The best growers affix their names and the date of packing and the number of their packer to each package. Some attach a guarantee, others a request for information if the fruit is not satisfactory in every way. Every package of fruit should be a silent salesman. It must be "up to grade," if the reputation of the grower is maintained. The grower who grows a high quality of fruit, packs it right and stores it well, has the choice of markets, and in years of heavy crops usually has least complaint of poor prices.

THE MARKETS.

Wheat.

Activities in the wheat market during the past week have been about normal. A fairly good business in spot wheat is being done, but San Francisco is badly handicapped by the fact that her storage facilities are much less than heretofore and by the reluctance of merchants to ship wheat to this port unless it has been previously sold. The supply here is very limited and the local dealers have to do the best they can with what little wheat reaches this port. The growers and buyers are of a different opinion in the matter of prices and right now the wheat situation is comparatively at a stand still. The situation will, however, undoubtedly loosen up within a few months as the prices by that time will be more or less settled. The growers as a general rule are holding their wheat either because they fear a drouth next year or because they have been accustomed to receiving considerably more for their produce than they are now being offered. It has been estimated that about two thirds of the crop is being held by the growers. The quality of California wheat this year is exceptionally good and will undoubtedly be used for milling purposes and California's milling grain will not have to come from the north as it formerly has done. The present crop is being interpreted by many San Francisco dealers as a proof that all California needs to raise the very best of wheat is the proper amount of rain at the right time. The grain crop in Central California and the San Joaquin valley has proved to be much shorter than usual, especially in wheat, but in the Sacramento country and in Southern California the crop is probably somewhat better than heretofore. Prices remain unchanged and the situation will probably continue until the growers begin to let their crop go. The wheat situation up the coast remains about the same as last week with prices unchanged but not quite so firm.

Flour.

The flour situation is much the same as last week with a brisk local demand. Considerable flour is coming in from Oregon and Washington, but San Francisco depends principally upon the Stockton mills for her supply of flour. One of the local dealers succeeded in selling 10,000 barrels of flour in one day. This gives an idea of the demand for flour in this city. Northern mills are very conservative in their orders and are not running to their fullest capacity although normally this is the busiest time of the year. The foreign demand has not suffered any material change and from the present outlook very little advance in foreign demand is expected until prices have subsided.

Barley

The barley crop has proved to be one of the largest California has ever raised and the price is as a result only fair. The situation here has not changed materially, however, and about the same amount of speculation is being carried on this week as last. The demand for feed barley is increasing and it is estimated by local dealers that barley will occupy the leading place in feedstuffs this winter. Much barley is being shipped into the southern part of the state despite the fact that the barley crop in that vicinity is abnormally large. The export grain trade of California will probably be limited to a barley trade exclusively as this is the only grain this year that has passed the home consumption mark.

Oats.

The idea that the oat crop was going to be a fairly good one has been shattered since the harvest of that cereal. Growers from nearly every section report a material shortage in the oat crop. Prices for oats are good at present and it is expected that the present prices will be at least maintained. There is a lively demand for oats in the local houses and the supply is rather short. The quality of oats this year is fair with the exception of some lots which are more or less foul. Farmers are showing a tendency to hold the oat crop as they are firmly convinced that prices will have to go up and many are of the opinion that the grower will be justified in the belief.

Corn.

The corn situation is of less importance to the local dealer than anything else and as a consequence little interest is being taken in the cereal. Some eastern corn is arriving at this port, but receipts as a rule are small. The demand is slight and Easterners will probably have to look elsewhere for their market this year.

Millstuffs.

Some little movement has been noticed in the feedstuffs line. The demand has increased to a considerable degree and local dealers are beginning to take some interest in this market. The ruling feedstuff in San Francisco are oats and barley and some few sales of rolled oats and barley have been made. Millstuffs

such as bran and shorts are very limited in this city and very little business is being done in these lines.

Hops.

The hop situation is occupying much of the time and attention of hop dealers in California. The crop is not so large as expected in these parts and the foreign demand is increasing daily. England and other European countries show a decided shortage in hops and an enormous demand from the old country is expected. The California yield will probably be somewhere in the neighborhood of 900,000 bales. The hop situation in the north is becoming serious. The late rains have caused the crop to be light and notwithstanding the fact that prices range from 16c to 20c, growers have contracted their crops for 10c and are not getting any benefit of the raise. The pickers are not able to make anything at the ordinary wages paid and hundreds are striking for a raise.

Beans.

The bean crop is fast coming on and the market is opening up a trifle. Some shipments of mixed cars are being made to the east. In general the bean crop is good, but in some parts of the river district the crop is reported short. Limas are steady and are expected to remain so for the time being. Bayos are plentiful and the price remains unchanged. The harvest of limas has begun in Ventura county and the crop has been estimated at 650,000 bags, about the same as last year. Prices are expected to be stiff as the old crop is nearly all gone.

Wool.

Wool transactions are about the same as last week. Little wool is being handled by local dealers, as they are not prepared to store a very great amount. Some wool houses have opened up, however, in the southern part of town and are beginning to take an interest in the wool market. The wool people of Red Bluff have set a day on which to meet in a body and decide upon a date for selling the fall clip.

Bags and Bagging.

The price of grain bags continues to go down as the demand for these bags has practically stopped. There is a lively demand for bean bags, however, and local dealers and manufacturers find it almost impossible to compete with the demand. Cotton goods continue about the same as last week. Twine is high, but is showing little increase in demand. The prices for twine have been advanced by corporations until dealers are now paying from 4c to 5c per pound more than they were a few years ago. The demand for bailing rope has suffered a great decline within the last few years and the demand now is practically nothing. The local dealers account for this, however, from the fact that wire has succeeded rope in nearly every district.

Hay.

Receipts of hay for the week have amounted to 4431 tons. The railroad company has again put an embargo on hay. The Southern Pacific Company's agents throughout the state have been notified not to receive hay for shipment to San Francisco. How long this embargo will last no one has yet been able to ascertain. This places large quantities, laying at railroad points awaiting shipment to San Francisco, in imminent danger of being wet by the expected rains. Many of the farmers are endeavoring to obtain shipment for their hay by hauling it many miles to the bay landings to be brought in by water. The fleet of vessels available for this purpose is limited and cannot handle near the amount that is offered. The market has continued along in the same condition as it has been for the past few weeks. Choice wheat hay is very firm, on account of light arrivals of this particular variety. The same can be said also of choice tame oat hay. The medium grades of hay sell off very well, but the poorer classes, of which considerable has been coming in of late, move off slowly and at unsatisfactory figures. There is more alfalfa hay coming forward now, than at any period at this season. Large quantities of alfalfa are piled upon the banks of the river, awaiting transportation. Barges have been pressed into service to endeavor to clean up many large lots that have been awaiting shipment. The hay wharf is congested and the space limited for unloading of hay. Therefore, for the next few weeks it looks as though conditions would be very unsatisfactory at this end. Considerable straw has come in this week, which has relieved the situation on this article very materially. There is now plenty of straw available here for the requirements.

Poultry.

Few changes have transpired in the poultry business this week. The same good demand is prevailing for large young hens and roosters. Young turkeys are in good demand, but the market is slack at present. Extra fancy pigeons are in good demand and are bringing top prices. Ducks are scarce and firm.

Butter.

Receipts of butter have probably been a little more this week than last. Prices remain about the same and the demand is good for the best butter.

Eggs.

Eggs have fallen off in receipts this week and dealers are finding it hard to supply the demand. Fresh ranch eggs are not to be had in any quantity and the price has gone up to from 39c to 40c per dozen.

Cheese.

Cheese remains unchanged with the best cheese selling at 12 cents. The poorer grades of cheese are plentiful in the market and the demand for such is poor. The supply of fancy cheese is very light at present but prices for this grade are firm.

Vegetables.

The vegetable market remains steady with a good supply on hand and a demand that cleans out local stores daily. Tomatoes are plentiful now and the price has gone down a trifle since last week. Beans are bringing a good price, but are very scarce. Egg plant, cucumbers and summer squash are plentiful and are selling at unchanged prices.

Potatoes.

The potato market remains practically unchanged. The receipts are fair and the daily demand just about clears up the day's receipts. Salinas, if anything are a little higher than last week. Some little range is shown in the market and Salinas are selling all the way from \$1.30 to \$1.55. Rivers remain firm at 75 to \$1.10. The crop of Salinas is small this year and it is estimated by local dealers that the price will probably reach the \$1.60 mark next week.

Onions.

The receipts of onions have been heavier this week and the price is showing a tendency to fall. The crop of onions all over California is exceptionally good this year and only a fair price is expected to prevail.

Fresh Fruits.

The supply of fresh fruits is good and local dealers are realizing good returns in this line. Some grapes are coming in from the mountains and are bringing top prices. Lake county pears are arriving daily and are selling at \$1 per box. Plums are plentiful and selling at about the same figure. Peaches have increased somewhat in receipts and the price remains firm.

Dried Fruits.

Shipments of dried fruits to this port have increased somewhat during the week. Pears are arriving and are bringing top prices. The quality as a rule is good, but the quantity is light. Peaches are bringing good returns and growers are reporting a better crop than was at one time expected. The canneries are claiming their share of the crop and the dried fruit market will undoubtedly be pretty well cleaned out this year.

Raisins.

The raisin situation is beginning to occupy much of the attention of dealers. The price for raisins in Fresno county has been ruling at 3 1-4c per pound in the sweatbox, but rumors have been passed around that packers were paying 3 1-2c per pound. This has been denied until lately since the packers have openly offered 3 1-2 cents and are buying freely at that figure. The crop of raisins is variously estimated, but it is pretty generally settled that the crop is less than has been anticipated. Many of the grapes are going to the wineries and it is believed that this has had a big bearing on the shortage of the raisin crop.

Citrus Fruits.

Citrus fruits are not very plentiful in the San Francisco market. Lemons are particularly scarce and oranges are not much better. Grape fruit is scarce and bringing a good price. Limes are scarce and firm.

Nuts.

Walnuts are still holding the leading place in the nut market. The walnut market is pretty well controlled by the Southern California Walnut Association, and the price for the present walnut crop has been practically fixed. Growers are satisfied with the prices they are receiving and good returns are expected from the walnut trade. The total yield of Southern California is placed by estimation at about 625 cars. Harvesting will begin within the next week, but the crop will not move to any great extent until about the first of October.

Honey.

The honey market is as yet unsettled. A great deal of hold-over is still in the hands of dealers and not much action is expected until the market opens up. Reports from over the state show a shortage in honey and Los Angeles is now importing from Utah and other western states. The best grades of honey are being used locally while the second grade is being shipped.

THE STOCK YARD.**THE HEREFORD.**

By Col. J. J. Steadman, of Los Angeles, at the California Live Stock Breeders' Association annual meeting, in Sacramento.

The question among breeders of beef cattle for many years past, viz., what particular breed is best adapted to the general farmer, has been one to draw out a variety of opinions. Up to within a period of 12 years or so, the breeders of Shorthorns have strenuously contended that no type of cattle in this country would equal that particular breed in all the essential elements of health, strength, quickness of maturing, and rapidity of finishing for the market. In many of the States of the Middle-West the Shorthorn had decidedly the lead. No other type was much considered, nor much desired by the best stock raisers and breeders throughout the country. At that time, however, the merits of the Hereford began to be discussed among stockmen, and the exhibitions made by the Hereford breeders at agricultural and stock fairs, awakened an interest in the peculiar characteristics of the Hereford breed. Owners of extensive ranges began the use of pure bred Hereford bulls, and it soon developed that range cattle bred up from the Hereford, combined more essentially the elements of successful stock cattle than had heretofore been considered at all possible. The calves and steers from this breed exhibited great constitutional power, strength of bone, width and length, ability to carry enormous quantities of fat, and an adaptability to climatic conditions and feed, that surprised not only the owners thereof, but the feeders and breeders of other classes of cattle. When these facts were once thoroughly demonstrated, the attention of the farmer was directed to the utility of the Hereford for the general farm; and the use of the pure bred Hereford bulls and cows began to be more generally adopted throughout the section which had previously been devoted only to the raising of the Shorthorn and other types of cattle. It was found, upon actual experiment with a given number of Shorthorns, Polled Angus, Galloways and Polled Durhams, that the Hereford would finish for the market on the same ratio of feed, that is, the same amount of grain, hay, clover, or alfalfa, from two to three weeks earlier than any of the above named types. It was also found that the Hereford calves were more immune from the diseases common to cattle, especially "Blackleg," than the calves of any other breed. These facts awakened the attention of the cattle men throughout the country to the remarkable characteristics of Hereford cattle. So great became the interest throughout the cattle growing sections of the country, among the breeders and raisers of improved breeds, and grades and their crosses, that in December, 1900, the largest aggregation of live stock for show purposes ever seen in the land culminated in Chicago. It was held under the auspices of the International Live Stock Exposition. This organization comprised representatives of each of the different breeds of pure-bred domestic animals, besides their grades and crosses; and the entire aggregate reached a total of over 6,000 head. There were represented at this exposition 2,689 head of cattle, of which 409 were Herefords, 312 Shorthorns, 228 Aberdeen-Angus, 144 Polled Durhams, 212 Galloways, 165 Red Polls, 25 Devon and Sussex, and 1,195 fat animals embraced in the above enumeration. The purpose of this exposition was to bring together the growers of these great types of domestic cattle, and to demonstrate by actual object lessons the condition and kinds of cattle demanded by the market. In order to clothe this exposition with the most accurate judges, college professors, veterinarians of national repute, veteran breeders, students from the agricultural institutions of the country, and the most experienced feeders for a quarter of a century, were brought together and placed in charge of the exposition. Three hundred and fifty-five pure bred animals were sold at public auction on an average of \$336 per head, and of all the sales made, the highest paid was for a Hereford bull calf, which sold for \$3,500. From this exposition went out the heralds of the Hereford, and from that date to this the growth of the breed has been phenomenal. In later exhibitions held at Kansas City and Chicago, in but one instance have bulls or cows of any breed sold higher than the Hereford. The reason for this is, that the Hereford adapts himself to the range, where as a rustler he has no competitor, keeping fat where almost every other, if not every other breed, presents only a living appearance.

From an experience of over 12 years in breeding and feeding, I have come to the conclusion that for the purposes of utility, there is no stock for the general farmer of the same use or value as the Hereford; beef cattle being alone considered in this suggestion. I have had less trouble with diseases incident to the raising of stock, and I have finished cattle for the market from

two to three weeks earlier than my competitors, who were feeding their cattle for the same market. I have fed no more grain, nor hay than they, and I have received in the market on an average from 30 to 50c, and even 60c. per hundred more than they.

When the storms of winter would drive the Red Polls to the stables and sheds, the Hereford would be rustling in the snow, scraping his way to the ground to eat the dry grass, and would seldom come to the feeding pens before the usual hour. It is because of the resisting power of the Hereford to heat and cold alike, the ability to rustle, and take on flesh rapidly, to carry fat evenly distributed over the body, and to present an even, perfect appearance when ready for market, that I stand as the exponent of Hereford cattle for breeding and stock raising.

President George, of the American Hereford Breeders' Association, in an address delivered before the association held at Kansas City, in 1905, spoke of the Hereford as follows:

"The Hereford breed to-day needs no one to sound its praises, as the merits of the Hereford have been so long and so well demonstrated that its position among the rival beef breeds is one of certainty. The color, the hardihood, early maturity, the prolificness, the early and rapid fattening quality, place this breed to-day in the foremost position of beef breeds."

In a history of the Hereford, published in 1833, the writer thus describes the Hereford:

"The Hereford breed is a variety of the Devon and Sussex, but is larger and weightier than either; being generally wider and fuller over the shoulders and chine, and the breast or brisket, as well as the after part of the rump. The prevailing color is reddish brown, with white faces, the hair fine and the skin thin.

"In the true bred Hereford cattle there is no projecting bone in the point of the shoulder, which in some breeds form almost a shelf against which the collar rests, but on the contrary tapers off; they have a great breadth before, and are equally weighty in their hind quarters, their tail not set high; a great distance from the point of the rump to the hip bone; the twist full, broad and soft; the thigh of the fore legs to the pastern joint tapering and full, not thin below the joint; the horn pushes aside a little and then turns up thin and tapering; remarkably well feeling; mellow on the rump, ribs and hip bone; the quality of the meat not hard, but fine as well as fat; little coarse flesh about them, the offal and bone being small in proportion to their weight; whilst their disposition to fatten is equal or nearly so, to that of any other breed. They are, however, ill calculated for the dairy, their constitutional disposition to accumulate flesh in opposition to the qualities of good milking cows, an observation which will apply equally to every breed when similarly constituted. A breed of cattle equally adapted to the shambles, to the dairy and the plow, is, indeed, not to be met with; for experience teaches that these properties are inconsistent with each other."

The Hereford cattle are by many good judges considered to approach nearest to that perfect state of any of the large breeds; they arrive early at maturity, and are fit for labor, but it is as a fattening cattle that they excel, and it is a different variety of the same breed that is preferred for the dairy. I believe the Hereford on the California ranges, north of the Tehachapi, will prove money-makers for every stockman engaged in their raising, and I believe, further, that well directed effort to the raising of beef cattle in California will prove not only pleasurable, but exceedingly profitable. We have, heretofore, been content with only mediocre grades of stock for our farms and ranges, but the time has come when, if we are to realize the utmost possibility of our agricultural greatness, we must adopt the most improved types of beef and dairy cattle, and come up to the standards which have made the farmers of the Middle West independently wealthy.

REMINISCENCES OF SHORTHORN BREEDERS AND BREEDING IN CALIFORNIA.

By Robert Ashburner, Woodland, Cal., at the annual meeting of the California Live Stock Breeders' Association in Sacramento.

I have been asked to give some reminiscences of the importing and breeding of Shorthorns in this State in early times. As I landed here in February, 1861, with some Shorthorns direct from England, and as I was brought up amongst them from my infancy, it was quite natural that I should take some interest in the Shorthorns that had already been brought into the State before my arrival. It was but a short time before I had seen nearly all of them and become acquainted with their owners, excepting the herd of W. J. Walsh, of Colusa county, who was undoubtedly the first man to bring pure-bred Shorthorns to this State, for, I find recorded in the fifth volume of the Herd Book three ani-

mals bred by him, viz., Sally Chambers, calved on the 6th of January, 1857; Mary 1, calved October 4, 1857; and the bull Shasta 4359, that was calved on January 1, 1858, which gives earlier dates of birth than for any other California bred Shorthorns.

Next in order are two animals, in Volume 4th., calved February 1, and March 19, 1858, respectively, which were bred by George H. Howard, of San Mateo, who, in 1857, had brought two bulls and two cows from the herd of B. and C. S. Haines of the State of New Jersey. Mr. Howard made no more entries for the next 13 years, when I find 12 cows and 5 bulls recorded in the eleventh volume, published in 1872.

Mr. S. B. Emerson, of Mountain View, Santa Clara county, also brought two bulls and three cows from Canada in 1857. They were from the herd of F. W. Stone, of Guelph, who, during his long career as a breeder, had imported a good many high-priced Shorthorns from England. The two bulls and two of the cows that Mr. Emerson brought were out of cows that were imported from England, and all five animals were got by imported bulls, thus being nearer the original Shorthorns of their "native sod" than any that had been brought here up to that time. Mr. Emerson bought some high-priced bulls afterward, notably the imported bull Sheriff (29,964), but, like many others of that time, he was neglectful about taking advantage of the benefits to be obtained from making a proper use of the Herd Book, and I do not find any animals of his breeding recorded till Volume 13 was published in 1874.

In 1859, Egbert Judson, of San Francisco, bought two bulls and two cows from the herd of E. Marks, in the State of New York. These were practically of pure Bates blood, being the first Shorthorns of that blood that had been brought to California. Like all Shorthorns of that time, that were descended from the herd of Mr. Thomas Bates, they had been in-bred too much, but, notwithstanding that fact, one of the bulls was useful till he was 16 years old.

The largest importations into California from the State of New York were made by J. D. Patterson, who had a breeding farm at West Chester. During the years 1859-1860, and including one shipment made in the spring of 1861, he must have brought here about 50 head of Shorthorns, besides both Southdown sheep and French Merinos, and it was from Mr. Patterson's importations that the late Robert Blacow obtained the foundation stock for his flock, which he, in after years, bred so successfully.

In Volume 4 of the Shorthorn Herd Book, Mr. Patterson has 23 animals recorded; in the fifth volume, 29 animals; and in the sixth volume, 19 animals; 61 in all, the greater part of which came to California by way of the Isthmus of Panama, which made it a very costly business, the cost of transportation from New York to San Francisco being over \$400 per head. Mr. Patterson brought a number of very good cattle, more of the type of Shorthorn prevalent 50 years ago than now—big, lengthy and round ribbed on short legs; most of them being great milkers as well. I never saw an inferior animal amongst all that he brought here. There had been a great boom in prices, which had, in a great measure, died out by the time he arrived with his last shipment; but the fads and fancies in colors, about Bates blood and Booth blood, etc., had not then been much thought of. True, animals of the blood and breeding of either of the two old rival houses would sell for more money than animals equally good in appearance from almost any other herd, but the craze for these things had not come—and pity 'tis it ever did come.

I landed in California on the 11th of February, 1861, with five Shorthorns, two bulls and three heifers; also one Devon bull and two heifers, for the late John Parrott, of San Mateo. One of the bulls and one heifer were of the late Sir Charles Knightly "fill-pail" sort, well named, for from them have descended a great many heavy milkers—true to the old name, but, in fact, the greater part of the cows that had been brought to the State up to that time were more of the original dual-purpose type of the Shorthorn, than were the greater part of those that came afterwards.

Mr. A. B. Forbes, of San Francisco, brought a bull and a cow from the herd of Mr. Samuel Thorne, of Thornedale, N. Y. These were good animals, but there are no living recorded descendants of them. I also remember seeing two very superior roan bulls belonging to Mr. Fred Warner, of Yolo county. The above four animals, and two or three included in the last shipment made by Mr. Patterson, are all that I know to have come from that celebrated herd.

I think it was in 1859 that S. B. Whipple, of San Mateo, brought one bull and a cow from the herd of Mr. N. G. Morris, of New York State, and bred from them quite a large herd, the bulk of which was sold off, in 1874, I think it was, when Shorthorns were selling high, being the year after the great New York Mills sale, where cows sold as high as \$30,000 and \$35,000 apiece,

which caused a little excitement in Shorthorn circles, but more especially in Bates bred cattle, than in any of other breeding.

In 1870 Mr. Louis Pierce, of Suisun, imported two bulls from England, and in 1874, four cows, but from which there were no recorded descendants. Then there was J. D. Carr, who brought quite a number of good cattle into the State, but he did not keep them many years. The same may be said of Cyrus Jones & Co., who brought a number of well bred animals. Major Naglee, of San Jose, imported four heifers from England some time in the sixties. He also bought some cows at the closing-out sale of Cyrus Jones & Co., but, so far as I know, never succeeded in establishing a permanent breeding herd.

Mr. J. W. Waters, Jr., bought two bulls and 16 heifers from Jas. N. Brown's Sons in the State of Illinois, and brought them to a nice 200-acre alfalfa farm near the town of old San Bernardino. The late Moses Wick, of Oroville, brought as many as 37 head into the State at different times, nearly all of which he bought in the States of Ohio and Kentucky. He kept up a breeding herd as long as he lived, but after his death the bulk of the herd was sold to Miller & Lux, who recorded but a very few animals after the herd came into their possession.

Wilfred Page brought two bulls and eight heifers to the Cotati ranch in Sonoma county in 1872, from which are descended a good many animals now eligible for record. Mr. Chiles, of Davisville, brought some good ones and kept up a breeding herd for several years. He was quite successful in the show ring with several animals that he showed, and deservedly so.

In 1875 I went to England for Shorthorns, having previously bought Mr. Egbert Judson's small herd of Bates-bred cattle. I wanted new blood of some kindred strain. I brought back two bulls and five heifers for my own herd; also two bulls for use on the Chowchilla ranch. This, so far as I know, was the last importation of Shorthorns made direct from England to California.

During the time covered by the above account of importations up to the year 1875, there were some others brought in lots of two or three head by individual owners, who probably had the idea of establishing breeding herds. There were also a goodly number brought here by speculators, who sold them as soon as they found it expedient.

Most people who are interested in good cattle and their breeding ought to know as well as I do about the number and kind that have been brought into the State during the last 30 years. If I have made any mistakes in my statements, I shall be glad to have any one correct me.

I have confined my statements pretty much to the bare facts, so that this paper should be as short as I could possibly make it, and at the same time give the information necessary, yet I would like to review the results that have come from so many good cattle that were brought here. No doubt but that they had a generally good effect in improving the cattle of this State, provided only that the necessary feed was given to develop a good growth in both size and quality. It must be admitted, however, that there are comparatively few pure-bred and recorded descendants of the first importations. There are none from the Walsh herd, two from the Emerson herd, that are owned by me; then there is the Howard herd, that has been kept straight; there are also a few descendants of the Whipple stock in that herd. I have two cows of the same descent, and that is all from the Whipple herd that I know of being eligible for record. I have some female descendants of the Parrott importation, and they are the only ones eligible for record from that source.

From all that Mr. Patterson brought into the State, I do not know of any recorded descendants. W. L. Overhiser, of Stockton, formed a partnership with Mr. Patterson, which finally resulted in Mr. Overhiser owning the whole herd, and which he sold as a whole after keeping it about 15 years.

There have been none recorded for several years, either from the descendants of the herds of J. D. Carr, Mr. Chiles or J. W. Waters, Jr., or from the herd of Cyrus Jones & Co., excepting that I have a few descendants from the last named herd. The trouble with the greater part of the men, who had Shorthorns, was that they would not stick to the business through thick and thin, as the saying is, but when prices got down the cattle had to go, or it was not thought worth while to keep record pedigrees; in fact, they thought only of the money there was in it, and did not care about the breeding part of it. Such men never become successful breeders.

Now I wish to say to young men who are breeding a few Shorthorns, or are thinking of doing so; study the Herd Books, beginning at the beginning, for you cannot know pedigrees properly without the Herd Books. You can spend a few hours in tracing out a pedigree. I take

it as a kind of recreation, or change of work, considering it the kind of a change that is as good as a rest, and, if you undertake to trace out one pedigree, you will through that find out something; yes, a good deal, about the breeding of other animals. The Herd Books are just as necessary to the breeder as the Bible to the minister of the gospel.

I have no doubt but that the most of the people who brought pure-bred Shorthorns to California, brought them with the full intention of continuing to breed from them, with the ambition, perhaps, to each build up a herd better than that of his neighbor. If only a few of them had done this and kept up both the Herd Book pedigrees and the feeding pedigrees, which latter is even more necessary than the paper pedigree, for without a good and well arranged system of feeding, a good class of cattle cannot be maintained. If this course had been followed up continuously there would have been many more good cattle in California than there are now.

THE FIELD.

CURING SWEET POTATOES.

In case some California grower may not be satisfied with his success in field or house curing of sweet potatoes for shipment, we give an account of southern practice, as tested and approved by Mr. M. B. Waite, of the U. S. Department of Agriculture, well known to Californians through his pear blight work in this State.

Referring to the methods used in Delaware, Maryland and Virginia successfully, and which I have used for the storage of nine successive crops, they are about as follows: In the first place, prepare a warm, tight building, yet one which can be ventilated quite freely, either through trap doors in the ceiling or through the windows and doors, or both. Almost any sort of a building or room will do, which can be provided with a stove or heating apparatus and thoroughly heated. The rooms in which the potatoes are stored should be double-ceiled with building paper between the ceiling, both on the sides and overhead.

The potatoes can be piled in large bins. In some cases, I have had bins nearly 40 ft. long, 12 ft. wide and 8 ft. high, holding approximately 500 barrels. As a rule, however, bins holding not over 200 barrels are more convenient. It makes little difference about the size of the bin, if it is thoroughly ventilated on all sides. Where a good floor is provided, after placing on 3 or 4 in. of pine leaves, the potatoes can be piled directly on the floor. It is not necessary to have a floor in the potato house, as the ordinary dirt floor will suffice. However, in such cases, the potatoes should rest on a bin floor made of loose slatted boards 6 or 8 in. above the ground level.

The Heating Apparatus.—A good wood stove answers every purpose, provided it is of sufficient capacity to heat the space. As a rule, the stove should be placed at the north, or otherwise most exposed end of the building, and a window or principal source of ventilation should be close at hand. If wood is used for fuel, a good air-tight sheet iron stove has proved, with me, to be by far the most desirable type. The fire can be controlled so nicely with this style of wood stove. A hot water heater is undoubtedly the best form of apparatus for storage on a large scale.

The potatoes are dug just ahead of, or about the time of the first light frosts, and handled as carefully as possible while digging and hauling to the storage house. Considerably more care is required in the digging and handling of sweet potatoes for storage than for ordinary market. As a rule, it is better not to let the frost touch the vines, but if they are dug within a week or so after the vines are frozen, there appears to be no undesirable result. However, a second freeze is not desirable.

Unless the soil is very light, it is necessary, in case of rain, to wait for it to be tolerably dry before digging. The potatoes are plowed out with the common plow, or better, with a machine digger, and are at once pulled out by one set of hands and the dirt shaken from them. They are allowed to dry for an hour or two in the sun. Unless the ground is very dry, a sunny day therefore is absolutely necessary.

After the potatoes are surface dry, a gang of pickers gathers them up into baskets and they are hauled at once to the storage house. With skilled labor available for picking up, the potatoes can be sorted into shipping potatoes and seed potatoes. In my own case, however, I have found so much confusion in the sorting that it compelled me to install a half dozen sorters, who work under supervision at the storage house, and carefully grade out the potatoes there. The pickers in the field can work much more rapidly when they never have to discriminate between the different grades, and a more careless and ignorant class of labor can thus be utilized.

Everything under 1½ to 1¾ in. goes into the seed potatoes, except, of course, string and crooked or defective stock. The larger size goes into the shipping bin, and comprises about two-thirds to three-fourths of the crop.

Proper Temperatures for Curing.—The house should be kept at a temperature of about 80 to 90 degrees while the potatoes are going in; 95 degrees will do no harm. At these higher temperatures, however, perfect ventilation is imperative. Never heat the sweet potato house to high temperatures and confine the air at the same time. The object is to warm up the potatoes, cause them to sweat or transpire their moisture, and then to allow this moisture to escape from the house. A few hours after the potatoes are placed in the bins, they are covered with the moisture which they have breathed off. This is especially noticeable in the morning on potatoes placed in the night before. The sweating of the potato under this high temperature causes it to undergo quite a decided change. It shrinks slightly, though not noticeably; the flesh becomes somewhat drier and decidedly better flavored. Furthermore, the potato has undergone a sort of curing process, which renders it much less subject to decay.

In the case of a few potatoes, it doubtless requires but a day or two to have them thoroughly cured. However, experience has shown in actual practice, with large bins, that it required from one to three weeks, according to the bulk of the bins and the size of the house, to cure thoroughly a house full of potatoes. The higher temperature somewhat hastens the process, provided it is accompanied by careful ventilation. A temperature of 90 to 95 degrees, therefore, is not desirable. In actual practice, however, I have usually kept my houses about 85 degrees, at any rate, between 80 and 90 degrees, and have taken about three weeks for the curing process.

After the potatoes have undergone this heating and curing, they are sold on the market as kiln-dried potatoes. Usually they are not marketed until winter weather sets in, and the ordinary unstored potatoes are passing from the markets. As soon as the house is thoroughly cured, the temperature can gradually be lowered, first to 75 degrees, then to 70 degrees, then on down to 55 and 60 degrees. Some growers keep the house at about ordinary house temperatures of 70 to 75 degrees. However, the shrinkage is slightly greater and the sprouting tendency is more pronounced than it is between 55 and 60 degrees.

As the temperature is lowered, the ventilation is cut off by shutting the windows and also the trap doors. If there is considerable sweat on the windows on cold mornings, it shows the house has not been sufficiently dried out. The temperature should be maintained as uniformly and regularly as possible. It is wise to hang a thermometer at both ends of a long room, as I have frequently found a difference of 5 to 10 degrees in the two ends of a house. Potatoes properly handled, fired and kept at a uniform temperature, may be expected to keep through until May. Ordinarily, the crop is sold through the winter months, and only the seed potatoes have to be kept until April, when they are used for bedding.

THE KENNEL.

TRAINING A COLLIE PUP

An experienced writer for the Breeders Gazette answers a question about training a collie pup six months old to drive a cow. There is, of course, a question among dairymen whether cows should be dogged at all or not, but passing that, of course only a trained dog should be used in any case. The writer says that a pup which has been kept in a pen or yard until he was six months old should be in a most favorable condition for training, having never learned or acquired the habit of running at will, unrestrained and perhaps formed habits of which he must be broken.

We favor keeping young puppies in yards or pens, but we are careful that there is no place of cover to which they can run and hide at every little noise or sight of a strange person and so become shy. A naturally timid puppy if he has no place to conceal himself, but is forced to face whatever may present itself, and finds that no harm is done to him, forgets his shyness and gains courage.

Puppies, like children, are not all alike as to being scholars; some are very quick to learn, and others more slow; but as a rule the latter develop into the best, for learning slowly they are the more certain of it, and work closely just as they have been taught, attempting nothing more, while the quick, smart one often needs very little teaching, preferring to work unrestrained.

The puppy should be led near to the cows and first become familiar with the sight of them, care being taken that he is not harmed or frightened by them in any way. Then as he is led in among them and they are driven a little in one direction or another after a few trials the

Collie spirit in him will be aroused and the training may begin.

It often is the case that the little puppy not over three months old will show decidedly the Collie character, but it is not well to go too rapidly in his training even though he be so very bright, for he certainly could not defend himself in close quarters and if badly hurt while young his courage might never again be regained and he becomes a failure.

Many persons when about to purchase a Collie are very solicitous in regard to his being a heeler, and demand almost a positive assurance before they are willing to buy. Now there is really no trouble about the bright, active, well bred Collie puppy becoming a good driver at heel, for that is the natural place for a Collie to go. He rushes up behind the cattle and as he keeps a very watchful eye upon the heels which might suddenly retaliate, gives the heels a nip, if it is necessary, or trots to and fro immediately in the rear of the stock. Often there are vicious, contrary animals that neither man nor dog can easily control and drive at pleasure, and these are the ones which often spoil the usefulness of the dog.

When the little puppy first learns to drive he must begin right. Let the master drive the cattle and the puppy be kept closely at his side near to the cattle; in this way, by observation, he learns to drive at the heel finding that the cattle may thus be driven. Let him get well used to driving before he is taught to head them off, turn them to one side or the other or any of the different uses he is to be put to in his work with the stock. Teach him this, the most common and important part of his work, first, and learn it well before other work is attempted. He must know how to drive and take an interest in it before he can be taught the various ways of handling the cattle.

Many persons make a fatal error in the training of the dog by being over anxious to teach him all he is to know in an incredibly short time, while a little patience and a slower process would bring about the desired results, even beyond their anticipations.

It is best to take a puppy or young dog and let him grow up in company with the one who is to use him and so get the motion and be moulded according to the temperament of the man. In this way they understand each other and work in harmony. One man is quick to move, loud to speak, of an impulsive nature, and another may be slow and moderate, gentle in his speech and every way under good self-control. The master, whatever his characteristics, is his dog's idol and he enters into his ways and temperaments. A dog which would suit the one would be of no use to the other. Under excitement one would be at his best while the other might become useless.

A puppy has no way of knowing what words mean simply by the sound of the word. There must be some act or motion as an indication of its meaning and until we are sure he comprehends, the act must be patiently repeated. On account of the great intelligence which many Collies have displayed many others have been condemned simply because they apparently did not inherit this great gift and their owners expected them to understand everything spoken to them, no matter what the language. His language is that of signs. He watches you and what you do interests him. Associate some word with these acts and it becomes with him a part of the act and then as the word may be used he knows what you want and does it. By a multitude of words he becomes confused. Use as few words to express a command as possible and never speak harshly to the dog when you have reason to believe he might not have understood your meaning. He is not there to receive the vent of anger or ill-feeling. Gain his full confidence and love and as you are honest and good to him so he will be true and faithful to you. You may think he is slow to learn and get discouraged, but possibly he may have a poor teacher. A successful teacher knows how to present a proposition in more than one way, does not give up at a single failure, but being interested in the scholar persists in presenting the work until the result is accomplished which brings success.

POULTRY YARD.

HINTS FOR THE SEASON.

If the poultryman thinks this the off-season in his work, says Mr. M. R. James in the Petaluma Poultry Journal, he will find himself a little off. There is one thing about this industry that may have been overlooked—it is a highly moral agent and tends to keep its followers out of mischief, as it leaves no idle hands for Satan to furnish with a job.

For fall chicks in our coast climate, August is the month to fire up the incubators and let the broody hens get down to business. Good results may be depended upon from the hatches of this month; while September and October are the best ever for the rearing of the

chicks. We no longer have the chill trade winds of the spring and summer months, and chicks that are out the early part of September will be beyond harm before the long rains come.

Even if there are many fall chicks, there are many other things to engage the attention of the poultryman. The disposal of all hens not needed for next season's breeding pens should be attended to before they go into the molt. It is a question if it pays to keep any other through the molt, and certainly not if they are more than a year old. It is a bird of fine points that is worth carrying through three months of idleness and extra feed and care. The way to make the big profits per fowl is to sell off the old ones just before molting and fill their places by pullets that will be dropping eggs instead of feathers in the months when eggs are golden.

The hens that are kept over should be given the best of care. To be sure they will not be very attractive at this season, all ragged and bedraggled and not paying for their keep, the tendency is to neglect the onery lot. But with proper care and patience they will bloom out into renewed beauty and usefulness. They should be separated from all male birds and kept in clean, warm quarters where they will not be exposed to hot suns or chill winds, and should be given extra rations of meat and an abundance of green feed. This is the natural way to force the molt and make sure of results when biddy is in form again.

The same treatment should be gone through with the cocks and cockerels. Those not intended for breeding purposes should be disposed of. Only very choice birds should be kept over the second year, and of these, care should be taken to test the fertility of eggs from their pens before placing dependence upon them. The cock loses his vigor much sooner than the hen, and the safest plan is to breed only from one and two-year-old male birds.

The cockerels for next season's breeding should be kept by themselves, but care must be taken that they do not fight or otherwise injure each other. A cock will usually act as policeman in keeping order among them; though sometimes it is the other way, and he has to hunt a corner himself. In this case he should be removed, as the cockerels will never let up when they get him on the run. For fine stock individual pens are needed for cocks and cockerels.

The pullets, too, should be kept by themselves in small flocks and gotten in trim for laying the golden egg. They should not be forced to early maturity. To begin laying at from five to six months and get down to steady work between six and seven months is plenty soon for even a Leghorn. The young birds should have as wide range as practicable and be fed mostly hard grain and fresh greens that they may put on substantial and hardy growth before going into laying quarters.

These are a few seasonable points, attention to which makes for success in the poultry business.

PARCELS POST WITH DENMARK.

Acting Postmaster-General Hitchcock has signed a parcels-post convention with Denmark, to take effect on October 1.

It provides for the exchange and transmission through the postal services of both countries of parcels which weigh no more than 4 pounds and 6 ounces nor measure more than 3 feet 6 inches in length and 6 feet in length and girth combined. The value of the parcels carried is also limited to \$50. Postage must be prepaid in full at the following rates: In the United States on parcels for Denmark, 12c. for each pound or fraction of a pound.

In Denmark on parcels for the United States, 60 ore for a parcel not exceeding 1 kilogram in weight, and 1 krona for other parcels. A delivery charge not exceeding 5 cents in the United States may be collected of the addresses of each parcel. The parcels-post regulations applicable to parcels for Norway apply also to parcels for Denmark. Parcels-post mails for Denmark will be made up at the New York postoffice.

Consul-General Ridgely, of Barcelona, writes that a railroad company may be fined from \$50 to \$500 for failure to get its trains in on time. He cites the case of a fine imposed upon a road which was behind time during a fair. A provincial governor may impose the fine upon the recommendation of a local inspector. Appeal for remission of fine may be made to the minister of public works, whose decision is final.

Public meetings are being held at Manila in keeping with the movement to secure an agricultural bank for the Philippines. A prominent Manila firm state that they hope to secure a minimum capitalization of 20,000,000 pesos. They state that the shortage in the hemp production, upon which the islands are dependent, will create a bad financial condition which a government agricultural bank would greatly mitigate.

THE DAIRY.

CONSTRUCTING A SILO ON THE FARM.

(Prof. W. J. Fraser, Illinois, in the Orange Judd Farmer.)

The essentials of a silo are an air-tight structure, having perfectly rigid walls. These essentials can best be obtained in the round wood silo plastered with cement. It has been definitely proved that the round silo is the only correct form. The wall can best be made strong and rigid by springing the lumber around horizontally, as the enormous pressure can be resisted better and more economically with the lineal strength of lumber than in any other way.

The best method of making this rigid wooden silo air tight is to lath and plaster it with good sand and portland cement. A silo of this construction, which is 20 ft. in diameter and 34½ ft. deep, having a capacity of 228 tons, was built at the University of Illinois the summer of 1903. The first silos of this kind built in the State, so far as I know, were three erected by H. B. Gurler, of DeKalb, in 1897. This is the style of construction frequently referred to as the Gurler silo.

These three silos have been filled every year and have given most excellent satisfaction. It seems probable that silos of this construction will not only preserve the silage perfectly, but will prove to be lasting as well as economical for most sections of the State. As few silos of this type have as yet been built in Illinois, a detailed description of the one at the University is given:

The excavation and foundation were made by cutting a circle 20 ft. 10 in. in diameter and 4 ft. deep, and laying up a 4-in. brick wall against the clay. This wall was slushed in full on the back side with mortar, so that every brick had a full bearing against the clay, to resist the great outward pressure of the silage. Where the clay is solid, a 2-in. brick wall is quite sufficient. Three feet from the bottom and with in 1 ft. of the top of the ground, the wall was thickened to 8 in. and carried up 6 in. above the grade line, the top of the wall being reinforced with heavy wire. Where the grass is not kept down around the silo, the brick wall should be higher to protect the wood from dampness.

When a silo is placed on the ground, unless there is a good natural drainage through the subsoil, the tile must be laid to drain the bottom, or difficulty is almost sure to be experienced with water in the pit.

The Silo Frame.—The sill was made of 2x4s, cut into 2-ft. lengths. These were thoroughly imbedded in mortar, made of one part of portland cement to two parts of sharp sand, and the entire foundation was plastered with a thin coat of this mortar.

The studs, which were 16-ft. 2x4s, were set on the sill and toe-tailed to it. A large post 16 ft. long was set in the ground in the center of the excavation, and boards extending from this to the studs about 6 ft. above the foundation, held the studs perpendicular to this height. A half-inch board was then bent around the outside of the studs at this height, and the studs were tacked to it as fast as they were plumbed. These boards held the studs perpendicular and in a circle to a height of 6 ft.

The lining, which was ½x6 in., 16 ft. long, made by splitting common fencing with a saw, was cut on the inside, being in at the bottom. The upper portions of the studs were then plumbed and held in place by pieces radiating from the post in the center and by boards sprung on the circumference of the silo. To insure uniform strength throughout the silo, care must be exercised to break joints when ceiling.

Building the Upper Portions.—Staging was carried up on the inside as fast as the ceiling. When the top of the first studs was reached, the upper studs were spiked to the sides of the lower, allowing them to lap 2 ft., and another section was plumbed. The ceiling was continued on the inside to within 6 in. of the top, and the plate, which consisted of 2x4s cut into 2-ft. lengths, was then spiked on top of the studs.

On each side of the line of doorways were set two 2x4s, spiked together to make 4x4s. They were placed so that the edge of the 2x4s faced the doorways, leaving the flat side for the floors to rest against in resisting the pressure from the silage. In this way there was no crack through the 4x4s, where the plaster and doors join.

Reinforcing the Walls.—As the silo was partially cut in two on the side where the openings were left, it was necessary to reinforce it between the doors. The strongest, cheapest, and most satisfactory way to do this was to ceil that side of the silo with an extra thickness from the bottom to the top, using half-inch lumber, the same as that with which the silo was lined. The doorways were, of course, left in the middle of this extra ceiling, and the spaces between the doors were thus covered with two thicknesses, with no broken joints for 14 ft., as shown in the cut.

The ends of the boards of this inner lining broke joints on three studs, so that all of the strain at the end of these boards should not come at one stud. These irregular ends were filled out with short pieces, so that the edge of the extra thickness would come in a straight line. Since this inner ceiling left a jog of half an inch, the thick edge of common shingles was butted against the ends of the half-inch boards, thus running the extra thickness down to a feather-edge, and making an apparently even surface on which to lath.

The Interior of the Silo.—The silo was then lathed with common 4 ft. lath, breaking joints and nailing the lath solid to the half-inch ceiling without furring out. It is usually recommended in lathing silos that the edges of the lath be cut on a bevel, so that when nailed to the wall a dove-tailed joint is formed for the mortar, or that the lath be set out on furring strips, so that the mortar may clinch behind the lath. Experience shows that this is entirely unnecessary.

The plaster was made of one part portland cement to two parts of good, sharp sand. Two coats of this mortar were used, making the plaster a full half-inch thick over the lath. The second coat extended continuously from the bottom of the brick work to the top of the silo, uniting the foundation and the superstructure and giving an air-tight wall for the entire silo.

Four doors were made of two thicknesses of common flooring, run in opposite directions, with tar paper between. These doors are each 20 in. wide, 2½ ft. high, and are 4 ft. apart. Authorities on silo construction have erroneously stated that for silos 20 ft. in diameter and 30 ft. deep, three thicknesses of half-inch lumber are required to give sufficient strength. This silo is 30 ft. in height above the foundation and has not shown the slightest sign of giving in any particular.

Protecting from Dampness.—In order to preserve the silo in good condition, it is absolutely necessary that the half-inch lumber with which the silo is ceiled, be protected from dampness. To this end the plaster must be of good quality, and kept perfectly water-tight by cementing up any cracks that may appear, so that the wood shall receive no moisture from the silage. The wall must also be ventilated, for by allowing a free circulation of air between the sheathing and the lining, the lumber will be kept dry.

In this silo a 2 in. space was left at the top above the plaster and below the plate. In this way the air was allowed free access to enter from the bottom between the outside covering and the inside lining, and pass into the silo through the openings at the top. These spaces were covered with heavy wire netting of one-third inch mesh to keep out rats and mice.

The Outside Covering.—Theoretically, the outside covering should be put on horizontally, so that the strength of the material which forms the cover might add to the strength of the silo. There are, however, several practical difficulties in putting sheathing on in this manner. The lumber cannot be more than a half-inch thick and spring to a circle 20 ft. or less in diameter, and any siding as thin as this, which is carried in stock, is practically clear lumber and necessarily high-priced.

Another difficulty is that the only half-inch stuff that can be purchased at the lumber yard, which will make a water-tight cover, is common house siding. This, in order to be sprung to a circle, must be rabbeted on the back side of the thick edge, so as to fit over the thin edge of the board below and allow the siding to lie flat against the studs. Rabbeted siding cannot usually be obtained at a lumber yard, and it is extra trouble and expense to have this work done at a mill. Another serious difficulty in putting the siding on horizontally is that at the end of each board there is a strong outward pull against the nail heads, and as soon as the boards become slightly decayed at the ends, they are likely to pull over the nails.

Hooping.—Owing to these objections, and to the fact that it was our aim to use, as nearly as possible, lumber that is carried in stock by all lumber yards, it was decided to put hoops on the outside and build them up of the same half-inch material as the inside sheathing. This was done by using three thicknesses and breaking joints, thus making a strong 6

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in. hoop 1½ in. thick. Seven of these were placed around the silo between the doors to make a continuous, even surface on which to nail the sheathing. The silo was sheathed up and down with common 1x12 barn boards 1 and 16 ft. long, and the cracks were covered with common 3-in. battens.

The Conical Roof.—After the silo was completed, a conical shingled roof was put on, a chute built over the doors, through which the silage is thrown down, and the small space between the silo and roofed over, connecting the two. The silo was then completed ready for painting. The silo has been filled three times and the silage has kept perfectly from the bottom to the top, even next the wall and against the doors.

The cost of this silo, which was 20 ft. in diameter and 34½ ft. deep, holding 228 tons, was \$383, as shown in accompanying table of itemized outlay, or \$1.78 per ton capacity. The expense of a silo will vary in different localities, according to the price of labor and material.

ITEMIZED COST OF SILO.

Foundation	
Excavating 4 feet deep and laying wall	
15 hours at 30 cents.....	\$4.50
70 hours at 15 cents.....	10.50
2,000 brick at \$7.25.....	14.50
2 barrels cement at \$2.00.....	4.00
2 barrels lime at \$2.25.....	4.50
	\$41.05
Superstructure	
139-2x4-16 feet. 1482 ft. at \$20.....	\$29.64
25-1x12-16 feet. 2016 ft. at \$12.....	24.19
70 doors 20x30 in. double, 33½ at \$23.....	7.77
3000 lath at \$4.50 per M.....	13.95
11 barrels of cement at \$2.....	22.00
6 yards sand at \$1.25.....	7.50
Carpenters, 67 hours at 30 cents.....	20.10
Labor, 148 hours at 15 cents.....	22.20
Plastering, 28 hours at 40 cents.....	11.20
Tender, 35 hours at 15 cents.....	5.25
	160.85
Sheathing	
7 hoops-8-1½x6-16 ft 672 ft. @ \$14.....	9.41
1-1x12-16 ft 16 ft @ \$24.....	24.00
61-1x12-14 ft 854 ft @ \$24.....	20.50
61 battens ½x3-16 ft 244 ft @ \$22.....	5.37
61 battens ½x3-14 ft 214 ft @ \$22.....	4.70
65 ft 2½ in water table @ \$3 per C.....	1.95
	65.35
Roof	
18-2x4-14 ft 168 ft @ \$19.....	34.92
4-2x4-12 ft 24 ft @ \$19.....	4.56
3000 shingles @ \$3.20 per M.....	12.80
35 roof boards 1x6-16 ft 280 ft. @ \$16.....	4.48
Cornice, 5-1x12-16 ft 80 ft @ \$24.....	1.92
Ornamental post in center.....	.90
	23.75
Chute	
5-2x4-14 ft 70 ft @ \$19.....	8.90
12-1x12-16 ft 192 ft @ \$24.....	4.61
	5.50
Carpenter work on roof, sheathing of silo and chute	
54 hours @ 30c.....	16.20
120 hours @ 5c.....	6.00
	46.20

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Nails.....			
50 lb 8d common @ 3c.....	1.50		
2 lb 10d common @ 5c.....	.10		
8 lb 3d cut @ 4c.....	.32		
6 lb 6d cut @ 4 c.....	.24		
4 lb shingle @ 4c.....	.16		
2 lb long finishing @ 5c.....	.10		
Wire netting.....			
63 sq.ft 1-3 in mesh @ 5 1/2c.....	3.47	5.89	
Painting			
Priming coat,			
9 gal oil @ 50c.....	4.50		
29 lb yellow ochre @ 5c.....	1.45		
25 hours labor @ 15c.....	3.75		
Paint and labor, two coats.....	25.00	34.70	
Total cost.....		383.27	

PATRONS OF INDUSTRY.

WHY PATRONS SHOULD ATTEND STATE GRANGE.

The meeting of the State Grange at Santa Rosa, October 2, will manifest the mature fruitage of a third of a century of united effort by the farmers of California. It will make every patron proud of being a member to associate and mingle with this body of organized farmers, to note their kindness of heart, their social culture, their mental ability, and their devotion to the order. The influence of the Grange in California is daily increasing and its worthiness is more generally conceded now than ever before. It is inspiring in every way to go to State Grange, and everybody is the better for each inspiration that lifts him up a niche higher. By spending these few days at Santa Rosa you get right into the center of Grange activities; you can see, hear, feel, taste and handle the very essence of Grange principles.

I for one am glad to say that I admire the way the Rural Press passed through the great disaster, and so soon began its regular weekly visits, with its new dress, full of ambition, with an earnest desire to educate the farmer, horticulturist, and to beautify the homes of California.

E. C. SHOEMAKER,
W. S., California State Grange.
Visalia.

THE STATE GRANGE.

To the Editor: Worthy Master Griffith has issued the call for the assembling of the thirty-fourth annual meeting of the State Grange. It will convene on Tuesday, October 2, at Santa Rosa. The Patrons of Sonoma county are making great preparations for a profitable and pleasant time. It is expected that steps will be taken for aggressive work during the coming year, with a view to the extension of the order in California. Let every member who possibly can be in attendance. We shall be royally entertained.

J. W. WEBB,
Modesto, Cal. State Lecturer.

EDEN GRANGE.

To the Editor: This active and benevolent order met at 1 p. m., September 8, in Odd Fellows' Hall. The Worthy Master of the State Grange, Mr. Griffith, was present, and in regular order conferred the third and fourth degrees on three new members. Many from the Oakland Grange cheered and assisted us. After the conferring of the degrees, we, on invitation, withdrew to the banqueting

hall, where ice cream and cake were served. Then we re-entered the hall and gave undivided attention to the rendering of a good program. Miss Belinda Stanton at the organ gave some good music, and she and Mr. Antoine Henrickson each gave us a good declamation.

Worthy Masters Griffith and Mornsen, Messrs. Brown, Cross, Ransom and Dodds, also Sisters James, Emory and others, spoke with telling effect on the general good to the public that the order is accomplishing, and on reciprocity, all agreeing that each shrewd observer perceives that the law of reciprocity between man and his surroundings is the veritable element in which all life goes on; and every one who knows and does the truth gets that response and reward back into his own bosom and treasury.

DR. D. DODDS,
Haywards.

CALIFORNIA FARM SCENES.

Mr. C. A. Jackson gives the Prairie Farmer some bright notes of local observation, as follows:

You would hardly believe it, but John Chinaman is the "boss" farmer. He beats the Dutch for his thriftiness, his well-kept fields and his patience. He can make a stone patch blossom as the rose, and his "truck" is the wonder of his white neighbors. Not a stump, stick or weed can you find on his little farm. Down he goes on his knees early in the morning, and it is early candlelight before he trudges back home. He drives a pretty good horse, does John, and the wonder to me was how so many horses could look so much alike. I saw about a dozen of them in a feed-yard in Los Angeles Chinatown, and was struck with their similarity—heavy-boned, not very much "style," a sun-burned bay, above the average in height, and fat enough to kill. He always drives single and never faster than a walk. He is the most independent "critter" on earth, and cannot be "jewed down"—"you no likee, you no takee," he says to you if you remonstrate about the price of a fresh, clean bunch of beets or onions. He practically monopolizes the vegetable trade of the cities, because he is shrewd enough to study the householder's wants and then supply that want.

Talking about farms, one is impressed with the large number of small farms there. They run all the way up from 3 to 20 acres—the latter being considered plenty big enough. But the stuff he gets from it is a caution. Weeds are considered a curiosity, but a potato as large as a small pumpkin excites no comment. His field is as smooth as the top of your kitchen table, and every inch of it is growing something. The "two-rounds-a-day" farm is passing into history, and in its stead is a farm that does not have to get "a lick and a promise."

Short Hours.—I noticed so many farmers unhitching at about half-past five every evening that I asked what it meant, for I had been led to believe that it was against the law to quit that early back East. He explained that it was the rule; that he could do as much work; that his horses were in better shape; that it took less to feed them; that he felt better himself; that it gave him more time at home with his family; and, lastly, that it let the woman folks get their work done before night. I thought that was a pretty good argument for nine hours' work on the farm, too.

There is quite an undercurrent of unrest among the younger generation of farmers, especially those from back East. "Too cramped here," said one young man to me, as he sat down on his plow beam and looked down the furrow he had just plowed across his 10-acre farm. "I want to go somewhere where I can kick up my heels and don't have to turn corners too sharp. I want to raise

stock, and I think Oregon or Washington is about my size. If you are looking for a bargain I would like to talk to you." You see, he had the "big-farm" habit and was hopeless. But he afterwards told me in a burst of confidence that he had put a thousand dollars in the bank last year, made from his 10-acre farm, besides he was getting \$4 per day for himself and team every day he could spare. Some people just won't be good.

On the Move.—One would naturally think that when a farmer had struggled and worked and sacrificed to get a home, with all its surrounding comforts, he would be content to settle down and take things easy in old age. But it isn't so. If you have the ready cash you can buy anything out there. They all give some excuse—one wants to go and "live with the children," another wants a smaller farm, another wants more acres, and so on down the line.

You may travel for miles and miles in Southern California and never see the sign of a fence, although practically every foot of land is under cultivation. Everybody seems to get along about as well as if they had a stone wall around their farm. Some have planted flowers on a boundary line, others have some sort of a fruit tree, and still others plant English walnuts. The effect is most pleasing, as it does away with that dreary look one sees on our prairies in the Middle West.

A pretty big per cent of the "tourists" one sees out there is farmers. You meet him in the hotel lobby, in the restaurants, on the street cars, in the stores, down at the beaches, walking up and down the streets on pleasant evenings, and he fills the churches to the doors on Sundays. He spends his spare time sitting in an easy chair at some good hotel where he enjoys a smoke. He don't seem to get just the right angle to his cigar, but he enjoys it just the same, and seems to be at peace with all the world. One thing about him is he isn't afraid to ask questions and seldom "goes wrong." The policemen and street car conductors are his guide book, while the "city feller," who thinks he knows it all, has all kinds of trouble getting around.

On the Desert.—It seems hard to account for some people's notions, or taste, or whatever you might call it. I ran across a farmer out on the desert who was the picture of distress. Not a tree, flower or green shrub was to be seen. A pig was tied by the leg to a stake, though he could do no harm if he wandered off a hundred miles or so. A pair of scrawny horses were standing at the tail end of a wagon panting for breath in the scorching sun, while a cow and her small calf were trying to stand in the shadow cast by the lone shanty. It wasn't for his health, for he looked robust. It couldn't have been money, for he was more than two hundred miles from the nearest market. I wonder why?

This is not the only freak farm one

sees out there by any means. One man has his home so far up on the mountain that it looks like a doll house; another has gone to the other extreme by building down in a canyon where you only see the top of everything about the place, another has a ranch on a small island, his only communication with shore being by boat. And the strange thing about them all is that they are far away from the beaten paths of travel. Frowsy-headed women stand in the doorway, while half-naked children sit around in the sun and view strangers with idle curiosity.

Nowhere else does one feel quite so helpless as out on the desert. Its quiet solitude, its utter abandonment by every living thing, its oppressive heat, is trying to those of even strong nerves. Yet to a lover of nature it has many attractions—the wonderful mirages, the long ranges of vision, the immense stretches of cacti in all their beauty and variety, the quaint shapes of sand dunes formed by the wind blowing hither and thither, all are intensely interesting. Pity the poor animal who wanders out in the desert. It goes up and down bellowing for water, and when exhausted falls down by the wayside and leaves its bones bleaching in the burning sun. The next day or the next week another follows, until to-day one sees their bones by the thousands.

CARRYING A JOKE TOO FAR.

A farmer, who was a lover of nature, and also a keeper of sheep, was walking through a pasture lot and stooped down to pluck a tender flower. As the agriculturist stooped to cull the blossom, a large and vicious ram, allured by the prospect, took a running shoot and, hitting the farmer near the base of the spine, turned him a somersault, and also propelled him about two rods through the atmosphere. For an hour or two after that the ram had considerable fun talking the thing over with the crowd of sheep and describing the manner in which he knocked out the agriculturist. But on the following day the farmer returned with a gun and killed the ram, and dressed him, and sold his carcass to the uninformed for lamb chops, and as one of the ram's companions saw the farmer carrying away the remains of her former consort, she said to an alecky lamb that was taking some gymnastic exercises near by: "My son, I observe that you show a disposition to be unduly gay. Take warning from the fate of your father, and remember that there is such a thing as carrying a joke too far."

Regrets.

A country paper had this personal item: "Those who know old Mr. Wilson of this place personally, will regret to hear that he was assaulted in a brutal manner last week, but was not killed."

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HOME CIRCLE

SCYTHE SONG.

Mowers, weary and brown and blithe,
What is the word methinks ye know,
Endless overword that the scythe
Sings to the blades of the grass below?
Scythes that swing in the grass and
clover,

Something, still, they say as they pass;
What is the word that, over and over,
Sings the scythe to the flowers and
grass?

Hush, ah, hush, the scythes are saying
Hush and heed not, and fall asleep;
Hush, they say to the grasses swaying;
Hush, they sing to the clover deep!
Hush—'tis the lullaby Time is singing—
Hush and heed not, for all things
pass;

Hush, ah, hush! And the scythes are
swinging

Over the clover, over the grass!

—Andrew Lang.

LOCK, STOCK AND BARREL.

Lemuel Pruitt was a bachelor of 45; a man of the middle class, with intelligent aspirations, who had been in trade, and had made money enough to permit him to retire from business, and to spend the rest of his life in the pursuit of happiness according to his own ideas.

These ideas were simple enough; he wished to buy a small property in the country, and settle down as a rural man of leisure. He had always lived in the city, but he yearned for woods and fields, and, when these should be covered with snow and unsuitable for purposes of pedestrianism and observation, for a home and a comfortable fireside which should be all his own.

With this object in view, Mr. Pruitt was now upon an expedition in search of a country home. He had already examined several modest estates which had been offered to him, but none of these had suited his fancy; and upon the day on which this story opens he was seated in the office of Mr. Falconer, a real estate agent in the village of Symington.

"I do not believe," said Mr. Falconer, in continuation of some previous remarks, "that you will find any place that will suit you so well as this farm of Mrs. Fenwick's, which I have just described. It seems to me that it contains everything you want."

"That has been said to me before," remarked Mr. Pruitt, "by everyone who has a place to offer; but I am willing to go and look at it."

"It is cheap, too," said the agent. "Mrs. Fenwick wants five thousand for it, but you can get it for less—I assure you of that."

"Is it worth five thousand?" asked Mr. Pruitt.

"Indeed it is," was the answer. "It is worth much more than that; but she is obliged to sell, and will, of course, be reasonable. Now, sir, if you like, I will drive you over there this afternoon."

"No, sir," said Mr. Pruitt; "I thank you very much, but I wish to be by myself when I first visit the property. If I don't like it I don't want to be made to like it. That sort of thing happens sometimes, you know."

Mr. Falconer laughed, and that afternoon Mr. Pruitt walked out by himself to the Fenwick farm. A mile and a half was nothing to him on a fine summer day. He found Mrs. Fenwick, the owner, at home, and she was very glad, indeed, that Mr. Falconer had sent her a possible purchaser for her property. She explained her circumstances in the very beginning, so that Mr. Pruitt might know why she wished to sell. Her husband had died two years before, and since that time she had lived here with her sister, but that sister had now married and gone away, and as Mrs. Fenwick could not

stay alone, she wished to sell the place and go to live with another sister.

This statement was all very straightforward, and enough to make Mr. Pruitt understand why anyone should wish to leave such a pretty place. The farm was small, but well planned, and the house was neat, in good repair, and big enough for the purposes of an ordinary family.

Mrs. Fenwick showed Mr. Pruitt everything about the house. He wanted to see everything; he even went down into the milk room, and as he gazed critically about him he did not think it necessary to state that this was the first milk room he had ever seen. He asked very many questions; he went twice into the garden, and three times into the orchard, because he wished to assure himself in regard to the variety of fruit trees. He stayed nearly all the afternoon, and when he went away he promised to return on the morrow.

The next morning at ten o'clock Mr. Pruitt walked slowly toward the Fenwick farm. He looked about him this way and that, and noticed in the yard three pleasant, shady places suitable for the hanging of hammocks. Then, after examining the roof and floor of the piazza, he knocked at the door.

When he was seated with Mrs. Fenwick in the prettily furnished parlor she asked him if there was anything else he would like to see. The man was now out at the barn, and could tell him more about that part of the estate than she had been able to do.

"No, madam," said Mr. Pruitt, "I don't want to see anything more at present. I have examined your place pretty thoroughly. But there are some points I want settled before I go any further. I have been thinking a good deal about them since I saw you. There are three things that I must have in a country home. The first is pure, soft water. I am sorry—as you told me yourself—to find that the water in your well is of the limestone variety."

Mrs. Fenwick's heart fell a little, but she did not lose courage. "The water is hard," she said, "but not very hard. When it is first drawn it is so cold and clear that you would not be likely to taste any lime in it if nothing had been said on the subject."

"That is very true, madam," said he. "I tasted your water and it seemed good enough for anybody; but, as you say there is lime in it, it must have lime in it, and I understand that that sort of water is not wholesome; it makes little lumps and stones inside of you, and I should not like that."

"I have been drinking limestone water all my life," said Mrs. Fenwick, "and I have always been very healthy."

"I can easily see that, madam," said Mr. Pruitt, "but, notwithstanding, lime is lime, and has a tendency to lumps."

"But then there is the spring," said Mrs. Fenwick, a little eagerly. "It is a good way from the house, but it is soft water, and a windmill and pipes would not cost very much."

"That is true," replied Mr. Pruitt, contemplatively. "That is a point to be considered. But there is another thing I must have in a country home, and that is some woodland. Now, on this farm there is nothing that resembles a forest or woods."

"No," said Mrs. Fenwick, an additional tinge of disappointment in her face. "We have no woodlands, but there are trees enough scattered here and there to furnish all the firewood needed."

"It is not firewood that I am after," said Mr. Pruitt. "I am fond of woodland rambles and I want a forest of my own. It may be a small one, but it must be a real wood. If there are not paths through it I could make them; I would like that better than finding them already made. I am fond of forestry, or at least I know I should be if I had the chance."

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Mrs. Fenwick's face brightened a little. "Some years ago," she said, "Mr. Perkins, who owns the next farm, offered my husband a piece of woodland which adjoins this farm. There are about twenty acres in it and he said he would sell it for two hundred dollars. But Mr. Fenwick did not care to purchase it."

"What kind of trees has it?" asked Mr. Pruitt, quickly; "oaks?"

"Yes," she answered, "I have walked through it, and there are oaks, and some chestnuts and a good many pine, and on the outside edge, this way, there is a catalpa tree and two sycamores."

"That's very nice," said Mr. Pruitt; "and two hundred is what he wants for that?"

"That is what he charged at the time," said Mrs. Fenwick, "and I don't suppose he would ask more now, if he hasn't sold it yet."

"Very well, then," said Mr. Pruitt, "that may answer my purpose. But there is another thing, Mrs. Fenwick; another thing which is very important. In a country home I must have a study."

The lady looked at him in surprise. "I did not suppose, sir," she said, "that you were a lawyer or a literary man."

"I am not," he replied; "but I am fond of books, I am fond of reflection, and I like to be undisturbed. I have been disturbed a great deal in the course of my life, and one of the things I have always been looking forward to in a country home is a study. And now, Mrs. Fenwick, I have gone over the whole of this house with you, and last night I went over the whole of it in my mind, and I cannot see any room that would do for a study."

Mrs. Fenwick was surprised. "Why, sir," said she, "there are four rooms downstairs and four rooms upstairs, and I should think you could take almost any one of them for a study. Here is the back parlor; what could be better than that?"

Mr. Pruitt shook his head. "It would not do, madam, it would not do," he said. "There is not a room in this house that would do at all. Each room opens into some other room, and a study to be a real study should not open into any other room. To be quiet, to be able to reflect—to study, in fact, one must not be in a room that communicates with another one."

Now Mrs. Fenwick looked truly sad. She could see very well that there was no room in the house which would conform to Mr. Pruitt's idea of a study. But suddenly a ray of light shot across her mind. "But, sir," said she, "there is the kitchen."

"The kitchen!" interrupted Mr. Pruitt. "Madam, I could not study in the kitchen."

"Oh, you do not understand," she said. "I do not mean the room in the basement which we use as the kitchen. I mean that small brick house in the yard which I showed you. It is not used now, but it is all 'one room inside and has a splendid fireplace nine feet wide at one end. It has large windows, and if it were papered and put in order it would make a beautiful study, with a view out over the garden."

Mr. Pruitt reflected. "Yes," said he, "properly fitted up, that house would make a very good study, indeed. In fact, I think it would be better than a room here in the dwelling. Yes, that will do very well. And now, madam," said he, looking about at the furniture, the pictures on the walls, the books and the bric-a-brac, "I want to ask you one thing: Would you be willing to dispose of your furniture and all the things in this house, as well as the agricultural implements, the sheep, and the chickens, everything—lock, stock and barrel?"

"Lock, stock and barrel?" repeated Mrs. Fenwick; "I don't understand you."

"That means everything, madam," said he, "the same as if you were buying a gun. You would not want the lock and the stock without the barrel; you would not want the barrel and stock without the lock, and you would not want the barrel and the lock without the stock. I have looked at the things in this house, madam, in the most particular way; I thought about them last night, and I have been thinking about them today, and everything seems to belong exactly where it is. If you were to strip this house of everything in it, I might spend as much money as I pleased, but I could never make it look as it does now. It must have taken a long time, madam, to make this house look as it does now. Having seen it as it is, I wouldn't be satisfied with it any other way."

Mrs. Fenwick's heart beat rapidly; a most desirable condition of affairs seemed

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were generally realized at country auction sales. If she could sell everything to Mr. Pruitt at a fair price it would be a wonderful advantage to her. But to fix a price was very difficult; she had not thought on the subject. Mr. Pruitt perceived her perplexity and seemed inclined to help her.

"Will you take seven thousand dollars for everything—lock, stock and barrel?" he asked.

Mrs. Fenwick opened her eyes very wide. She had never imagined that she would receive an offer of seven thousand dollars for her property, real and personal. Mr. Pruitt was sitting opposite her, looking fixedly at her, anxiously awaiting her reply. She would have been glad if there had been someone with whom she could confer. But, after all, what was the use of seeking advice? Surely, no one could expect a better offer than this, and it would be the greatest possible satisfaction to her to leave all encumbrances behind her, and to begin life over again with seven thousand dollars in her pocket. For some minutes she rapidly and earnestly considered the matter and then she spoke.

"I never thought of selling everything," she said; "but as you seem to want everything just as it is, and are willing to pay for it, there is really no objection that I can make, and I agree to your proposition."

"And let me have everything—lock, stock and barrel?" he asked.

Mrs. Fenwick smiled. "Yes, everything," she said.

Mr. Pruitt looked wonderfully pleased. "And when can I come into possession? Tomorrow, or I hope by the next day, or the day after at the very latest."

"This is a very sudden notice," said Mrs. Fenwick; "but still, under the circumstances, I think I can accommodate you. As the furniture and everything is to remain here there will be little to do, and I can clean up things and pack my trunk to-morrow, and then the next day I can go."

"No, madam," said he, very decidedly; "there must be no packing of trunks."

She looked at him in utter amazement. "You don't want me to leave my clothes!" she exclaimed.

"I do, madam," he said. "I want everything on this place—I want your house

and your furniture; I want your clothes, and I want you."

Mrs. Fenwick started and turned pale; she could not believe the words she had heard, and yet she was not frightened. There was never a kinder or more genial countenance than that which now glowed before her.

"You may think, madam," said Mr. Pruitt, "that this is a very sudden sort of thing, but it isn't. When a man's mind has been prepared for a long time to make itself up, when it makes itself up as soon as it sees a reason for doing so, there is nothing sudden about the affair. When I set out to look for a country home I was positive about three things—soft water, woods and a study; but there was another thing I wanted just as much, although I wasn't positive about it, because I did not expect to find it connected with any place I might see; but I have found it here, and to get it I would be willing to give up a great many things, even if I could not make the arrangements to have them which I can make in this case. I have been here twice, madam, and I have had a whole night to think in; I have come to the conclusion that there is not a house in the whole world—not even this one—that I would care to have without you. I know you think you ought to have time to consider the matter, and I suppose you are right, but I don't want to leave this house without having it settled; I don't want to have to say to Mr. Falconer that I don't know whether I am going to buy the house or not I don't want to walk about the village feeling that I don't know whether I am going to get what I want or not. This is not a common case and cannot be treated in a common way. I have been looking for a house and have been wanting a wife, and I have found exactly what I want, both in the same place, and now that I have seen and talked to you, and gone over all sorts of things with you, I feel well acquainted with you and I know that I want you. Remember, madam, that your answer is everything to me; everything—lock, stock and barrel."

Mrs. Fenwick's mind was going at a gallop; but she was a sensible woman, and knew that she must pull herself up, and not only do what was right, but do it at once. The fervent earnestness of



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Pruitt had infected her, and she felt that she must decide the matter immediately—and she wanted to decide it.

Mr. Pruitt was a good-looking man; he was hale and hearty, and of a cheerful way of talking; and, moreover, he had a generous manner of looking at things which had pleased her from the first; she was quite young enough to marry again, and it would be very suitable for her to do so. But she was a woman of a business mind, and now she put a question herself.

"Mr. Pruitt," said she, "do you mean that if you should buy this place with everything on it, and should pay me seven thousand dollars for it, and afterward should marry me, that that seven thousand dollars would be my own, without your having any claim upon it?"

Mr. Pruitt rose to his feet. "Madam," said he, "if you agree to what I have offered I will go to Mr. Falconer as soon

as I leave this house; I will have the deeds made out and I will then put the seven thousand into your hands, and I would have nothing more to do with it. It would be yours; it would be the payment for this property, which is yours, and which would then be mine. Then, madam, when I have married you I will make a will and leave everything I possess to you—lock, stock and barrel."

Mr. Pruitt's whole soul showed itself in his face. As Mrs. Fenwick, pale and silent, sat and looked at him, she knew that before her stood a man who meant what he said; more than that, she knew that he was a man who must be answered and answered now. She could not tell him to come to-morrow, that she would think of it, that she must have time. She could offer no reason for delay. Mr. Pruitt must be answered, yes, or no. If he should go away with this matter unsettled, she felt that it would be the same thing as if she had said him nay. Not for a moment did the fear of his leaving her suddenly

Continued to Page 189

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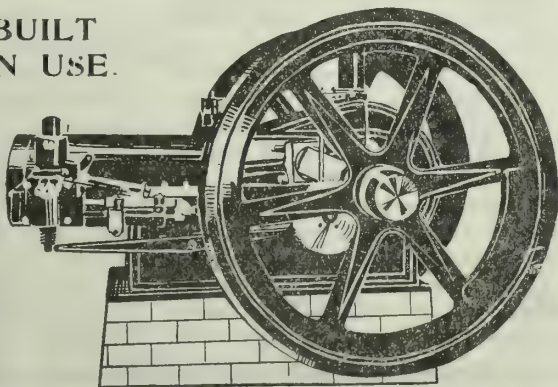
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AGRICULTURAL REVIEW

Butte.

NEW INDUSTRY FOR BUTTE COUNTY.—Biggs Argus, 14: Articles of incorporation were filed at Oroville Tuesday of the A. J. Pieters Seed Company. The company will engage in the raising and selling of vegetables and flower seeds on a large scale. Chico will be the headquarters of the business, though seeds will be grown in different parts of the State wherever soil conditions are best suited to the particular seed desired.

Fresno.

PACKING HOUSE LEASED.—Kingsbury Recorder, September 12: The California Fruit Cannery Association has leased the Lindgren packing house and will run there this fall. They have taken out the old stemmer and sent it to Hanford, and a new, large one of sufficient capacity to handle their buy will be installed at once. They expect to stem at least 1000 tons of raisins there this season.

Charles Danell brought to this office on Friday a bunch of Muscat grapes that was a beauty. The bunch was not a large one, but the size of the berries and their evenness was what attracted attention. They should have been preserved in alcohol and placed on exhibition.

Fresno Ensign, September 8: The California Fruit Exchange are still shipping Malagas from the Giffen packing house, and returns from the shipments show that good prices are being secured for the grapes in the East, averaging in Chicago from \$1.15 to \$2.10 per crate, and in New York from \$1.25 to \$2.50 per crate.

PHOPHECIES THAT FAILED.—Reedley Ledger, September 8: "About fifteen years ago, when the Swedish people began buying land on the installment plan, west of Reedley, and planting it to trees and vines, wheat farmers thought they were fools. They prophesied that they could never pay for their land; if they did by any chance pay for it, the fruit would do no good, and, even if they succeeded in getting a crop, the overproduction would soon be such that their products would not bring anything. But look at them today. They have paid for their places, moved from their little shacks into comfortable homes and are taking in \$100 to \$300 per acre a year from their fruit crops. So after all the Swedes knew what they were doing. And another place where prophecies failed was regarding dairying. They thought that this part of the country was too far from market, and besides that butter made from cows fed on alfalfa was unfit for use. Today everyone in the dairying business

is making money, and it is a fact that our butter brings the very highest price in Los Angeles and San Francisco."

FRESNO COUNTY JAP IS THE POTATO KING.—Hanford Sentinel, September 12: The Hanford Sentinel has the following interesting paragraph about George Shima, the Japanese, who is sometimes mentioned as the Potato King:

"Spuds have their Napoleons and kings, all the same as cattle, politics and finance. The potato king of the San Joaquin is George Shima, a Japanese man, who twelve years ago was a common laborer. Now his fortune is estimated at \$150,000, and he has 6000 acres of potatoes this year, which escaped the floods, and he expects to get \$2 a sack for them this winter. He and his partner, M. Naka, have just secured a lease on the Sargent Canal farm of 3,200 acres for years at an annual rental of \$15,500.

SELMA PACKING HOUSES GETTING READY FOR SEASON'S WORK.—Fresno Republican, September 15: There is much activity at the local packing houses in anticipation of a big run on raisins this fall. The packers say that everything in this locality has been bought up and active deliveries will be commenced in a few days, as the crop is curing nicely. The big seeding plant of the Selma fruit company will probably commence work about the 20th of this month. This plant has been increased in capacity by the installation of a large amount of new machinery and it is now said to be one of the finest seeder establishments in the State.

LARGE YIELD OF ONE TREE.—Reedley Exponent, September 13: A. I. Powell picked 16 forty-pound boxes of prunes from one tree in his prune orchard this week. "Can any one beat that," said Mr. Powell to a post office crowd. "That's too easy, Uncle Asa," said T. M. Lane. "Last year I got 720 pounds of prunes from one of the trees on my place, but this year I haven't kept count," and Mr. Powell had nothing more to say about prunes.

This is an off year for fruit, yet the vineyards around Reedley are bringing their owners very fair returns. Carson Reed is getting about 124 tons of grapes from his 12-acre vineyard. Mrs. M. Andrews has about three acres in peaches on her place near Reedley, which produced a crop that brought her in \$1800 this year.

MONEY IN PEACHES.—Sanger Herald, September 18: Mrs. Black of South Sanger owns an acre of ground, set out to peaches—mixed varieties, such as Orange and Lemon Clings, Susquehanas, Muirs and Crawford. Eighty trees are in full bearing on her little home place, from which she realized \$213 cash for the green fruit, besides 700 pounds of dried fruit, which she is holding for 10 cents per pound, and will get it, too, bringing the total sales up to \$283 from one acre this season. The productiveness of our soil cannot be questioned, for water is to be had in abundance for irrigation, and thorough and practical tillage of the soil will do the rest. For the cling peaches Mrs. Black realized \$32.50 per ton and \$30 for the freestones.

Colusa.

SEVEN THOUSAND MILES TO SELL BEET SEED.—Chico Record, September

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Rex Flintkote Roofing is not "another of those prepared roofings." It is in a class by itself. Made of chemically treated long-fibre wool. No tar about it. Don't buy another roofing expecting it to do what we say Rex Flintkote will do. Cheap makers imitate its appearance only. Write for name of nearest dealer who has real Rex Flintkote.

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FARM BUILDINGS, T. W. JACKSON, FILL.
COVERED WITH REX FLINTKOTE ROOFING

8: Mr. Fritz Braune of Bernburg, Germany, took an order from Mr. Hamilton of the Alta California Beet Sugar Company for a large quantity of beet seed to be delivered in time for the next season's planting. Mr. Braune said: "You have magnificent soil here. In Germany our beet land is worth from \$400 to \$700 per acre, and it does not compare with the soil about Chico or Hamilton. Here, Mr. Hamilton tells me, no fertilizers are used. Why, in Germany it takes about \$25 per acre expense to reinforce the soil to produce a crop of beets."

Glenn.

MANUFACTURE OF SUGAR SOON TO BEGIN.—Willows Semi-Weekly Journal, September 1: The harvesting of the first crop of sugar beets is now in progress in the vicinity of Hamilton City, and soon the big factory will begin the manufacture of sugar in Northern California. Fortunately for this locality, the factory people have not imported a full force of men from beet-growing sections to man the factory, but to a great extent are depending upon the labor of this locality. About seventy-five more hands will be needed to fill the places, and this will afford some an excellent opportunity to begin this season to learn the beet-sugar business.

Los Angeles.

COTTON FIELDS IN PASADENA PROMISE NEW LOCAL CROP.—Riverside Press, September 13: Viola Pinson, of Pasadena, formerly a resident of Georgia, believes that cotton can be successfully and profitably grown in Southern California and has been demonstrating the fact at his residence. He sent to Georgia for a small bag of seed and now has his experiment to such a state that he is able to say that cotton growing in this section is practical. The plants are about three feet high and contain blossoms and the cotton bolls nearly ready to pop open, all on the same stem.

The plants have been brought to their present stage with but one irrigation, and it is the belief of the grower that the cotton plants will thrive in this section with two irrigations a season. Mr. Pinson said that he believed an acre of ground in this section would yield from two to two and one-half bales of cotton a season. Cotton at the present time is worth \$75 per bale, so the industry would be profitable.

Madera.

WOOTEN HAS BANNER CROP.—Madera Mercury, September 14: This season the grain crop on the Daulton ranch amounts to 35,000 sacks. There was considerable waste on account of the late rains causing the grain to fall and lodge worse than usual. Jake Wooten went to Stockton on Wednesday morning to arrange for storage room, as the warehouses of this county will not be able to accommodate all the grain that must be housed before the rains set in.

Napa.

TO ADVERTISE COUNTY.—Weekly Callistogan: The Napa Chamber of Commerce has asked the Board of Supervisors for an allowance of \$100 a month with which to properly advertise Napa county. An effort will also be made to have a secretary selected that can give his whole time to his work and receive a sufficient remuneration.

Orange.

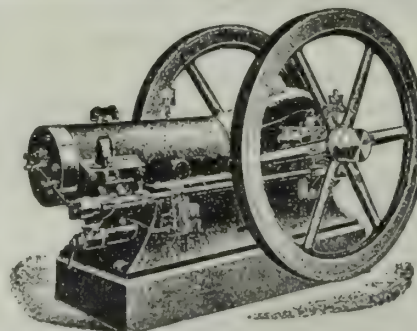
THE YORBA RESERVOIR.—Santa Ana Register: A large reservoir will be built at a cost of \$27,000 and will be a splendid investment for the stockholders and irrigators of the Anaheim Water Company on the other side of the river. The dam is to be built of earth and will be 50 feet high, giving it a capacity of 51,392,762 cubic feet. It is to be used for the storage of the winter and spring flow of water in the Santa Ana river, which will be used for summer irrigating.

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Lock, Stock and Barrel

Continued from Page 187

and forever connect itself with any thought of the sale of her farm or personal possessions. His fervor had so infected her that she forgot he was a possible purchaser and only thought of him as a lover.

Whatever he might be, or care to be, he was a lover.

Suddenly Mr. Pruitt drew his chair closer to her. "Mrs. Fenwick," said he, leaning toward her, "for a long time there have been some things I have wanted and have been trying to get, but at this moment there is only one thing in this world that I really want or care to have, and that is you. May I have that?"

Mrs. Fenwick looked into his eyes, and her own became a little moist. Her voice did not seem to be under her control, and she did not say a word, but, leaning slightly forward, she offered him her hand.

That afternoon Mr. Pruitt marched into the office of Mr. Falconer and astonished the house agent by the alacrity of his step and the brightness of his countenance.

"Now, sir," said Mr. Pruitt, "I want you to go to work and make out the papers and deeds and whatever is necessary. I opening before her. She had planned to take some of her household goods away with her, but, of course, she would be

obliged to sell the greater part of them, and she knew very well what low prices have bought the Fenwick farm."

"Bought it!" exclaimed Mr. Falconer. "I did not think you would be in such a hurry as that. What did you agree to pay?"

"Five thousand," said Mr. Pruitt. "That is the price of the place."

"My good man!" exclaimed Mr. Falconer; "if you had let me attend to the matter for you, you could have had the property for very much less."

Mr. Pruitt leaned back in his chair and laughed. "You attend to the business for me!" he cried; "a pretty piece of business it would have been. Now listen, and I will tell you what I have done. I have become the owner of that place—lock, stock and barrel." They talked a long time, for Mr. Pruitt's mind was animated by his good fortune, and he was eager to discuss every salient point of it.

"Yes, sir!" he exclaimed; "she's a woman in a thousand. She told me how to get the three important things I wanted and which did not seem to exist, and now she has given me the one great thing that I did not even expect."

Mr. Falconer laughed. "I should never have thought of doing business in such a prompt fashion as that," he remarked.

"Well, sir," said Mr. Pruitt, "if I had been a real estate agent, I suppose it would have taken me three or four weeks to buy that place, and if I had been a marrying man it might have taken six months or a year to marry its mistress. But you see I am different from you, and I do things in a very different way. When I left Mrs. Fenwick I went straight to her neighbor, Mr. Perkins, and I bought that piece of woods and gave him twenty dollars down to clinch the bargain, and, more than that, I have hired a forester Mr. Perkins has recommended. He is a black man and I can get him for eight dollars a month. He says he understands all about forestry, and if he doesn't know everything, I expect he can learn. I take the greatest interest

in forestry myself, and I know that the only way to have the right kind of a forest is to help a forester."

"We don't call them by that name about here," said Mr. Falconer, "but it doesn't make any difference. And you are going to have water brought up to the house?"

"Yes, sir," replied Mr. Pruitt. "On my way here I stopped at Mr. Allen's, and he says he will attend to the whole thing for me—windmill, pipes and all—and he is going to make out an estimate."

"Upon my word!" exclaimed the agent; "you are a man of deeds. Have you arranged for your new study to be papered and painted?"

"Oh, yes," said Mr. Pruitt. "Just before dinner I went into that painter's shop opposite the hotel, and the man there—Jackson is his name, isn't it?—has now gone out to Mrs. Fenwick's place to measure my new study and to see what is necessary to be done."

Mr. Falconer smiled. "I suppose," said he, "that you have already stopped at the house of one of our clergymen and have made your arrangements for the wedding. Is it to be this evening, or tomorrow?"

Mr. Pruitt's exuberance abated a little. He shook his head. No," said he; "it's not so good as that. You see, there are two people concerned in that business. If I had been able to manage it all myself I would not be boarding long in that hotel when I have a beautiful piece of property in the country, but she would not agree to hurry up things as I wanted to hurry them up. She said there are various matters that have to be attended to, and she wants one of her sisters to come on. It is all right enough and natural enough, and I cannot make any objection, but I must say I hate going slowly through this world and putting things off."

"When are you to be married?" asked Mr. Falconer.

"Stunted lamp-light"—smoky chimney, poor draught, imperfect fit, cracking chimney, clouded glass—why do people put up with this when good lamp-light is the best light to read by?

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MACBETH lamp-chimneys give lamps new life.

Let me send you my Index to tell you how to get the right chimney for your lamp; it's free.

Address, MACBETH, Pittsburgh.

"Not until next Monday," said Mr. Pruitt. "She would not agree to anything sooner than that."

"And this is Wednesday!" ejaculated Mr. Falconer. "Poor man! How can you endure such delay? By the way," he continued, as his client rose to leave, "you are going to make such wonderful improvements in the Fenwick farm, I suppose you will be wanting to give it a new name. It is now known as the Meadows, but that isn't much of a name."

"Indeed, it isn't," said Mr. Pruitt; "but Mrs. Fenwick and I have talked over that matter and we've settled upon an excellent name. After this, the name of our estate is to be 'Lock, Stock and Barrel.'"

Arnold, N. D. Feb. 8th, 06.

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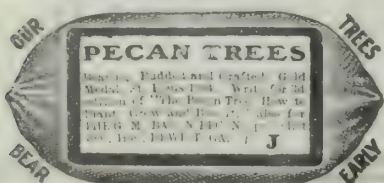
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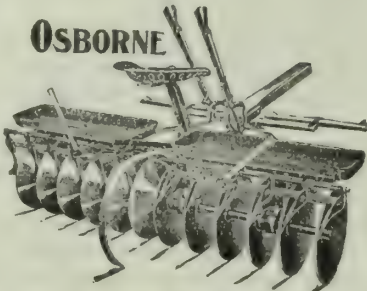
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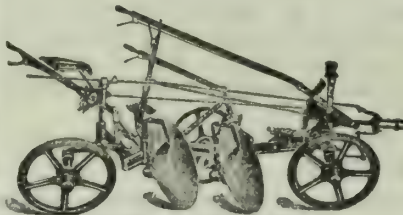
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Kentucky Drills.



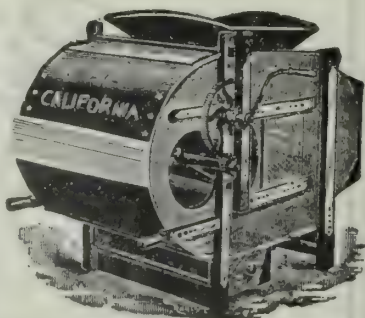
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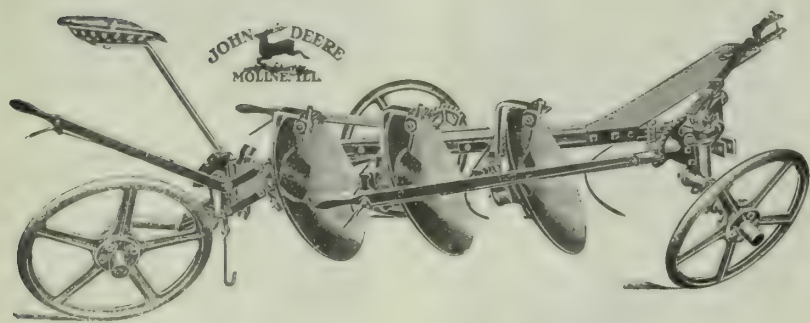
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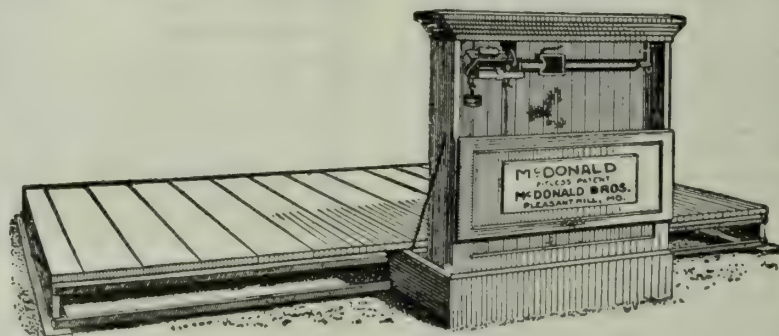
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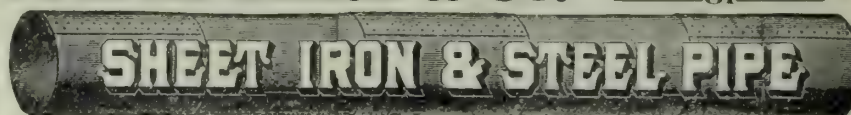
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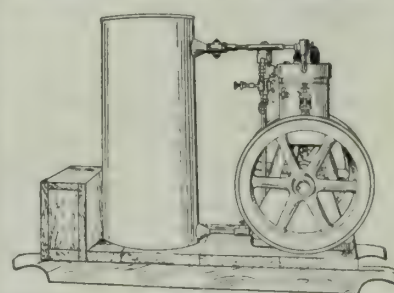
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LXXII. No. 13.

SAN FRANCISCO SATURDAY, SEPTEMBER 29, 1906

THIRTY-SIXTH YEAR

IN THE ANDES.

In our excursions from ordinary agricultural affairs to scenes of broader suggestiveness we come this week to summits of the Andes. Of course, at these great elevations agricultural country is not found, but mining invites investment, industry and development. The accompanying scenes were encountered by Mr. W. H. Shockley, in Carabaya, Peru. This portion of Peru was long renowned for its rich gold mines, and in the days of Pizarro a mass of gold the size of a horse's head is said to have been sent to Spain. The trails to the mines cross the Andes at a tremendous height above sea-level; in this case the crossing was at Aricoma pass, at 17,000 ft. The character of the climate is suggested by the glacier shown in Figure 1; it being remembered that this body of ice is within the tropics. A large cairn surmounted by a horse's skelton marks the summit of the pass, as shown in Figure 2. In this province of Peru, near a place named Poto, is a mine that is probably the highest in the world, for it is close to a glacier at about 18,000 ft.

The trail that Mr. Shockley followed descends in 50 miles to 3,000 ft., on the Inambari river, which is crossed many times on suspension bridges, made of ropes as shown in Figure 3. Two horses are in the act of crossing, one ridden and the other led; on the trail the remainder of the expedition is proceeding in single file. In the distance, up the valley, the clouds obscure the high peaks. These mists rise from the eastern side of the Andes and rise to the summit, where they encounter the warmer air of the Pacific slope and become dissipated. The trail connecting the Santo Domingo mine with the low country is only a narrow shelf blasted out of the solid rock, overhanging the river. The trail at the highest point is 600 ft. above the ravine, and for miles a stone dropped from the hand of a rider will fall 200 ft. vertically into the stream. The Montebello mines are at about 5,000 ft. altitude in the verdant montana, or lower mountain land. They were worked many years ago, but the forge shown in Fig. 4 is about all that remains of the old buildings. Many "tunnels" now tenanted by the vampire bats are the only record of the work done long ago, but as modern energy spreads into these remote parts of Spanish America, they are destined to be explored and exploited.

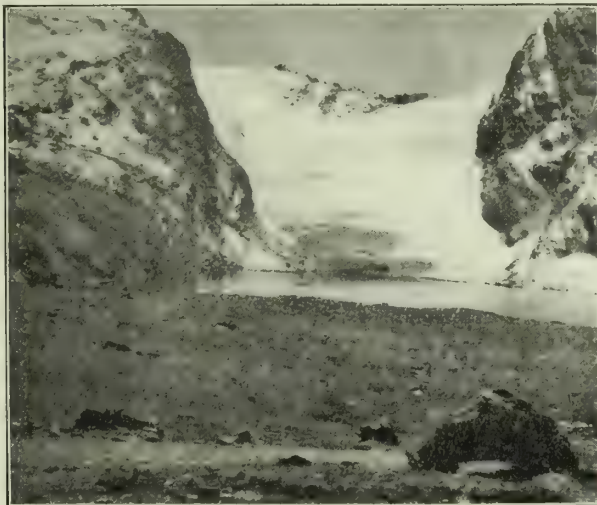


Fig. 1. Glacier on the Aricoma Pass, 17,000-ft. Altitude.



Fig. 2. Summit of the Aricoma Pass.



Fig. 3. Rope Bridge on the Santo Domingo Trail.



Fig. 4. Blacksmith Forge at Montebello Mine.

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THE WEEK

The greatest event of the agricultural year in California is the appearance of Professor Hilgard's book on Soils. Other events may be greater from the point of view of immediate commercial and industrial concern; other events may have clearer connection with individual failure or success, or with local phases of development and progress, but none is more significant as an indication of the position of California in the recent attainments of applied science, and none reaches farther into the future agricultural development of the State, because none is more essential to such development, nor more fundamental in the attainment of it. We do not undertake to fix the place of the book, as the world will discern it, nor to determine its influence as the world will feel it, but we apprehend that it is a work for all places and for all times, and that whatever it may lose, as the years go on, as an epitome of knowledge then present, it will rise in importance in the perspective as pointing the way to the newer attainments upon which that fuller knowledge shall establish itself. We are sure that this is not claiming too much for the work, nor is it difficult to explain why the work should be so masterful.

Professor Hilgard is an early gift of German science-culture to American advancement. Three years ago he received from Heidelberg the distinguished honor of the re-issue of his doctorate diploma of 50 years before. This ancient seat of learning thus declares its pride and satisfaction in its product: thus it placed the imperial stamp "made in Germany" upon the highest of all human products, an effective man. "We again have conferred," says the ponderous Latin of the diploma, "the highest honors in philosophy which 50 years ago were bestowed upon him. These honors have since been actively and successfully upheld by his researches throwing great light upon the geology of California, and other parts of America, as well as by the promotion and improvement of California agriculture, resulting from these researches." This declaration, following the award of the Liebig medal for distinguished achievement in science by the Royal Bavarian Academy of Sciences a decade before, emphasizes Germany's appreciation of her gift to America.

Professor Hilgard's career and achievements constitute a splendid instance of the advantage of broad culture as a foundation for distinguished special work. His early training was under the domination of the classic school, and later he passed into the uprising of science to pedagogic equivalence and assisted notably therein, enriching his own mind and contending valiantly for what he approved, as has always been his wont. Of the sciences he partook broadly, as was the early method, escaping superficiality by his ready penetration and facility of mind, as well as by his habit of untiring industry. Of three sciences he demonstrated especial mastery—geology, chemistry and botany, working so well with them that he was chosen to many important places in research and instruction in these lines, while the more recently differentiated science of physics also rested in his grasp. All these constituted a most admirable qualification for his achievements and leadership in the complex science of soils, which involves them all. It is doubtful whether anyone else has ever

gone so far and so deep into knowledge of physical and biological sciences and wrought them so well into the fabric of a specialty. It has devolved upon Professor Hilgard to carry the conceptions of his great prototype, Baron von Liebig, into a later century, and give them new breadth, richness and significance by his own thought and research.

Another element of qualification for Professor Hilgard's great soil work has been the length and breadth of his field study and observation. His family came to Illinois in his childhood. In early manhood he returned to Europe for study, and traveled widely. More than 40 years ago he was State Geologist of Mississippi, and was first to give due regard to soil characters in the exposition of the geology of a State, and his reports are classic in the South. After that he filled a composite chair of science in the University of Michigan, and then came to the University of California nearly a third of a century ago. During his early years in California he explored the State widely, making careful studies from his points of view, adding particular efforts to turn the light of science upon intelligent agricultural use of the strange and new conditions of soil and climate which are characteristic of California. At this period he also collocated his California work and extended its significance by wide exploration in the remote regions of the Pacific slope. Second only to his native talent and broad training, we confidently place Professor Hilgard's personal acquaintance with vast areas in both humid and arid regions of both hemispheres as qualifying him for the world work in soils in which he has distinguished himself. In connection, however, with this breadth of field work, he has always maintained the most searching laboratory investigation, devising methods, inventing appliances, planning and equipping laboratories, in fact, until his followers have come to California from all parts of the world to see his processes, materials and apparatus. We have claimed it not difficult to explain why Professor Hilgard's soil work should be masterful, and we trust these hurried references to his career will justify the claim.

Professor Hilgard's book has this specific title: "Soils: their formation, properties, composition and relations to climate and plant growth in the Humid and Arid Regions." The plan of the work is admirable, and a sketch of it will indicate its breadth and richness of contents. It is divided into four parts: (1) Origin and formation of soils; (2) Physics of soils; (3) Chemistry of soils; (4) Soils and native vegetation. These subjects are discussed in 26 chapters, filling 593 pages large octavo, and constitute the book a portly and dignified treatise of the scientific class. The publishers are the Macmillan Company and the price is \$4.00 net. Although the book is clearly of scientific and not of popular classification, and although the author does not hesitate to discuss the most obscure and involved problems of soil science and philosophy, his characteristically lucid style and his constant use of facts of common agricultural observation for illustrative purposes make so much of the work so readily intelligible that any careful reader, though he may be unskilled in the science involved, can draw from the work a clear understanding of the nature, composition and relation of soils to the sustenance of plants, and can secure suggestions of soil amelioration which are of the highest practical value. Very pertinent illustrations assist the reader, notably, to an understanding of the text. Because of this eminent service which the book renders to agricultural practice and because of its manifest relations, not only to the betterment of single farms but to the development of agricultural enterprise upon vast areas of unused soils, it becomes an effective agency both for the promotion of individual prosperity and the future wellbeing of the human race. The reading of any single chapter will strongly convey these impressions: the dignity of the subject, the mastery of the author and his ability to connect his science with the life problems of individuals and of nations. So far as

observation goes, such a combination of qualities in a technical work is rare.

To a certain extent, chiefly on the scientific side, the work is controversial. Professor Hilgard's attitude toward all questions is that of intelligent conservatism. He is tenacious of his views and a ready combatant for their integrity, but is always awake to admit modification and improvement reached by methods of research which he approves. He is intolerant of crosscuts and unsupported claims, and possibly is not always as gentle in his methods of attack as his opponents might desire. There has arisen a troubling of the waters of soil investigation and all crafts do not ride easily. In his new book Professor Hilgard approaches these points of issue in a dignified and sincere spirit and contends valiantly for his views, at the same time giving most cogent reasons for the faith that is in him. This distinct contribution to the science and ethics of soil work will prove of inestimable value and will exert a wide influence.

We have counted the appearance of this work the greatest agricultural event of the year in California. Aside from and beyond all estimates of the local importance of the accomplishment, there comes the proud satisfaction that this man has lived the best of his life in California and that Californians have appreciated and honored him. His work has repaid the favor of the State; his work has made California better known throughout the world than that of any other man, and his researches have more profoundly influenced not only the erection of standards in his specialty, but the proper methods of approaching them. The connected account of his thoughts and the observations upon which they rest will systematize and concentrate discussion and lay the foundation for the world's soil work of the future. That California should have attained such a commanding position in science during the first half century of its life as a commonwealth is a warrant for honest pride and sincere rejoicing.

QUERIES AND REPLIES.

A DEBILITATED APPLE TREE.

To the Editor: I have been asked to look at an apple tree growing in a San Francisco yard that shows evidence of indisposition. I went to investigate with the idea of prescribing an application of Thomas' phosphate powder, potash or nitrate of soda, but the sickly appearance of the tree deterred me from doing anything until I could get more competent advice than I feel able to render. I therefore enclose a few leaves from the tree and will be obliged if you can suggest to me, from them, what is the best thing to do. The apple tree is an old one, say 20 years or more, and the yard is cemented over to within 5 or 6 ft. of the tree. The ground around the tree, however, is kept well cultivated, and the soil appears to be fairly good. If you can give me any instructions as to what to do, I will appreciate the courtesy, and the owner of the tree will be grateful for anything that can be done.—READER, San Francisco.

The apple leaves manifest no disease which we can recognize, but are rather indicative of general debility of the tree, as manifested by ineffective root action, which might be due to lack of sufficient water or excess of water. That will have to be determined by local examination, and by the judgment of those who know how the tree has been treated. The presumption is that the water supply has been insufficient. Proper treatment would be watering and the use of the fertilizers which you propose in moderate quantity, followed by a thorough pruning of the tree during the coming winter.

MEDICINAL PLANTS.

To the Editor: Where can I find a market for native medicinal herbs?—READER, Bakersfield.

There is no general market for native medicinal herbs. They are used by manufacturers of proprietary remedies, who make contracts with local collectors to supply them. It is usual for such a manufacturer to find out in what part of the State certain material

which he needs occurs, and then make arrangement with some one to collect what he desires. It is a very peculiar trade and quite limited in amount and difficult to arrange.

GRASSES AS FERTILIZERS.

To the Editor: If you have information on grasses for sod, giving the different kinds, and pointing out those most easily grown and taken care of by mowing, and mentioning those which when mowed and the mowings left on the ground to decay, will return to the soil more nitrogen than they take from it, will you kindly give it?—FARMER, Lemoncove.

Probably the most generally successful grass and one that will look fairly well with the least water and mowing is the Australian rye grass, but this will not live through the dry season without a fair amount of irrigation. There is no grass that takes nitrogen from the atmosphere; that is a peculiarity of the clovers, and for accomplishing that service winter crops of field peas, vetches, etc., are grown by many. It is, of course, true that grasses, even if they do not have power to take nitrogen from the atmosphere, do add something to the available nitrogen of the soil, because they transform nitrogen already existing in it in a less available form, and so the clippings will be of advantage in increasing the humus content. If you wish to grow a plant for green cover the year round there is probably nothing better than alfalfa, and this can be safely sown with trees, providing there is moisture enough supplied to grow both the trees and the cover crop. But even this is hardly a desirable practice, except in extremely hot districts, where the lowering of the soil temperature by the green cover is more desirable than the effect produced by clean cultivation. The question which you propose is not easy to determine.

FOOTHILL FANCIES.

To the Editor: About winter apples: as the soil and altitude are substantially the same as in other localities where they are grown, it seems probable that they will do well here. The orchardists here think not, but no one has apparently really tested the matter—neither know why. As nearly as I can sum up, the codling moth is mainly responsible for failure. Kindly give me your opinion, when would be the best time to plant, fall or spring? We have a block of Salway peaches, and I thought of setting one or two-year-old apple trees between peach trees, cutting out the latter in two years, say. Would this do?

Will it be possible to lift two or three-year-old peach trees. They are small on account of poor soil. I would plant them where trees have died in a block of McDevitt's.

Will fall or winter be the best time to sow speltz for hay?

What grass seed would you advise sowing for pasture where there will be no irrigation? And can it be sown to advantage with the grain, as in the east? What would be best to plant for green fodder—corn or millet?—BEGINNER, Auburn, Placer county.

We should be inclined to think that people who doubt whether you can grow, profitably, a late ripening and long-keeping apple at your elevation are probably right. The codling moth is certainly a most serious obstacle. Again, although you could grow early apples very successfully if a good market could be found for them, and they could be protected from the codling moth, the forcing heat at your elevation would cause a late apple to mature too soon and to be deficient in keeping qualities. At a thousand feet higher elevation the question would be chiefly whether you can successfully fight the codling moth. This pest seems to be even worse in the foothills than in the valley, or else the people do not try so hard to overcome it.

Deciduous trees should be planted not later than February, and any time between December and February when the ground is not too cold and wet from winter rains. There is no advantage in setting old trees, the yearling is better than the two-year-old.

You could successfully move the peach trees of which you speak, but it would be very much of a question whether a stunted tree is worth moving. A young tree in an old orchard is a hard proposition anyway, and it should start with all the vigor that can be given it.

Grain for hay should certainly be sown early in the rainy season, no matter what kind of grain it is. We

know of no grains that will make you summer pasture without irrigation. The dry season will knock out anything of the kind. The best you can do is to grow some hardy plant like sorghum, sowing it after frost is over and cultivating it as well as you would corn. The sorghum usually resists heat and drouth better than corn. For winter feeding you can get good results with oats and peas sown together, or with rye.

ONION TROUBLES.

To the Editor: Last spring I planted 75 lb. of silver-skin onion sets on a little less than an acre and gathered about 3,500 lb., but about 20% went to seed and such onions were very small. Some of them I pulled off the seed top, thinking it would help the onion, but such seemed to send up another seed stalk, so I quit. What is the best way to prevent onions going to seed? Also, when ought they to be dug to keep best? I dug most of mine after the tops wilted, and a few are still in the ground, and I am inclined to think that a better percentage of them have kept in good condition. I think at least 25% of those I dug early have spoiled. I tried three different ways of keeping them: One lot I kept in a storeroom; second lot in the shade of a tree; a third lot in piles exposed to the sun and weather, but I cannot see any material difference, except that those that were in the shade of the tree turned to a green tinge. What is the best method of keeping onions? Also what kind will keep best? What kind will yield best in sandy, dry soil? Would it be an advantage in getting onion seed or sets from Eastern or colder climate?—GROWER, Squaw Valley.

California methods of onion growing are given in our book on 'California Vegetables.' The chief part of California's onion product is made from seed and not from sets. During our long growing season onions grown from seeds are not apt to stop growing, and begin again, and the second start runs largely to seed. There is no satisfactory way of keeping onions in our temperature, except by resorting to cold storage, as even our winter temperature is high enough to start growth in the bulb. The onions which are chiefly grown for long keeping are the "Prize Taker" and the "Yellow Globe Danvers."

WINTER GROWTH OF PEAS.

To the Editor: I have 20 acres of Feather river bottom land planted to trees. Would Canadian field peas make a suitable crop for winter green-manuring, peas to be planted in October and plowed under the middle of February? Where can they or anything suitable for that purpose, with inoculating bacteria, be bought in Northern California?—PLANTER, Butte county.

Your success in winter growing legumes will depend upon the sharpness of the frost with which you have to contend. Either the Canadian field pea, or the common field pea of California, have about all the frost resistance that can be expected, but whether it is enough for your situation an actual test must show. We doubt if there is at present any place where you can get inoculated seed. As we have already said, it would be desirable to try them without it, to see if you actually need inoculation, because that also must be determined by experiment.

EVERGREEN CUTTINGS, SLUGS AND POULTRY SHADE.

To the Editor: What time of the year is best to plant out cuttings of "Box" and "Privet" for hedges? Is there anything that will kill snails on strawberries, or keep that pest away? It is the small black ones that eat themselves into the berry, leaving the empty shell, and then there is the lighter kind, the "slug." Please name some fast growing brush or shrubbery that grows fast to give shade and shelter in chicken yards.—ENQUIRER, Sonoma.

You will probably do best with cuttings of the plants you mention by planting early in the spring after the heavy rains are over and the ground has become mellow and warm, so that rooting can take place before the sharp heat and drouth of the rainless season. There is no easy way to kill snails or slugs. To keep the ground well hoed and as dry as possible on the top interferes with the growth and progress of these pests, which move quite rapidly over hard, moist ground. You can also trap them in considerable numbers by putting down chips or pieces of boards near the plants, as they will collect under these covers in the day time and can be readily crushed. There is, probably,

nothing that grows more rapidly and affords more shade in hen yards than common eucalyptus trees, which can be kept low by cutting off the tops. The locust trees, of which favorable report for poultry uses was recently printed in our columns, are not so rapid, but are very desirable and can be kept growing low by cutting back and bending down the lower branches. The tree malva is a good plant for the purpose and can be readily grown from the seed, which can be gathered in nearly all localities at this time of the year.

PEAR BLIGHT.

To the Editor: A couple of neighbors and myself are interested in Bartlett pear trees; each having good sized orchards; healthy until a year ago, when they were attacked by what is called "fire blight." What is to be done for it? It makes no difference as to the age of the tree or where planted; all seem to suffer alike. We saw in the papers some time last fall that a committee had been sent to investigate the disease in Yolo county, but we have seen nothing more about it. Was there a report published of the investigation? If so, where can we get it? The fruit does well in this section and we wish to save our trees.—GROWER, Atlas, Napa county.

There has been no formal report printed yet concerning the pear blight experiments which are in progress in the Sacramento valley. They have, in fact, not yet reached the results expected, but are being continued in the strong hope of satisfactory solution. In the issue of the Pacific Rural Press of September 15 there is a long account of a pear growers' meeting at Sacramento at which these subjects were quite fully discussed, and in which you may find some point of interest concerning the present condition of the work.

NITROGEN CULTURES.

To the Editor: Can I obtain nitrogen culture for using on pears to plant in the orchard? I have saved several pounds of the Tangier seed and am, in all, going to plant some 100 pounds of pea seed. I want, if possible, to plant this variety.—ORCHARDIST, Lindsay.

We do not know where you can get nitrogen cultures for using with peas. There was a great rush after this sort of material without sufficient demonstration of its value and without sufficient care in the preparation of it. It is not certain that you need it. In the present state of knowledge we should trust more to getting peas in early so that they would have all the advantage of the rains, than we would to any introduction of bacteria. Possibly after a while a different opinion would be warranted.

FERTILIZING WITH INSECTICIDES.

To the Editor: Could you give me any information as to what effect it would have on an orange tree, and also on the black scale to spray the tree with nitrate of soda, phosphoric acid, or potash, separately or the three combined? Would any of them be injurious to the tree if dissolved in water in sufficient quantity to give the soil the proper amount of these fertilizers when the rain washes them off? By mixing the three together, would they lose any of their chemical effects as to destroying the scale and their usefulness as fertilizers? Have you ever experimented in spraying trees with any or all of these chemicals for black scale?—ORCHARDIST, Sutter county.

None of the materials which you mention, nor all of them combined, in no greater strength than it is safe to use them for fertilizing purposes, would have any appreciable effect on the black scale. If you should use caustic potash—say one pound to six gallons of water—the solution would destroy young scale which might be reached by it, but would have no effect upon old ones. So much of this solution as reached the ground and was distributed by the rains would, of course, act as a fertilizer and its passing presence in the vicinity of the scale would have no effect on its fertilizing value. The best treatment for black scale on a small tree where you can be very sure of doing the work thoroughly is spraying with kerosene emulsion at about this time of the year, and if the kerosene emulsion is properly prepared there will be no injury to the foliage, but on large trees the only treatment which has come to be considered satisfactory and worth while is the proper fumigation with hydrocyanic gas. This application, of course, has to be made with proper care and with suitable apparatus.

HORTICULTURE.

A FEW NOTES ON INTENSIVE FARMING.

To the Editor: These few notes on intensive farming upon a small scale are not presented in the belief that they contain anything new, or any matter particularly helpful, but with the idea that the efforts of any honest experimenter have a certain value.

The only possible exception to this modest disclaimer is that portion referring to sweet corn. If the writer's efforts to obtain a wormless ear have been duplicated, he has seen nothing of the kind mentioned in the columns of the Press, although queries on the subject have occasionally been printed. About four years ago a correspondent asked for a method of preventing the depredations of the corn worm, and the reply was to the effect that the moth laid its eggs in the tassel, from which the caterpillar subsequently made its way to the silk, and so to the ear, and that there was no known way of remedying this state of things, beyond the fact that some species attracted the moth more than others—the sweeter the corn, the fatter and more frequent the worm. That had been my experience; out of half an acre of Stowell's Evergreen hardly a half dozen ears were fit for the table the year the query appeared.

At the time the problem did not appear very abstruse: i. e., a spray that would be offensive to the moth, yet harmless to the corn. The following year I tried sulphur, losing sight of the fact that sulphur needs sunlight to generate fumes, and the moths appear to get in their work at night. The worms hatched out a bigger and healthier brood than ever. The next year the kerosene emulsion was tried—a crude form, three parts soap waste to one of oil, but quite as effective, apparently, for use on citrus trees as the regular formula. Put to its present use, the emulsion was obviously discouraging to the worm, but disastrous to the corn. Both the tassels and silk were given a dose: the former in many cases died right down to the joint, and in a number of cases, even where there was no die-back, they failed to pollinate the cob; the proportion of seedless cobs was appalling, fully 60%. Strange to say, the emulsion applied to the silk, in some case penetrating well into the ear, produced no withering there. As the spraying was not repeated that year, the worms rallied later in the season, in the shape of a second brood, and made up for lost time. The third year fish-oil was tried—three parts of a weak solution of soap waste and soft water to one of oil. The silk alone was sprayed, twice—just as it appeared and while maturing. The result was a marked diminution in the number of worms without injury to the corn. This would have been gratifying, but for one drawback—no one, including the cow, would touch the corn. It is now up to some other genius to continue where I left off.

Out of a seven acre tract, one acre was set to fruit trees (deciduous and citrus). The situation was not a favorable one for most fruits, being on mesa land exposed to cool airs from the ocean, and temperate summers. Moreover, the soil had a suspicion of dobe. Of the "clean cultivation," about which we hear so much, this is to be said: I practiced it for four successive years, and believe it will take at least three of fertilizing and cover cropping (that is, a rank growth allowed to grow up through the straw or whatever is thrown upon the land) for the soil to recover its humus and virtue. Where weeds are allowed to grow rankly and then turned in once or twice, subsequent clean cultivation may be all right, and, of course, for appearance sake, if for no other reason, must be followed—without this preliminary my observation leads me to condemn it. This lack of condition in the soil I found particularly fatal to success in small fruits—strawberries, and the higher types of canes. Loganberries, mammoth blackberries, etc., will die off incontinently if the soil is out of condition, and no amount of water will save them; in fact, water seems to make the matter worse.

A mere amateur with a few years of theoretical study of the subject, to add to six or possibly seven years of practical work, hesitates to advance even apparent results against conclusions reached by others whose life work has lain along horticultural lines; it is, therefore, set down here with diffidence that the resultant effects of irrigation observed by the writer coincided with those of the small minority that condemned the practice in the valuable epitome published recently by Professor Wickson. Better results were obtained by fertilization, producing humus by any available means, and later keeping a loosened surface. In the case of figs, even a small quantity of water applied in the proper manner, leads to premature cracking and spoiling of the whole crop. Climatic conditions may have had some hand in this, as the fig in Santa Barbara gets too little sun in many situations, anyway, but if un-irrigated will hold its own and do better than almost

any other deciduous fruit tree in an unfavorable (cool) location.

Fertilizing is, of course, a problem by itself; briefly, I found that grapevines (shy bearers at the best near the sea) do better without. Globe artichokes are killed with very little manure. Other vegetables apparently cannot have too much. An amplification of a hint contained in Professor Wickson's 'California Vegetables' may be of interest. For a winter growth of peas, it is directed that barnyard manure be placed in 8 or 9 in. furrows, the earth turned back over the fertilizer and tamped, the furrow is then filled level and the seed planted. The heat of the manure forces a quick growth of peas despite inclement weather; in fact, cold, rainy weather is a necessity, if the plan is to succeed so far as peas are concerned. Very little sun and dry weather will prove destructive. The amplification is this: After the peas have seen their best days, they may be removed and some root crop sown in the same row, or if the season has waxed late, squash, melon, or other summer crop, without further plowing. There is a gratifying saving of labor, and this plan has produced excellent crops of beets, turnips, and even parsnips. The reason for this is perhaps not difficult to arrive at. The manure went in crude for heating purposes; in a month or two it has undergone the necessary fermentative process, and is ready to give up its elements to a rank feeder. Moreover, the manure is well in the soil in large quantities; rows so treated retain their virtue the following year.

September 12, 1906.

ALAN OWEN,

214 Leavenworth street, San Francisco.

WALNUT GROWING IN SOUTHERN CALIFORNIA.

(By Mr. Ralph McNees, at the University Farmers' Institute, at Whittier, Los Angeles county.)

In looking back over the decade in which I have been interested in the culture of the walnut I recall that in my earlier experience how, after I had worked and studied out problems and methods, I often found I could have obtained the same knowledge by consulting my more experienced neighbors, which caused me to wish for an experience meeting or a Farmers' Institute.

Interesting as it may be, I do not intend to speak of the founding and fostering of the walnut industry, nor will I mention the names of the various kinds of walnuts grown in Southern California, for I will venture to assert that with the old way of selecting our trees for planting from seedlings that we have as many kinds of nuts as trees planted; but with enough similarity to make little or no difference in their market value.

After the permanent establishment of the walnut industry and previous to 1900, it was difficult to imagine anything more desirable horticulturally. In the rich, warm soil of our Southland the tree found the most favorable conditions for a flourishing growth. The natural vigor of the soil produced both beautiful trees and a bounteous yield regardless of the methods employed in culture. We did not have to raise walnuts. They raised themselves. To be the owner of a good walnut grove was considered as fortunate as to be a banker—as a fact banking sometimes followed the occupation of walnut growing. Given one of the finest climates in the world in which to live, one of the richest of soils, beautiful trees, easy to care for and cultivate, yielding large crops, with an active demand for the product at good prices, like the children of Israel possessing the promised land, there seemed nothing more to be desired. In the midst of this scene of rural prosperity an enemy came, with the result that the new conditions required new methods.

When we awoke to the fact that our trees had an enemy we began to study some way to combat the blight. One of the first practical suggestions was that as warmth and water combined produced a rapid growth and conditions more favorable to the increase of the blight, we should do most of our irrigating during the winter season and follow with dry farming methods during the summer. The advantages claimed are hardening of the new growth, making it less susceptible to the disease and producing a deeper root system. This theory has many enthusiastic supporters. But the amount of work necessary properly to carry out the dry farming, the destruction of vigor of soil by burning up of the humus by frequent cultivations and the difficulty in growing green cover crops, warrants us in making a study whether unmodified it would be adaptable to your grove or to mine. It is almost a maxim in the States bordering the Great Lakes that an orchard tree needs drainage. The same fact was stated in another form to me by an old walnut grower, viz., that a walnut grove did better on land with a slope; such land could stand more water if properly

applied than one with no drainage. My aim in irrigation is to run water in a sub-soil furrow about eight to ten feet from trees, furrows to be six to eight feet apart and give a deep irrigation; once in July, once after gathering nuts, and to be guided in winter irrigation by amount of rainfall. The object of deep irrigation is to produce deep rooting and an even supply of moisture. My experience with flood water in winter has led me to favor its application, especially if there be a good green growth on the ground.

Under the head of fertilizers and cultivation, I would recommend stable manure applied after nut harvest, followed by a good irrigation, which will insure a good growth of weeds to turn under in spring plowing. At this time the ground should be well worked up, and after the weeds have time to rot and settle, then thoroughly cultivate the ground to as fine a state as possible. (Commercial fertilizers and green cover crops may be used where manure be not available.) The ground after this treatment with fair amount of rainfall will need no further attention until after nut picking. Should the mid-summer irrigation be necessary, the land should be thoroughly worked again. The habit of flooding and preparing the ground for picking is possible only when the land is level and the water abundant and is of no special value except to smooth the ground. The method usually followed in pruning a walnut grove is very simple, consisting in removing such branches as would be in the way of teams in cultivating and any deadwood in the tree.

The length of time between planting a grove and the stage of profitable bearing has caused growers of experience in setting out new groves to plant only grafted trees where the scions have been taken from trees having a record as good producers. Some prefer roots of the natural black walnut where ground to be planted be level or low and damp, others use ordinary seedling root.

This leads those of us having groves planted from seedling stock to consider the best way to improve them. First, by grafting without removal if possible; second, if it be necessary to remove trees, then to replace with best grafted stock. If we were to number each of our trees and keep a record of them we would find that some were even and steady producers; others put on a crop biennially and still others that were poor in production all the time. Of the first class we will find some that not only bear well every year, but are hardy and resistant to the blight, and these are the trees from which we should select our scions. If we can prove by actual test that these scions retain their resistant qualities when grafted in another tree, we have advanced a long way toward the control of the blight, besides securing a good bearing tree and a uniform nut.

The fact that we have encountered an obstacle in the walnut blight only serves to bring out the latent abilities of the intelligent growers and make them more determined to study and work to protect their favorite industry. In this we expect to be ably assisted scientifically by our pathological station, and we have cause for congratulation on account of its location at Whittier.

As to the future outlook of the walnut industry, I can only say that I am optimistic, as I do not believe the walnut blight will ever assume sufficient proportions to seriously menace the profits of our groves if properly managed.

The total value of the American fertilizer production for 1905 (which includes complete, ammoniated, superphosphates, and all others) amounted to \$50,506,294, against \$40,545,661 in the year 1900. This does not include fertilizers manufactured by establishments classified as slaughtering or meat packing.

Valuable Liberian timber is available for the American markets, reports Consul-General Lyon, of Monrovia. The woods comprise red and white mahogany, red and white whistmore, red and white oak, cedar, cherry, corkwood, brimstone, and mulberry. Mr. Lyon gives the name of a business man (which is on file at the bureau of manufactures) who desires to ship this timber direct to the United States.

Butter consumption at Veracruz is small, reports Consul Canada, because of the high retail price. American butter sells for 60c per lb. can, the home-made article at 50c, and Spanish butter at 40c. Several butter compounds are also sold, being put up in 5-lb. cans, and mostly used for cooking purposes. The Mexican laboring man, earning 75c. per day, and the mechanic at \$1.25, can not afford to buy butter at the high prices.

THE STOCKYARD.

WHY A BREEDER SHOULD PRACTICE RIGOROUS SELECTION.

By C. W. Rubel, Polytechnic School, San Luis Obispo, Cal., at the annual meeting of the California Live Stock Breeders' Association.

We have all heard the story of the old Scotch woman who, on being asked for receipt for making hare soup, naively started out with, "First catch your hare"—so before starting to make any rigorous selection we should first have our mind made up as to exactly what we want to select. Whatever class of animals we may be interested in—be it draft horses, dairy cattle, mutton sheep, or any of the various classes or breeds of live stock, we should have our ideal firmly fixed in our minds and have that ideal always before us when making any selection. Of course, it will be impossible for us always to procure animals which would come up to our ideal standard, providing, of course, that it is a correct one, for a perfect animal is very rarely found. In fact, we may say that we never see an animal with which some slight fault cannot be found. However, we may approximate to a greater or less degree, our ideal, and by constant watching, and careful, even rigorous selection of breeding animals, we can approach that ideal nearer all the time. The path of improvement is no easy road. If all the animals in our herd were lacking in the same ways—weak in the same place—it might be a comparatively easy matter to select some prepotent sire and thus effect a marked improvement. But we generally find some of our animals weak in one place, some weak in another, and so on. Thus it takes an infinite amount of care, patience and time to get a uniform lot of stuff that approaches our ideal.

We take it for granted that every breeder of pure bred live stock knows what he is breeding for—has his ideal. In breeding market stock, the feed lot, the scales and the market types only need consideration, but the breeder of pedigreed stock must keep up with the ideals, whims, fads and fancies of other breeders, if he would succeed. Knowledge of these points is not hard to acquire. The literature of live stock is constantly expanding, bringing theory and principles, history of success and failure in live stock work, and even the fads and fancies of breeders down to the printed page, where they can be studied. But even more instructive than this are the opportunities found at sales and shows to inspect other men's work, or the results of their work, and to meet and converse with the breeders themselves. All these things not only keep a man interested in his work, but they keep him on the right track by keeping him in touch with what is going on around him, the demands of the trade, and furnish him material from which to mould his ideals.

It is with this ideal then that we start in our selection. Inferior stock, like the poor, we will always have with us. There are several reasons for this. Perhaps the greatest source is breeding from inferior parents. Then there are occasional reversions in type, or sports, and accidents or neglect. Any way, this sub-standard stuff will appear even in the best bred herds or flocks handled with the best of care. It appears in our herds here in America; it appears in the herds of Great Britain, where they have, perhaps, some of the most skillful breeders and herdsman in the world—and the scrubby stuff there certainly cannot be laid to neglect. We all know that improvements in breeding operations is based on two seemingly opposite laws—the law of "Like begets like," and the law of variation. From the first law we expect when we breed two good animals together, we will get good offspring, and generally speaking, we will; but if the offspring were all exactly like the parents it would be impossible to have any improvement. So we have the law of variation. The offspring will vary somewhat from the parents. Some will, perhaps, not be so good as the parents, some may be about equal, and perhaps a few may be better—that is, approach our ideal a little nearer than did either of the parents. Occasionally we find we can breed two very good individuals together, and yet their offspring will give a very poor account of themselves, rarely ever being as good as their parents. And then again we find what we call a "good nick"—that is, two strains of blood, which, when being blended together, gives a uniformly good lot of offspring, generally superior to either of the parents.

But we do not care to enter into a discussion of principles of breeding. Suffice it that the good and the poor offspring will appear, the latter being very conspicuous occasionally.

What shall be done with this inferior stock? It certainly should not be used for breeding purposes; we will never approach our ideal as long as such stuff is

used. Every breeder recognizes this, or nearly every breeder, at least, in so far as his own breeding operations go. But the greatest temptation is to sell them to somebody else. Right here we come to a rather delicate question. Of course, every breeder must sell breeding stock that is not exactly of the highest quality. We must admit that perfection in animal form or function is only a matter of comparison, anyway. An animal is only relatively perfect. Some are nearer perfect, nearer our ideal, than others. So where is the dividing line going to come? Where are we going to shut down and say this animal is not fit to be used as a breeder?

The greatest trouble is, perhaps, with the males. Undoubtedly there are farmers' bulls, or farmers' rams, or farmers' boars as distinguished from breeders' bulls, or rams, or boars. That is, animals hardly good enough to use on pedigreed stock—to use in improving their breed, yet will give good returns when used on grade stock. Not that a better animal would not give the farmer or rancher better results, but with normal prices they can hardly afford to use on their grade stuff sires suitable to head herds of pedigreed stock.

But the difficulty is a great many breeders want to class all their rag-tags and bob-tails, their scrubs, in this class and seek to dispose of them for breeding purposes. This is unfair to everybody concerned. Here is where the breeder should practice some selection. He owes it to the buyer. He owes it to himself. He owes it to the breed. The man who raises an inferior crop of grain and sells it perhaps does no damage to anyone except himself. His grain goes to the market, is graded (perhaps it grades No. 3), and sold on its merits. The buyer gets just what he paid for. But the man who raises an inferior animal and sells it for breeding purposes passes on a losing proposition to the man who buys it. There is some responsibility connected with breeding pure bred live stock.

Then again it is indeed a short-sighted policy on the part of the breeder to follow this practice of selling scrubby stuff for breeding purposes. It is doubtful if there is even present profit in it, for the cost of keeping and expense of sale often leave less profit than if the animal had been sent to market. Of course, when values are high, and the demand cleans up all offerings of culls for breeding purposes, there is undoubtedly more money in selling them that way, but when the damage to the breeder and the breed resulting from the unsatisfactory use of these animals is considered, it is very doubtful if there is any profit in it. These chickens will come home to roost. One writer has put it that they will come home and perch first on the fence of the breeder and croak, like the raven, "Nevermore," meaning thereby that the buyer will nevermore select an animal from that herd or flock. And then they return in anathema on the breed.

I was talking with a man just the other day who had recently been buying some pure bred beef cattle. One man from whom he had been buying sent him a scrub, an animal that had no business in any pure bred herd. The gentleman pointed it out to me with contempt, and remarked, "I'll have no more dealings with that man." I was not by any means the only one who saw that example of that breeder's work—other men saw it; men who are interested in buying that breed of cattle. Will they go to that herd to look for good animals? Not by any means. That breeder's chickens are already coming home. He may have made a little money by hanging on to that animal and selling it as a breeder, instead of sending it to the butcher early in life, but who can estimate the money he lost by having such an advertisement out where the public would be sure to find it.

I know another breeder who practices a little more rigorous selection. He is a breeder of dairy cattle, and the ideal with them is high milk or butter producing power. This man has a high standard—every female is tested as soon as she comes in and those that fail to make the advanced registry on first or second trial are immediately discarded. As a result animals from this herd are in great demand. The bulls are often bargained for before they are dropped, and those of you who are breeders of dairy cattle know something about the market, or rather lack of market, for dairy bulls.

While selecting dairy cows by the Babcock test and selecting beef cattle according as they approach our ideal of beef form are two different propositions, yet they are both examples of selection. The same man who would keep a dairy cow that was hardly paying her way, and taking the room and the feed of a profitable cow, and try to sell her offspring as breeding stock, would probably hang on to a scrub bull calf and try to sell him on the strength of his pedigree, thus getting out a poor advertisement for himself, and bring contempt on the breed.

How often we see and hear the statement, "If it hadn't been for a number of mean bulls the average of

the sale would have been much greater." If the breeder had practiced a little more rigorous selection those mean bulls would not have been in the sale. Of course, they will drag down the average. A man may argue that averages do not count, that he must have the cash, but the probabilities are that the mean bulls would have brought nearly or quite as much as steers, and the general toning up of his herd by their absence would have raised the value of every other animal in it.

There is no surplus of good animals. The country needs them. This is especially true of California, where breeding improved stock is, we might say, comparatively new. At least, we find the State is seemingly paying more attention to other things. There is a sort of apathy towards live stock work in general among some classes of people, and others are rather pessimistic of improvement. Are we going to attract attention to our work and our stock if we put out a sub-standard class of stuff? Hardly. It is up to us as advocates of improvement in live stock to put out a first class article. We will have to show people what we can do. To do this we will have to practise rigorous selection. The sub-standard, or scrub animal, will have no place in our herd, our stud, our flock. The knife will have to be used freely. We cannot afford to send out an animal we are ashamed of, and that will cast a reflection upon the breeder, or upon the breed. We must remember those chickens will surely come home to roost.

Above all, let us emphasize the fact that to accomplish improvement in live stock breeding we must have our "ideal," and have that ideal constantly before us when making selections. Let those animals that do not approach the ideal to a certain extent be discarded. Discard not only from our own herd, but put where they cannot be used for breeding purposes at all, for remember they will bring dissatisfaction to the man who uses them, discredit to the breeder and dishonor to the breed.

BUYERS AND PRICES AT THE HOWARD SALE.

The Howard Cattle Company furnishes us the following statement of their sale at Newman on September 11:

Cows and Heifers.

Perfection Lass. Red. Calved February 21, 1905.	
Sire Ramsden Lad—H. F. Brown, Minneapolis, Minn.....	\$150 00
Aster 15th. Red. Calved January 29, 1901. Sire Kingalier—J. A. Lynch, Petaluma, California..	110 00
Aster 22nd. Red. Calved November 23, 1905. Sire King Spicy.—Robert Doherty, Hanford, California.....	105 00
Scottish Lustre 2nd. Red. Calved September 30, 1905. Sire Pride of the Herd.—California State Agricultural College, Berkeley, California	200 00
Mystery 29th. Red. Calved January 15, 1900. Sire Kingalier—F. H. Harvey, Galt, California	110 00
Mystery Duchess. Red. Calved October 23, 1905. Sire Oxford Grand Duke 10th.—California State Agricultural College.....	160 00
Hopeful 83rd. Red. Calved December 6, 1905. Sire King Spicy—Simon Newman Company, Newman, Cal.....	135 00
Minna Bracelet 9th. Red. Calved March 16, 1904. Sire Imp. Blythe Victor—Simon Newman Company.....	175 00
Royal Mystery. Roan. Calved December 2, 1904. Sire Royal Fashion.—J. W. McCord, Hanford, California.....	50 00
Royal Mystery 2nd. Roan. Calved December 2, 1904. Sire Royal Fashion.—J. W. McCord....	50 00
Inwood Aster. Red. Calved April 6, 1903. Sire Inwood Chief.—Robert Doherty.....	90 00
Inwood Vale. Roan. Calved October 3, 1905. Sire Chief of Valley View 4th.—F. H. Harvey, Galt, California.....	100 00
Humboldt Rose 9th. Red. Calved October 4, 1903. Sire Marshall's Combination.—Simon Newman Company.....	200 00
Hopeful 82nd. Red. Calved October 3, 1905. Sire Saturn.—H. P. Eakle Jr., Woodland, California.....	100 00
Hopeful Duchess. Red. Calved September 1, 1905. Sire Oxford Grand Duke 10th.—Robert Doherty.....	90 00
Miss Harold 34th. Red. Calved May 10, 1904. Sire King Spicy.—H. F. Brown.....	130 00
Philomena 71st. Red. Calved May 16, 1904. Sire King Spicy.—H. F. Brown.....	140 00
Aster 18th. Red. Calved April 28, 1904. Sire King Spicy.—Robert Doherty.....	100 00
Philomena Duchess. Red. Calved November 30, 1905. Sire Oxford Grand Duke 10th.—J. A. Lynch, Petaluma, California.....	70 00
Ramona Duchess. Red. Calved September 16, 1905. Sire Oxford Grand Duke 10th.—F. H.	

Spicy's Diana. Red. Calved March 20, 1903.	80 00
Sire King Spicy. H. F. Brown.	85 00
Diana Duchess 2nd. Red. Calved November 20, 1905. Sire Oxford Grand Duke 10th.—Simon Newman Company.	80 00
Miss Harold 37th. Red. Calved November 30, 1904. Sire King Spicy.—J. W. McCord.	65 00
Miss Dandy 2nd. Red. Calved October 29, 1905. Sire Royal Fashion.—H. P. Eakle Jr.	50 00
Victoria 16th. Red. Calved December 25, 1905. Sire King Spicy.—J. W. Sharp, Newman, California.	60 00
Aster Duchess 2nd. Red. Calved September 21, 1905. Sire Oxford Grand Duke 10th.—J. W. Sharp.	60 00
Bulls.	
Quinto Fashion. Red. Calved February 17, 1905. Sire Royal Fashion.—J. J. Stevenson, Newman, California.	125 00
Lord Fashion. Red. Calved March 21, 1905. Sire Royal Fashion.—Kern County Land Company, Bakersfield, California.	200 00
Native Son. Roan. Calved May 15, 1905. Sire Saturn.—Simon Newman Company.	225 00
Spicy Heir. Roan. Calved April 24, 1905. Sire King Spicy 53rd.—Spreckels Sugar Company, Spreckels, California.	100 00
Quinto Grand Duke 5th. Red. Calved October 10, 1905. Sire, Oxford Grand Duke 10th.—Spreckels Sugar Company.	100 00
Chieftain 5th. Roan. Calved June 30, 1905. Sire Chief of Valley View 4th.—Spreckels Sugar Company.	95 00
Chieftain 6th. Roan. Calved July 5, 1905. Sire Chief of Valley View 4th.—F. H. Harvey.	85 00
Quinto Grand Duke 2nd. Red. Calved August 28, 1905. Sire Oxford Grand Duke 10th.—Dr. Fatjo, Volta, Cal.	90 00
Quinto Grand Duke 3rd. Red and white. Calved September 4, 1905. Sire Oxford Grand Duke 10th.—Dr. Fatjo.	105 00
Quinto Grand Duke 4th. Red. Calved September 12, 1905. Sire Oxford Grand Duke 10th.—Dr. Fatjo.	200 00
Royal Fashion 6th. Red and white. Calved September 22, 1905. Sire Royal Fashion.—Spreckels Sugar Company.	50 00
Satellite. Red. Calved September 28, 1905. Sire Saturn.—Dr. Fatjo.	100 00
Royal Fashion 7th. Red, little white. Calved October 7, 1905. Sire Royal Fashion.—Dr. Fatjo.	100 00
Royal Fashion 8th. Red. Calved October 9, 1905. Sire Royal Fashion.—Dr. Fatjo.	105 00
Quinto Grand Duke 6th. Red, little white. Calved October 11th, 1905. Sire Oxford Grand Duke 10th.—Dr. Fatjo.	110 00
Aladin's Light 3rd. Red and white. Calved October 12, 1905. Sire Aladin.—Spreckels Sugar Company.	85 00
King Spicy 94th. Red. Calved November 16, 1905. Sire King Spicy.—Dr. Fatjo.	110 00
King Spicy 95th. Red. Calved November 18, 1905. Sire King Spicy.—Dr. Fatjo.	140 00
King Spicy 96th. Red, little white. Calved November 20, 1905. Sire King Spicy.—Dr. Fatjo.	105 00
King Spicy 97th. Red, little white. Calved December 1, 1905. Sire King Spicy.—Dr. Fatjo.	130 00
Royal Fashion 9th. Red. Calved January 1, 1906. Sire Royal Fashion.—Dr. Fatjo.	90 00
Quinto Grand Duke 8th. Red, little white. Calved January 16, 1906. Sire Oxford Grand Duke 10th.—Dr. Fatjo.	180 00
Quinto Grand Duke 9th. Red, little white. Calved January 22, 1906. Sire Oxford Grand Duke 10th.—Dr. Fatjo.	200 00
Quinto Grand Duke 10th. Red, little white. Calved February 3, 1906. Sire Oxford Grand Duke 10th.—Dr. Fatjo.	150 00
Quinto Grand Duke 11th. Red, little white. Calved February 11, 1906. Sire, Oxford Grand Duke 10th.—Robert Doherty.	125 00
Quinto Grand Duke 12th. Red, little white. Calved February 12, 1906. Sire Oxford Grand Duke 10th.—J. W. McCord.	105 00
Chieftain 7th. Roan. Calved February 18, 1906. Sire Chief of Valley View 4th.—California State Agricultural College.	155 00
Quinto Grand Duke 13th. Red. Calved March 5, 1906. Sire, Oxford Grand Duke 10th.—Dr. Fatjo.	80 00
King Spicy 98th. Red. Calved March 5, 1906. Sire King Spicy.—Daly & Tilton, San Francisco, California.	75 00

Summary:

26 females sold for \$2,745.00, an average of \$105 00.
 55 head sold for \$6,265.00, an average of \$114.00.
 29 bulls sold for \$3,520.00, an average of \$121.00.

THE FIELD.

Notes on Bean Growing in the San Joaquin.

To the Editor: Hoping to revive a fainting bank account, I arranged for a field of "summer fallow," near Modesto, and started the work of raising a crop of black-eye beans.

Having no experience of my own to guide me, I went through the neighborhood seeking some one who had raised beans on the unirrigated upland. I was surprised at the lack of accurate knowledge on the subject, and it is with the hope that I can save others the loss and disappointment I suffer that I publish the experience and observations of the summer. In going over the county I learned of several others making the same venture; one or two had planted earlier, others taking the suggestion and planting later than I did. From Ripon on the north to Turlock on the south, I knew of some six fields of beans, amounting to over 500 acres, most of which were black-eyes, the rest being "pinks." And to learn all I could about the subject I went to both trouble and expense to keep in close touch with the various lots.

The land was all upland, from heavy clay to sand that would blow, and while the field ranking first in point of yield was so heavy and baked so quickly and hard it could not be properly cultivated after irrigating, I should choose sandy land for another venture. The field I used was composed of various kinds of soil, all parts under the same condition otherwise, of course, and while the light land produced the best-looking plants, the whole of it would have done well enough could I have irrigated the crop.

If the summer's work teaches any lesson, it is that the quality of the land is a secondary matter; any of the land farmed in that neighborhood will raise beans, if the other conditions are right.

As to the time for planting.—While inquiring about the district generally, I heard of three or four previous ventures at bean raising, some resulting in remarkable yields, the others producing fine plants, but no beans. I learned that the failures were all early plantings. Of the six lots raised this year one was planted in March, another in early April; both were fine plants before I planted mine (in middle May). The season was unusually wet, and these early plantings had the benefit of rain on the young plants, but did no better than those planted later. I am not able to give the exact reason for this, but have wondered whether it was not that the earlier plantings brought the beans to the point of blossoming before their natural time for it. The two exceptions noted, the rest were planted in May, one lot as late as the 20th of the month. All came up sharply and well in a couple of days.

Part were planted the usual way, six to eight inches apart, in rows thirty inches apart. The rest were planted with an old corn planter, which dropped two or three beans every foot or so, in rows four feet apart, in depth from 4 to 8 inches.

Two of the fields, the one planted in March, and my own, were planted as deep as the planter would cut. The usual shallow plowing had been done, leaving the "plow-pan" about 6 or 8 inches below the surface, and the machine would not cut below it.

Notwithstanding the repeated warning, given by half the people that passed, that I could not hope to get a stand of beans, planting so late and so very deep, I put the seed well below the moisture, and believe I did not lose a bean.

Cultivation.—In cultivating, I got the best results from an A-shaped harrow-cultivator, costing \$3.50. I first tried a wide spade, Moline corn cultivator, but it turned the moist earth up where the sun and wind soon dried it out. One lot, at Ripon, used the "Junior" horse cultivator, with "bull-tongue" spades about 2 inches wide. It did great execution as a digger, but had the same fault, for that work, of throwing the moist earth under the surface, up where the wind dried it out. I still think the harrow-cultivator the proper tool for horse work.

The fields that were planted in May, and plowed and harrowed just before planting, needed no work for weeds; they did not appear again. It is quite likely they would, however, if the fields are irrigated.

Irrigation.—It is on the question of irrigating that the whole matter turns. The one man who spoke the most confidently about bean-raising, told me I surely would ruin my beans if I irrigated them. As the season was a very wet one, almost all were of the opinion we would not have to irrigate.

One of the largest fields was raised, partly as a test to see if beans could be grown on the upland without irrigation, and no expense was spared to make it a success.

I got, without irrigation, fine-looking plants, that came up to blossoming time in, at least, fair condition; millions of blossoms started, only to fall off before the pod was formed.

I doubt if a more thorough test could be given than one lot of ten acres (half black-eyes, half pinks). It was a fine piece of sandy loam, thoroughly worked by the "Campbell system of dry farming." He did not irrigate, and will get half a crop of black-eyes, the pinks burning down to nothing.

One lot, the first planted, would not have returned the seed had the owner not, at comparatively great expense, irrigated just before the blossoms were due. He will get half a crop, or less.

The one lot that came out a splendid success, a forty-acre field of black-eyes was irrigated three times; once when the plants were about 5 inches high, again about 3 weeks later, and again just before the blossoms appeared. He will harvest over a ton to the acre.

As one man stated it, "The way to raise beans is to force and nurse them ahead, by every possible means, until the blossoms appear, then stop sharply and let them ripen."

Harvesting.—The harvesting, while circumstances may make it unwise, ordinarily it pays well to go over the field twice, giving the slower ones a chance to ripen. The result is a much more even lot of beans.

While on the subject of harvesting, I want to suggest an inexpensive harvester: Build a saucer-shaped, perforated board platform on the top slats of a hay wagon, upon which the unhulled beans are forked and flailed or rolled out. As the beans fall through they are caught on a canvas, stretched from the second row of slats to a tin pipe fixed in the bottom of the wagon bed. This tin pipe leads to the sack. If they need extra cleaning, it can be done later.

This will save many beans from being split, save two men's time, make easy handling and leave the trash scattered over the field for the plowing under.

There are many fields scattered through the two irrigation districts at Modesto and Turlock and below, where with little work irrigating could be done by furrows. If planted in beans, it would be both a benefit to the land and incidentally make more money than the land ever made before.

Conclusions.—Here are the lessons taught by the summer's work and observation:

First—Beans cannot be raised on the unirrigated upland, even by the "Campbell system of dry farming," in the wettest seasons.

Second—Planted not earlier than May 1, preferably from May 7 to 20, in any of the land usually farmed in that part of the valley and properly irrigated, a splendid return is almost certain to follow.

Third.—If the moisture has gone below the top 3 inches, at the time of planting, the one safe way is to wet, plow deeply, and harrow the land just before planting, taking the larger fields in sections, if possible. This is quite worth while, on account of the weeds alone.

Fourth.—While it is, doubtless, unwise to flood the beans under a hot sun, the splendid success noted above was irrigated by flooding, and the ground baked so quickly it could not be properly cultivated. It evidently did not hurt the beans much.

In closing I want to offer a suggestion for increasing the yield of small acreage lots, where the conditions are right for it.

It takes land that will distribute the water widely by capillary attraction.

First wet the land, plowing deeply and harrowing thoroughly and deeply. It will well repay this extra work. plant two or three beans every 6 or 8 inches, in rows 10 inches apart, or as near this arrangement as possible, even 8-inch rows.

Plant in series of rows as wide as can be watered from the furrows at the sides, say six rows ten inches apart, then a furrow space of 30 inches, another six rows of 10 inch and 30-inch furrow space, and so on. In irrigating, run the water in the furrow spaces only, but use enough to soak through the six rows.

This plan will require hand cultivating, but will more than double the yield; and as beans rather help than exhaust the land, will do no harm.

One would have to arrange a wheat-drill for planting beans, or a regular bean-planter, supplemented by a "Junior No. 4" will do the work.

This plan returns most happily, where a family is trying to earn a living from a small place, while waiting for the trees to grow.

WILLIAM R. LEE, M. D.

Los Angeles.

THE MARKETS.

Wheat.

The wheat trade in and about San Francisco is very quiet this week, and speculating is being done to a very limited extent only. In fact, the past month or two has been quieter and sales have been fewer than in previous years. The price is down and farmers are holding with a determination to win out. Buyers, on the other hand, are showing a disposition to pay no more than present prices, as they hold that there is little prospect of an advance. A good portion of the crop was sold earlier in the year. As was the case last year, very little is expected in the way of exports this season from California. Receipts of wheat at Port Costa will be greater this year than heretofore. The wheat market up the coast continues to be exceedingly dull and values in that section have declined a trifle. Some growers there are selling only enough to pay harvesting and living expenses, and will hold the balance of their crops for an advance. Growers in Oregon and Washington are in a little better shape financially this year than usual, as they have had several prosperous years recently. Another feature that is causing growers to hold back is the fact that they are afraid of dry years, floods, etc. At all events, they are holding liberal supplies for seed purposes. Reports from Southern Russia and the Danube provinces show a very poor quality of wheat and accordingly the European demands for American wheat are expected to be a little more than normal. The United States will have to furnish a good part of the European deficiency. Crop reports throughout the United States show a good yield, however, and it is expected that a considerable export will leave this country. California wheat is especially good this year, but in other sections of the country reports show a very poor quality.

Flour.

Flour is probably attracting more attention at the present than anything else in the local market. Flour is being used in enormous quantities in San Francisco and not a little is being unloaded in this city. Prices are gradually decreasing, however, sympathizing with wheat, but as the article is an absolute necessity, the price is not effecting the sales to any marked degree. Reports from up the coast show a decided drop in prices. Milling interests in that section have, in consideration of the decline of wheat, established the price of flour at 20 cents per barrel under quotation for last week.

Barley.

Activities in this line are very much the same as last week, and despite the fact that barley is in big demand, prices range about the same as usual. The same tendency to hold produce is showing itself among barley growers and buying is limited. Activities in San Francisco are, of course, no sample of what is being done throughout the State, as all the local mills and warehouses are burned and the crop cannot be handled in this city. There is a good demand for barley here, however, and an enormous amount is consumed daily. The yield has been good this year throughout the State, and it is estimated by local dealers that California will rank up pretty well in the exportation of barley. The new grade of Chevalier barley is attracting a little more attention than any other kind and prices for this variety rule a little above the market. Northern growers are holding for higher prices than buyers are willing to pay, and the market is in a deadlock in those parts.

Oats.

Local conditions in oats are about the same as last week and the market is uninteresting. Some little buying is, however, being done and prices rule about the same. The oat crop throughout the State this year is larger than usual and prices are not expected to go up. Nevertheless, many oats are being held by growers, and few offerings are being made. Oregon oats are a little more active than California oats at the present time, but buying even in that district is very conservative.

Corn.

Corn continues to be a scarce article in the local market, and dealers are very little interested. Shipments from the East are still reaching this city in a limited manner, but the demand is small and very few sales are being made.

Millstuffs.

The supply of millstuffs is about the same and the price is very steady. Some bran is reaching this port from the interior and dealers report a fair demand. Barley for feed purposes is in good demand and prices remain about the same. Oats are being used as feed to some extent, and it is expected that

demand for feed oats will increase as the supply is immense.

Seeds.

Nothing new has transpired during the past week in the seed market. Prices are fairly uniform and supplies just about equal the demand. Seed raisers are particularly well satisfied with the weather they are having for harvesting their crops and under such conditions very little time will be required to put the seed crop into the market. The anticipated shortage in the onion seed crop has proved to be about as expected and onion seeds are expected to be scarce this coming fall and winter.

Beans.

Receipts of beans are slowly increasing in San Francisco as harvest advances, and so far the quality has been excellent. If no more rain is had during the harvest, the quality is expected to be exceptionally good. Prices are holding up. The crop is proving to be as large as anticipated, and no shortage in any one variety is reported. Local dealers report a good demand for beans and the prices are expected to at least hold their own.

Wool.

Very little interest is being taken in the wool market in San Francisco as the warehouses have been temporarily incapacitated by the fire. Activities throughout the State are about the same as a week ago. Reports from Marysville show that the wool growers' association of that county has decided to have its fall sale on Monday, October 15, at the J. R. Garrett Company warehouse.

Hops.

Reports of hop conditions in various parts of the coast are conflicting. Reports from Mendocino county show the largest crop that has ever been raised in that county. It is estimated at being one-half as large again as last year. Lake county, producing 9200 bales last year, will have a yield of 14,000 bales this year. Reports from Washington show a decidedly reversed condition. The hop crop in that section is light and feathery, and constant rains are making harvesting very expensive. Pickers are getting dissatisfied with the wages they are making and hundreds are striking for better pay. Under present conditions hop growers in that section are not very cheerful.

Bags and Bagging.

Local dealers are fairly well satisfied with returns from the bag business. Bean bags continue to be in big demand and prices for these are good. Wheat bags have ceased to interest the trade, as harvest is pretty well completed. Prices hold up fairly well for grain bags, despite the fact that there is next to no sale for them. Cotton goods are receiving their share of attention, although the demand for flour sacks is very materially shorter than last year. Bale rope continues dull and dealers are carrying very little rope, as the demand has dwindled down to almost nothing.

Hay.

Arrivals of hay for the week are 4471 tons. This amount about equals the arrival for the preceding week. Conditions have kept along here fairly satisfactory. The railroad company has lifted the embargo on hay and shipments are now being made from various points, although the company is not yet able to furnish cars enough to move the hay directed toward this market. It has been fortunate that the rains have held off, but should a rain come soon, a great deal of hay that is still out will become damaged. The warehouses throughout the country are nearly full, and everything is being rushed to get the hay out of the fields as quickly as possible. The market here for a choice article of hay is decidedly strong, but the poor classes, of which considerable is now being sent in, are dull, neglected and difficult to move off even at our lowest quotations. Horses are working hard and the entire demand appears to be for the better varieties of hay. Alfalfa hay is now coming forward freely and is being taken care of on arrival at full market figures. The market on straw continues strong.

Butter.

The butter market has been more or less affected by the hot weather, and a good deal of dairy butter has come in in poor condition. This is meeting with a slow sale and is being offered at concessions. Strictly fancy creamery is in good demand. Cold storage stock is being quite freely dealt in and is quite firm.

Cheese.

Cheese is moving well in the better grades. A good deal of off grade which came in early in the week is still on hand. Receipts have been very light and are expected to continue small for some time to come.

Eggs.

Receipts of eggs have fallen off considerably and

strictly fancy have advanced slightly. The movement in cold storage stock continues large and Eastern eggs seem to be in better request. California receipts continue to show a large percentage of spoiled. The hot weather is making itself felt particularly in the egg market.

Poultry.

The poultry market shows a slight improvement, notwithstanding the fact that the heat damaged some of the receipts. As before, the call is largely for the very best stock, with a decided preference for heavy stock in both hens and roosters.

Vegetables.

Vegetables in San Francisco are very stable, and prices, as a rule, change very slowly. The supply in nearly every line is complete and the demand holds up enough to keep the daily receipts pretty well cleaned up. Tomatoes are coming in a little freer this week, and the prices are tending toward a slightly lower mark.

Potatoes.

Receipts of potatoes this week have been heavy and reports show a good, fair crop yet to come in. There is some shortage reported for Salinas, however, and prices for these potatoes are expected to be better. The quality of the crop is excellent as far as is yet known. There has been a decided advance in potatoes as compared with a year ago, and farmers this year are receiving returns that are very encouraging.

Fresh Fruits.

Dealers report the fresh fruit market as being in a very satisfactory condition, with receipts of nearly every variety just about equalling the demand. Peaches are plentiful and only the good qualities are bringing good prices. The quality is exceptionally good, however, and few are being graded as second-class. Receipts of grapes are a little heavier than last week, and prices are only moderate. Apples are coming in in good shape and good bellfleurs are bringing \$1 and \$1.10. Pears are not so plentiful and prices are ranging from \$1.15 to \$1.25 per box. Plums remain the same as last week, and the supply easily equals the demand. The first shipment of Tokay grapes recently left Jodi for New York. The grapes were in excellent shape and coloring, and are expected to bring top prices. Apple picking has commenced in the Redlands district and the crop is light. Grapes are being contracted to wineries to a considerable degree and prices ranging from \$15 to \$20 are being received.

Dried Fruits.

Dried fruits are reaching the market in fair amounts this week, and the quality is very good. Some damage is reported from some parts of the country on account of the recent storm, especially in the Yuba and Marysville districts. The fact that the canneries are receiving so much of the crop this year is making the quantity of dried fruit shrink below its normal figure.

Nuts.

The California walnut situation is pretty well settled now, and otherwise nuts are not attracting much attention. Some little attention is being paid to almonds, however. The crop shows an increase over previous years, especially in the soft-shelled variety.

Honey.

Honey remains about the same as last week. Large stocks are on hand and the prices are ruling about uniform. There is a big demand locally for comb honey, and the market is beginning to open up in the fancier grades.

Citrus Fruits.

Receipts of citrus fruits are increasing to a certain extent as time goes on, but the market has not as yet assumed a very settled character. Fancy lemons are commanding excellent prices and the supply is fairly good. Oranges are about the same and receipts are only fair. Mexican limes are beginning to get scarce and prices are looking up a little.

Raisins.

California raisins are bringing top prices this year, and the growers are beginning to think that their once pessimistic mood was altogether uncalled for. Dispatches from New York show that California raisins are firm and are bringing not less than 6 1-4c. Packers are paying growers 4c in the sweat box. Fresno raisins are beginning to flood the market and prices in that district are looking up.

Horse breeding in Japan is being fostered by the Government, \$375,000 having been voted for establishing a central bureau and a number of stud farms in various parts of Japan. The Government proposes to purchase 1,500 stallions, selected from various countries.

THE IRRIGATOR.

THE NATIONAL IRRIGATION CONGRESS.

By Professor Samuel Fortier: A Report to President Benjamin Ide Wheeler of the University of California.

The Irrigation Congress recently held at Boise, Idaho, was attended by about 1,300 delegates, representing 33 States and Territories. Governor Pardee being unable to attend, the Congress was called to order by the vice-president, Mr. L. W. Shurtliff, of Utah. Mr. Shurtliff being in poor health, called Senator Carter of Montana, to the chair, who occupied it for the first two days, and he was followed by Governor Mead of Washington, who, in turn, gave place to Governor Chamberlain of Oregon.

It was admitted by the large majority of the delegates present that this fourteenth convention was the most successful ever held. The addresses were not only instructive, but aroused the greatest enthusiasm. With few exceptions, notably that of Senator W. B. Hepburn, who criticized the forest service, the sessions were quite harmonious. There was no attempt, as was predicted, to divert any portions of the funds of the Reclamation Service for drainage or other purposes. A delegate from South Carolina presented the urgent needs of his State to provide drainage for the swamp and overflowed lands, but he was emphatic in his statement that South Carolina did not wish to take one dollar from the irrigation fund, but rather to obtain the support of Western States and Territories in its effort to obtain from Congress an appropriation for that purpose.

A new departure was made by the last Congress in the appointment of several committees to undertake certain lines of work during the interval that would elapse before the meeting of the next Congress. One of these was the appointment of five delegates to sit as a commission to consider the question of interstate streams. Elwood Mead is chairman of this committee.

Another committee of five members was appointed in accordance with the following resolution:

"We recommend that the President of this Congress appoint a committee consisting of five members of this Congress, whose duty it shall be to secure the widest publicity of scientific information concerning irrigation, with the view of educating the new settler on irrigated lands in the proper use of water, stimulating the older users of water to a full appreciation of the value of improved methods, and to secure the publication throughout the United States of such information as will serve to inculcate a full recognition of the advantages of irrigated agriculture.

"This committee shall have the power to appoint a secretary at a salary of not to exceed \$25 per month, and incur an expense of not to exceed the sum of \$200 for stamps and incidentals, including stationery, which sums shall be paid as other expenses of this Congress are paid, and said committee shall make a report of its work at the session of this Congress for 1907."

The members of this committee are Frank C. Goudy, Denver, Colo.; C. R. Reeves, Weiser, Idaho; Dwight B. Heard, Phoenix, Ariz.; F. H. Ray, Helena, Mont.; and myself. In the organization of this committee I was appointed chairman, and L. G. Sinnard, of San Francisco, secretary.

It was my privilege to introduce the following resolution, which was passed with little opposition:

"Whereas, The building of irrigation works is but a means to an end, since the ultimate success of all irrigation enterprises, whether public or private, depends on the intelligence, skill and industry of those who settle on the lands, and

"Whereas, The organization of farmers' clubs, the holding of farmers' institutes, the establishment of agricultural and industrial high schools, the carrying on of practical experiments for the benefit of the farmer, and the training given by the agricultural colleges and experiment stations, are all valuable agencies in the upbuilding of rural communities in irrigated districts;

"We heartily commend and endorse the work of these various agencies, and urge upon the Legislatures of all Western States and Territories the granting of increased appropriations for these purposes."

The Outlook.—After listening to the addresses, papers and discussions, which occupied four days, one could not help but reach the conclusion that the prospects of the arid region were never so bright. The surveys that are being made and the construction work that is being carried on by the Reclamation Service meet with the approval of the Western people generally. Under the incentive of good times and the popularity of the policy of reclaiming Western lands, private enterprises are becoming much more active, and are reaching out for the control of the smaller projects. I visited a dis-

trict at Twin Falls, Idaho, in which 30,000 acres of sage brush land had been converted into irrigated fields in the short period of 18 months. This was done through the agency of a corporation operating under the Carey act.

Notwithstanding the bright prospects of the present, there are many who foresee serious difficulties ahead. There can be no question, I think, that the weak feature of the National Irrigation Law is about to be tested. It consists in securing the right kind of settlers for the various projects and in giving them a good start on the road to success. If these settlers can establish homes, render desert tracts productive, and at the same time pay the Government for the cost of their water rights, the wise provisions of the National Irrigation Law will be clearly demonstrated. On the other hand, if the settlers on the land are unsuccessful they will be unable to return to the national treasury the cost of their water rights, and the reclamation fund will be slow in starting to revolve.

President Roosevelt in his address stated "that there is now no question as to where the work shall be done, how it should be done, or the precise way in which the expenditures shall be made. All that is settled. There remains the critical question, of how best to utilize the reclaimed land by putting them in the hands of actual cultivators and home-seekers, who will return the original outlay in annual installments paid back into the Reclamation Fund."

Director Walcott and Chief Engineer Newell stated that they were approaching the crucial test of the National Irrigation Law. Both regarded the prevention of speculation in lands under Government projects, their early settlement by industrious people, and the successful production of crops as the chief essentials to success.

In my humble opinion the present is a favorable time for all agencies which have for their main purpose the welfare of the settler on irrigated lands to come to his assistance. By a well directed and united effort, much valuable information and assistance can be given him which will tend to lessen the mistakes common to new conditions and increase his success, thereby strengthening the weak features of the National Irrigation Law.

In this connection I believe the Agricultural College and the Irrigation department, of the University, will become potent factors in showing new as well as old settlers how to get the largest possible profits from small irrigated holdings.

Berkeley, September 18th.

THE VINEYARD.

THE GRAPE IN OREGON.

From an address by Mr. W. K. Newell, president of the Oregon State Board of Horticulture, at Salem, Oregon.

Some six or eight years ago we succeeded in stopping the importation of the Concord grape from New York and Ohio; it was formerly customary to ship in a few cars of New York grapes to Portland and Seattle, and other places, but about 1898 we succeeded in stopping that, and now Oregon and Washington produce enough Concord for home consumption, at least. We also import less grapes from California, but I think we might do still better both by growing the California varieties of grapes, and by growing more of our American grapes, which, to my idea, are better eating than the Tokay, so people will use more of them, and not buy so much of the California product.

Last summer at the Fair there was certainly a great object lesson for our people on the subject of grape growing; the finest Tokays that were exhibited anywhere at the Fair, from California, Idaho, or anywhere else, came from Southern Oregon. The Tokay is one of the most popular of the European varieties, and the Oregon Tokay was certainly the finest at the Fair.

I do not, however, advocate the growing of European varieties in the Willamette Valley, although a great many have made a success in growing Black Hamburgs, some of the Muscats, the Sweetwater, and some Tokays, but the Willamette Valley should grow the larger and better varieties of American grapes, and let Eastern and Southern Oregon produce the European grapes, as they require more heat and sunshine than do the American varieties.

The grape grower wants to pick out a hillside location of some kind; of course, the grape will grow over a wide section and succeed, but to make a commercial success, you want to get the best location you can. No one need be barred out of grape culture for home location, but if you are going to grow on a commercial scale an elevation of 200 or 300 feet is advisable, and on a southern slope, if you can have it. If you cannot get this, then choose the next best location. The soil must

be well drained about the roots; and soil that produces good fir trees is good land for grapes. It does not need to be particularly rich; the grape vine is inclined to make too much wood instead of too little.

I will speak more particularly about Willamette Valley grapes as that is the section in which I have had most experience.

In planting I would plant four-fifths Concord, then some Sweetwaters for the first early grape. I find the markets here require a blue or black grape, rather than the red, white or green; the white and green are very much at a discount. Moore's Early is another of the best early grapes, so far as I have tried them, coming in three or four weeks ahead of the Concord; then for a white grape, the Niagara or Moore's Diamond; for a red grape the Delaware, Brighton or Catawba. The greatest trouble with the Moore's Early is that it is in most localities a light bearer and the bunches are often imperfect. The Worden is a fine variety, but if there are heavy rains in September they are apt to crack badly and fall off the stems, and any one who is going to grow many grapes for shipment don't want to go too heavy into Wordens.

In planting, set them out seven or eight feet apart in a row; if not set too close together they are more easily cultivated. It has always been the custom to train American grapes on a trellis, and the European to a stem, and it is always best to follow those lines as they are adapted to that method of handling. Cut your yearling vine back to two buds for the first season, and let the two grow a little while until they become well enough grown so that they will not be easily broken off, as when the bud first starts out it is very tender. Let them grow until they are a foot long, then remove one and keep the other vine tied to a stake and let it grow the first season. The second season, if the vine has made a good thrifty growth, cut it back to 16 or 18 inches from the ground and train on a wire trellis. I use cedar posts and run the top wire four feet from the ground, the bottom wire two feet, then spread your vine, making the head of the vine come just under the lower wire.

It must be remembered that it is the year-old wood that produces the fruit; if other shoots bear in rare instances, the fruit is small and inferior. By renewing the vine each year you will have plenty of new wood produce the grape. You have got to be providing always a year ahead for spurs to grow your wood for next year. There always wants to be a spur at the base of the fruit bearing branch, growing for next year, in this way you will always have new wood and your vine will be kept up indefinitely. A thrifty young shoot from the bottom may be trained to take the place of the original vine, which may, if desired, be cut back to the ground. With a little care a vine can be kept bearing in this way many years. Do not allow your vines to bear too much.

Summer pruning is to be followed to some extent. After the grapes have set, say about the 10th or 15th of June, go over your trellis and pinch off the ends of the vines rather than let them get too long. Then, about the middle of July, go over them the second time, and pinch off the suckers that have started; this is about all the summer pruning you will need to do.

It used to be thought here in Oregon that it was necessary to cut out the leaves to let the sunlight in on the grapes. That is a mistake. Grapes will ripen the same as other fruit and the leaves should be left on to feed the grapes. We always find the first ripe grapes among the leaves close to the ground.

A progressive Arab of Cairo is sinking wells and installing irrigation pumps at the foot of the pyramid of Cheops, and the Sphinx, after gazing thousands of years on sand wastes, soon will be looking out on green fields. This is one of many demonstrations of the change from the old to the new in Egypt.

The teak industry of Siam is being interfered with by the stealing of elephants, reports the British consul at Chiangmai, the headquarters of that industry. The teak trade there is practically monopolized by four firms, three British and one Danish, and large numbers of elephants are employed in the forests in shifting the logs. These huge beasts are big propositions for kidnapping, yet three firms report the loss in 1905 of 33 animals, worth \$55,000. Recovery of a stolen animal is rare.

Consul James Verner Long, of Patras, reports that forecasts covering the present year's crop of Greek currants place it at about 148,000 tons. Crop estimates at the beginning of June indicated about 10% less than that of last year. This view has since been sustained, and is still considered correct, notwithstanding numerous reports reaching Patras about a still larger shortage.

THE VINEYARD.

THE FAMOUS OLD GRAPE VINE OF MONTECITO.

There has been inquiry of late about this famous old vine and data to compare it with some later "big vines" grown in the same district. We are fortunate in finding the following item which was published in "The Alta California" some time in the year 1870:

"The Big Grape Vine"—California Ahead.

[Professor George Davidson of the United States Coast Survey, lately in the region of Santa Barbara, measured the world renowned grape vine of that place, and has handed us the exact measurement of the trunk of the vine which has so often been told in the East, and as often denied. "It is a California yarn," they say, but Professor Davidson is authority, having taken the measurements himself.—H.D. ALTA.]

"In looking over some of my memorandum books, I find the following measurements made by me in November, 1869, of the large grape vine growing at Montecito, near Santa Barbara: circumference of the main trunk, at the ground, 3 ft. 4 in.; circumference under the spreading of the main trunk, 3 ft. 4 in.; circumference where the main trunk branches, 5 ft. 2 in.—this is about 5 ft. 6 in. above the ground; extent of the arbor, 23 yd. by 21 yd.; and at their limits the branches are 3 in. in diameter, and kept cut to prevent it covering more ground.

"The grape is that known as the 'Mission,' and the yield is very great. A small trickling stream runs directly past the main roots of the vine, and gives it a plentiful supply of water in the driest season. There is a young vine of 15 years' growth near the large one; it is only 2 ft. 5 in. in circumference at 3 ft. from the ground."

It will be noticed in this description that the grape vine was one solid trunk, and not two or three twisted together, as one now exhibited as a show vine near Santa Barbara.

What Became of This Vine.

The grape vine had been known to the professor from 1850, when he was on duty in the Santa Barbara Channel, and he had retained a lurking desire to make a home under the shadow of the Sierra Santa Ynez; so in the fall of 1869, when he was again on some special geodetic work, he revisited the grape vine, learned who the claimants to the rancho were and offered them a very liberal sum for 10 or 20 acres, although land with unsettled title was worth not more than a dollar and a half per acre. The parties would not agree. When the claim was decided for one party, it soon after happened that the grape vine was found girdled one fine morning; and so passed what to-day might have been a unique specimen in viniculture.

PATRONS OF HUSBANDRY

Tulare Grange Meeting.

To the Editor: Tulare Grange, P. of H., convened in regular session at its hall on the 15th.

The committee appointed at the last meeting to report resolutions of sympathy and regret on the death of Brother Julius Forrer and Sister Myra Field reported, the report was adopted and ordered spread on the records of the Grange.

The committee appointed to report on the amendments to the Constitution of the State Grange reported, and the report was adopted.

The committee appointed to consider and report on the Congressional free distribution of garden seeds reported adversely to its continuance. The custom should be discontinued. The report was

approved by the Grange. A communication from the Secretary of the State Grange on accommodations to be had at Santa Rosa on the occasion of the State Grange meeting at that place, commencing October 2, was read and filed.

Brother Emmet Barber gave a spirited address on the work of the Irrigation Congress, and the great benefits to agriculture and to the nation by irrigation, of which storage of water by the United States Government, is of vast benefit both in extending the benefits of irrigation, time and territory considered and in limiting the destructive effects of floods.

The subject of the day, "What should be the character of discussions in this Grange," was taken up.

The discussion was lead by the Worthy Master. It was agreed that such subjects as are of importance to the promotion and welfare of agriculture should have first consideration, but that all subjects pertaining to the welfare of the community at large should receive careful consideration, as on the welfare of the community depends the welfare of agriculture.

Mr. Edward M. Ehrhorn, Deputy Commissioner of Horticulture and State Horticultural Quarantine Officer, being present, was invited by the Worthy Master to address the Grange. Mr. Ehrhorn stated he is now visiting the various counties of California in the interest of the fruit grower and the horticulturist. He was pleased to have an opportunity of addressing such a body, representative of the industry; the industry itself, that of agriculture, having its ablest promoter in the Order of Patrons of Husbandry, of which Tulare Grange is a representative subordinate body.

Mr. Ehrhorn spoke of the pests of the orchard, insectivorous and fungus, how they should be combatted, and remedial measures therefor. Pear blight is a bacterial disease for which there is no known remedy, except digging up and burning root and branch. No pome tree affected by the blight should be permitted to remain in the orchard; until such a tree is completely burned up, it is a source of contamination to all other like trees. Peach blight is a fungus disease for which spraying with Bordeaux mixture at the proper time and manner is a remedy. For a proper preparation of the mixture and the proper time of its application, by spraying will be made known by the county horticultural commissioners. The Bordeaux mixture for shot-hole fungus should be stronger than that required for curl leaf, another fungus disease, the proportions recommended by Mr. Ehrhorn being 10 pounds of bluestone, 10 to 12 pounds of lime and 50 gallons of water.

For the better understanding of the science of agriculture and the detection and treatment of insectivorous and fungus diseases, Mr. Ehrhorn believes, our rural and city schools should instruct their pupils, from an early age, in entomology and botany.

Mr. Ehrhorn is a member of San Jose Grange, P. of H., and a thorough believer in the educational merits of the Grange and the advantages it would be to the State to have ten well sustained Granges of the Order of P. of H., to the one we now have. Mr. Hunt of the College of Agriculture, University of California, is now here arranging with Mr. Bearss, foreman of the Experimental Station, for a systematic spraying for peach blight, commencing the latter part of this month and continuing until January.

J. T.

In the September World's Work Isaac F. Marosson describes the work of David Lubin, the California merchant, at whose instance the King of Italy has founded the International Institute of Agriculture.

THE VALUE OF FERTILIZERS.

The Ohio Agricultural Experiment Station at Wooster has just issued a condensed statement of its work with fertilizers, which is very suggestive.

For twenty years the Ohio Experiment Station has grown potatoes, wheat and clover in a three-year rotation on one of its farms in Wayne county, a farm no better in natural fertility than thousands of others which may be found in this region of the State.

The land under experiment is divided into three sections and each crop is grown every season. Each section is subdivided into plots of one-tenth acre each, every third plot being left continuously without fertilizer or manure, while the intervening plots have received different combinations of fertilizing materials, the fertilizers being divided between the potato and wheat crops.

The average yield of wheat in this test for the last ten years has been 25 bushels per acre on the unfertilized land. The application of 160 lb. of acid phosphate per acre to wheat, following a like application to potatoes, has increased the wheat yield by five bushels. When to this application, 100 lb. of muriate of potash was added for each crop, the yield of wheat was increased by seven bushels, while the use of a complete fertilizer, made up of 160 lb. of acid phosphate, 100 lb. of muriate of potash and the equivalent of 160 lb. of nitrate of soda for each crop, has increased the total yield of wheat to more than 40 bushels per acre for the 10-year average.

The increase in the potato crop in each of these cases has more than paid for the fertilizer, leaving the increase in wheat as net gain, a gain which has been further augmented by a considerable increase in the yield of clover.

Not only has the yield been maintained at a high point, but it seems to be steadily increasing; the average yield for the three plots which receive the combination given, and which are located in different parts of the field, being 38½ bushels per acre for the first half of the 10-year period, and 42½ bushels per acre for the second half.

It has, therefore, been possible to produce 40 bushels per acre in Ohio as a 10-year average, and to accomplish this result by a method which has more than paid the cost.

It is the general observation of farmers that wheat does exceptionally well when it follows potatoes, and this fact in part accounts for the large yields obtained in this experiment. The fact that the land was in good condition to start with—part of it having been cleared from the forest for purposes of this test, must also be borne in mind. But on another of the Station's Wayne county farms, one which had been reduced to a very low state of fertility by long-continued and exhaustive cropping, an average yield of 28½ bushels of wheat per acre has been maintained for the same period in a rotation of corn, oats, wheat, clover and timothy.

In this test the unfertilized yield has been 9½ bushels of wheat per acre. This yield has been increased to 28½ bushels by a fertilizer of the same composition as that above mentioned, namely: 160 lb. acid phosphate, 100 lb. muriate of potash and the equivalent of 160 lb. of nitrate of soda per acre.

In this case, as in the potato rotation, the increase in the other crops of the rotation has more than paid all the cost of the fertilizers, leaving the increase of wheat as clear gain.

In this case, also the rate of gain is increasing, the average yield for the first five years of the period being 25 bushels per acre, as against 32 bushels for the last five years, and there seems to be no good reason to doubt that after the

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wasted fertility of this land has been restored, it will be possible still further to increase the yield to a point equaling that in the experiment first mentioned.

AGRICULTURAL REVIEW

Continued from Page 205

ists are even unable to employ a sufficient number of Japs. In many places where the grapes were ready for picking two weeks ago, not a vine has been touched. Vineyardists are offering \$2.00 per ton for picking and some employees are earning as high as \$3.50 and \$4.00 a day.

There has been some talk on the streets of closing the schools for a week or two so that the older boys may go out into the vineyards and earn wages, at the same time helping the vineyardists out of a serious predicament.

Yuba.

A CURIOUS VEGETABLE.—Marysville Appeal, September 17.—There is on exhibition at Ranchi's Red Front store a curious vegetable. It was raised at the Banner mine by George A. Nihell and is known as a snake cucumber. It does not belie its name.

WANTS LAND TO RAISE SUGAR BEETS.—U. L. Dike, a prominent real estate man of Los Angeles, who is negotiating the deal for the subdividing of 15,000 acres of land below this city, went to Sacramento yesterday morning and there met Morris Brook, a prominent real estate man of the Capital City, and F. H. Case of Three Rivers, Mich., and they came to Marysville on the local last evening and today Mr. Case will go down and look over the lands.

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HOME CIRCLE

THE PASSING OF CHINATOWN.

And the strange, strong breath of the
Orient town
That clung to the salt-sea air,
And the deep, old street, and the sandal'd feet,
And the "pipe fiend" in his lair—
Oh, where are the lanterns that were
swung about,
And their dragons of yellow and red,
And the shuffling string of yellow men,
And the babe with the bells on its head?
Where are the gambling clubs now gone,
With their doors of iron and oak,
And the passage below, and the joss-house bells,
And the pungy smell of smoke?
And where is the pawnshop over the way,
And the fish and the vanished pork,
And the bound-foot maid, and the "Meli-can chink,"
And the guide, who did no work?
* * * * *

Gone, all gone, in a puff of smoke,
To the realm of the far beyond,
And never again in the white man's town
Will a Chinatown be born.
They called it a pest and cursed it well—
But they must all go and see.
And they loved it, too—'twixt me and you—
That town of the heathen Chinese.
* Sunset for August.

AN IDYL OF HARDSTONE DISTRICT.

The hot beams of an August sun fell almost perpendicularly on the red clay road that ran through Hardstone district, a sterile and shadeless collection of much-tilled and small-producing farms on the seacoast of our land. The only good feature about the place was its sea-breeze, rich with the aroma and coolness it gathered in journeying over thousands of miles of salt water.

Along the road, his brow beaded with perspiration, Obed Strong plodded stubbornly, as if both heat and cold were alike powerless to affect him.

He was commonplace enough in his looks and dress. His coat was slung across a stick on his shoulder, from which also was suspended a bundle; a rough straw hat covered his head, and still rougher boots, red with the dust of the road, shrouded his feet; while a coarse shirt, open at the throat, and a coarser pair of trousers, completed his attire.

Had a traveler met him he would have passed him by, thinking him a rough farmer, made after the general making of his kind; but Obed Strong was a different man from the generality of his class, and his face was one to study and remember.

It was dark and stern now, and there was a deep glow in his eyes that sat deep in the shade of shaggy brows, and the lines about the brow were hard and firm. The lips were tightly pressed together, and the nostrils swelled and compressed with the working of his lungs, quickly and savagely; and his hands were clenched, so that the cords stood out in hard knots.

Some great passion was stirring the man's soul with its power; and he would have been dangerous even to a friend, had that friend sought to stay his way.

As he reached the brow of a small hill, where a single tree stood like a sentinel, he saw, sitting at its base, a woman's form. She was clad, like him, in coarse habiliments, and her hands showed signs of labor. Like his, her face showed signs of power and passion, but the eyes were full of tears and pleading, while his were full of wrath. As he stopped she arose and came toward him.

"I heard you were going, Obed, and I came here to have a few last words with you."

He did not speak, but his face grew

sterner, harder, if that could be, and the knots on his hands worked with the added strain he forced on them.

"Perhaps"—and her voice faltered a little—"perhaps I have done wrong, but I love you, Obed, and we may never meet again."

Her bosom rose and fell, as if a sob was striving to break from its hold, but she stifled it and went on.

"I have refused to marry you, Obed, because I have a sick father to tend; a man full of whims and notions, who would fret and tire you and cause you to feel that I had brought you trouble. Please do not think me hard, for I have thought only of you. Forgive me, Obed, for oh, I am weary and heartsick, feeling that you are going from me."

He threw down the stick that held his coat and bundle, and the words came hotly forth, as if time was precious, and much was to be said:

"You need not be weary, for I am willing to bear your burdens; and if you are heartsick because I am going away you have it in your power to stay me with a word. Say that you will marry me in a month, and I will stay here until you are willing to let me go, Phoebe Donne."

Her head was bent low now, and the tears would not be stayed.

"Obed, you know I love you, but I can not think it right to bring to you only fretting and toil; for the care of my father is a toil and a trouble, though I would willingly bear it all if I could keep you here near me."

"You can keep me here, and with you. Why, what were my love worth if it would not help you in your toil and be glad to share your cares? Do you think that being a man, I have not feelings but those that are selfish? I tell you, Phoebe Donne, I am willing to work for you, help you, love you, in all ways that a man can."

"I know it, but there are trials that sour love; and a man's patience fails before the many trials of another man's whims, and then there comes the feeling that love has imposed upon him burdens he has no right to bear, and so he broods and grows cold, and his love dies; and I could not live if I lost your love."

The man stood silent. He was thinking of her words and of her acts. She loved him and was willing to lose that love so that she should not bring him care and toil. And he? Why, he was about leaving her simply because she would not marry him when he thought she should. Well, he was willing to take her, care and work included, if she would come, and was not that enough? No; for he forgot that he had shown only impatience when she had tried to reason with him, and was this the way to show her that he could bear the strain a sick man's fancies would entail?

She had forgotten this, but oh, he was so willing to take her with it all, and he loved her so, and to be put off when his heart was crying for her love and the power to call her wife. Then he conquered his hot words and said, more quietly:

"Phoebe, I may have been wrong and hasty in saying what I have, and in starting away from Hardstone, but the place is one to kill a man with work, for which he gets no pay; and then to have to put his love back, how far in the future he knows not, is very hard. See, I am willing to stay here, knowing, too, that in the West I can have a home and comforts I cannot get here for twice the toil. If you will marry me, I am willing to take all it will bring, of sorrow and ill, so that you are my wife. Is there more a man can do?"

"There is no more, and I do not ask you to do more; but will your love be so strong that it can see me bestow care and attention on another, when you may desire my services? That is the point,

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Obed, regarding which I have hesitated. Oh, if I only knew?" A smile, calm and restful, stole over her face.

As she paused, a breath of sea air came wandering up from the low lying beach and seemed to linger about the solitary tree. Then the bird that had sought refuge in its branches broke forth in a low song, that sounded like a voice of hope and promise.

"Would you be willing to stay here, to put away the golden promise of the West, and bide the fancies of an invalid, for this? And she held out her toil-marked hand.

He looked at her, and then his eyes went wandering over the red hills to where, afar off, mountains covered with green rose like a wall against the sky. And he thought: "Is the smile and love of this woman, with toil and poverty, worth the promise of peace and rest, without it, in the distance hid by those mountains?"

Then his soul called his eyes back to her face, and he knew her love was better, even with poverty to share it, than the richest promise that lay beyond the mountains. So he took her hand and said:

"This is all to me, and, unless it can go with me freely, I will stay with it here."

Was it fancy? It seemed that to both of them a low voice whispered: "It is well." But around them was the glare of the sun, and the red, glaring land, and even the bird was still; yet the word had been spoken, and, though it was only a whisper, it gave them strength.

He stooped and picked up his stick and bundle, and together they walked on toward her home. It was a small cot standing in the shadow of a hill. A few vines and bunches grew about it, and, with a sickly green, strove to relieve the sameness of the scene.

In the doorway, reclining in a rough-built easy chair, sat an old and feeble man. As he saw them approach he uttered a peevish wish for them to hurry.

She turned and looked at her lover. He took her hand and, standing before the sick man, said:

"Mr. Donne, I have asked your daughter to be my wife. I think that it is in my power to help you both to rest and comfort. Are you willing to let me try?"

A strange look came to the old man's worn and care-lined face—a look of trust and hope.

"Bless you," he said feebly, extending his hands. They took them in theirs. A smile stole over the aged face, the eyes closed, the head sank on the breast.

Obed started to lift him, and started back. The weary sickness had ended forever and the trial of life had given place to the peace of heaven.

* * * * *

flow of a Western river. Trees and vines cluster round it and well-tilled acres, rich with the golden shimmer of ripening grain, stretch off from it. Children's voices in laughter ring among the trees, and the sunshine comes and goes, between the passing of the summer clouds.

And here the promise has come to Obed Strong; and the love of a true woman has made beautiful a life that had he not waited, might have been so dark that none would care to know its end.—Thomas S. Collier, in Elliott's Magazine.

DOMESTIC HINTS.

Swiss Egg.

Six Eggs, one-quarter pound cheese, one-third cupful cream, two tablespoonfuls butter, one teaspoonful mustard, one-half teaspoonful salt and cayenne pepper to taste. Cut the cheese into thin shavings, butter a baking dish and spread the cheese upon it. Upon the cheese distribute in small portions the rest of the butter. Mix the salt, cayenne, mustard and cream and pour half of the mixture over the cheese. Break the eggs into the dish, and, after pouring over them the remainder of the mixture, place in an oven and cook for eight minutes.

Indian Curry.

Take one onion, one ounce of butter, six or eight sweet almonds, two eggs, one slice of bread, half a pound of cooked meal, one tablespoonful of curry powder, butter. Put the slice of bread in milk, and grate the almonds into it. Beat the eggs in half a cup of milk, and mix all together with the meat minced fine, and a small lump of butter and the curry powder. Grease a pie-dish well and rub it with a little lemon juice. Put in the mixture and bake in a slow oven. When done turn out and pour some good gravy round, and serve with boiled rice. This is an excellent dish, and one highly to be recommended for a cold winter's day.

Asparagus Soup.

Get a small lean beef bone (5 cents), simmer two hours; allow three bunches of asparagus to boil three-quarters of an hour in pot; do not unite these until done; then cut off the tender tips of

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the three bunches and return to soup. Rub the asparagus stalks through the colander until all pulp has dropped into the pot; add to one pint of rich milk one teaspoonful of salt, one-half teaspoonful of white pepper; heat and thicken with medium tablespoonful of flour; pour into soup and allow it to boil up once. A delicious, light, creamy soup, particularly palatable in summer.

Cocoanut Candy.

Boil two cups granulated sugar with one cup boiling water till it threads. Have ready the stiffly whipped white of an egg and proceed exactly as if you were making icing for cake, beating the hot syrup into the beaten egg. Just before it cools and hardens add enough shredded cocoanut to hold together in firm balls. Drop by spoonfuls on buttered paper and dust lightly with powdered sugar.

Stewed prunes, pitted, spiced to taste with vinegar, cinnamon and cloves, sweetened and cooked to the right consistency, make a delicious spiced sauce to serve with chicken, turkey or veal.

HINTS TO HOUSEKEEPERS

Keep a dish of fresh water in the sick room to absorb impurities; change often.

Rub flat-irons with sandpaper to make them smooth.

A poultice of powdered slippery elm is very valuable for burns, scalds and bruises.

Whalebone that has become bent can be made as good as new by soaking it in tepid water for about half an hour.

The cane bottoms of chairs can be made tight again by moistening the cane well with very hot water and washing off, so that the cane becomes completely soaked, after which the chair must be set in the open air or in a strong draft to dry.

Damp shoes are very difficult to polish. Try putting a drop or two of paraffin to the blacking, and you will find they polish up at once.

A tin wash basin will last but a short time, as commonly used. To make it last a long time, keep the bottom painted with common oil paint.

To darken the eyebrows, make a strong brew of sage tea, straining through muslin, and to a pint of the liquid add a teaspoonful of alcohol. Add this to the eyebrows with a brush. It is perfectly harmless; in fact, it will stimulate the growth of the eyebrows.

Almond meal may be used instead of soap if the latter is irritating to the skin.

You cannot be too careful of what you put on your complexion. Many of the cheap face creams are made with a basis of white vaseline, or lard, both of which are extremely harmful to the skin.

To make the eyebrows grow: Four ounces of alcohol, two ounces of castor oil, fifteen drops of the oil of bergamot. Apply with a tiny brush night and morning.

To gain flesh live largely on boiled meats, bread and butter, starchy vegetables and cereals. Eggs are very good. Take two every morning before breakfast raw, adding a suggestion of lemon juice and salt and pepper to make them palatable.

To get rid of warts raise the skin by means of a stout needle or the tip of the nail scissors, and peel it off, and then apply colorless iodine, or diluted acetic

acid to the wart. If the acid treatment is used be sure to put a layer of cold cream on the surface of the skin lying around the wart.

Remember when putting meat in the ice chest not to place it against the ice. Ice draws the flavor out of meat.

Spread newspapers on a newly washed floor which must be walked upon before it is thoroughly dry. They will save footmarks.

Peach stains will readily yield to a treatment with spirits of camphor. Soak the stain for awhile in the camphor and then wash it in water.

CHAFF.

Didn't Pay.

Mary—They issued a hundred and fifty wedding invitations.

Jane—Did they get many valuable presents?

"No; they barely made expenses."

Unnecessary.

"Monsieur," said the duelist's second, "all is ready. Let me shake your hand."

"Voila!" exclaimed the duelist, with chattering teeth. "Can you not see eet ees shake too much as eet ees?"

The Other Way.

The teacher had been talking about a hen sitting on eggs, says English Country Life, and, with the incubator in mind, asked if eggs could be hatched in any other way.

"Yes, sir," said an experienced person of nine. "Put 'em under a duck."

"The Jones family is in mourning for a pet dog they have lost."

"Why don't they advertise for it?"

"His wife hadn't thought of it, and Jones is afraid some one might read it and return the dog."

Would Not Interfere.

"It's raining hard," said the boy who looked through the dripping window-pane. From behind his paper his father growled: "I don't care—let it rain!" The little lad in grave surprise glanced sweetly up at him. "Why, I—I—was a-goin' to!" acknowledged little Jim.

Breaking It Gently.

Captain of Steamer—Madam, it gives me great pain to be obliged to tell you that your little boy's hat has blown overboard.

Fond Mother—Why, I thought it was tied on with a string!

Captain—Yes. That was just the trouble. The string did not break.

Thoughtful.

"Are you sure the sick man wanted me?" asked the physician, reaching for his hat.

"He didn't mention your name, but he's screamin' for some one that'll put him out of his misery, and I thought of you right away."

Hard to Please.

Mr. Snaggs was accosted on the street the other day by a beggar who was covered with a very remarkable mass of patched and ragged garments and who said:

"Mister, haven't you some old clothes you could give a fellow?"

Snaggs surveyed the beggar from head to foot and then asked:

"Are not the clothes you have on old enough for you?"

Suspicious.

"Some men are so suspicious," said the pessimist, "that if they went into the organ grinding business they would compel all the monkeys to carry little cash registers."

Teacher—Now, Johnny, what was Washington's farewell address?
Johnny—Heaven.

Officer (to man who has been knocked down by passing auto):—"You didn't see the number, but could you swear to the man?"

Victim: "I did, but I don't think he heard me."

You can please a woman by asking her advice; and you can please yourself about taking it.

The Daily Mail, in the course of an article on a certain ladies' society in America, says: "This list comprises those who, while sympathetically interested in the work of the organization, are prevented by age and other vbkg shr fwy dl AO (, 789000 vbg kq shrdluhrs work." The tact and delicacy of the Daily Mail is beyond all praise. We particularly like "shrdluhrs"; that is just how we should have put it ourselves.—Punch.

Propitious.

An English daily had the following advertisement: "Wanted—A gentleman to undertake the sale of a patent medicine. The advertiser guarantees it will be profitable to the undertaker."—Christian Register.

Druggist—Huh! you seem to think you are the boss in this establishment! New Clerk—Oh, no, sir. Druggist—Then why do you talk like a blooming idiot?—Chicago Daily News.

CORRESPONDENCE.

CO-EDS AND CORN COBS.

To the Editor: Seeing you are the apostle of the agricultural co-ed. I suppose you are allowed to magnify your office, as in your 15th inst. editorial anent Cora Dowling, "working as a day laborer." But I've heard of very nice girls in cornfields before. Girls that had learned, somehow or somewhere, to talk very prettily, too, and that's what girls are chiefly supposed to learn in college. Memory pictures for me Mother Eve, as John Milton described her, lamenting her banishment from the scene of her horticultural labors. Ruth, "breast high amid the corn," and Naomi, the silver-tongued and loving, step next from their page in the old, old story into imagination's living light. Then comes a scene from Macaulay's classic pen:

"The harvests in Arretium this year shall old men reap;

This year young boys in Umbro shall plunge the struggling sheep;

And in the vats of Lima this year the must shall foam

Round the white feet of laughing girls, whose sires have marched to Rome."

None of these women needed a "college education" to exhibit "initiative and quick appreciation of a situation." I should not be a bit amazed to find that Cora Dowling's grandmother or even her mother, had had the sense to help out her husband and the boys in the cornfield before Cora entered the grammar school. I've even heard it hinted that the girls found "husking bees," and such, "lots of fun."

Of course, you know that my too susceptible heart is always willing to bow down and do homage to all the "sweet girl graduates"; but, is not the marvel rather the other way. Is not this the marvel, that Cora was willing to do her share of the work because the average "college education" has a tendency to make its recipient feel a little too exalted to condescend to "manual labor"? Is not that one reason, to extend the subject a little, why bricklayers, carpenters, etc., who

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have learned to do work the world wants, are at a premium as compared with educated young persons, whose smattering of languages puffs them up with the silly idea that their little acquirement differentiates them mightily from the horny-handed farmer who makes their lives possible?

If your College of Agriculture can bring back young women from "afternoon bridge," with its sequels of insomnia, dyspepsia, nervous prostration, envy, hatred, malice, and all uncharitableness, into a genuine enjoyment of outdoor life and wholesome sweat of the brow, it will deserve such a building as will make every other building at Berkeley look like a singed tepee. Belief in Nature, wholesome labor, and noble motherhood, the creed of our grandmothers, is imperative to-day.

EDWARD BERWICK.

Pacific Grove.

[That is just what we are doing, Mr. Berwick. We just let you do all the scolding in the first four-fifths of your letter because the last one-fifth is all right. You are generally right in the end, but why do you always make such a fuss about it?—ED.]

Hartwell, Ga., Feb. 6th, 06.

DR. R. J. KENDALL Co.,
Gentlemen:—I have been using your remedies over 20 years, and find they are the best on the market.

Very truly yours,

A. A. Jones

HOW TO HAUL HEAVY LOADS

It is said that when common grease is used on the axles of a wagon, nearly half the power necessary to move it is used to overcome friction. If this is the case, the use of the best axle grease is nearly as important as a good horse. On the other hand, an axle grease that "gums" is nearly as bad as none at all.

A very clever idea to reduce friction and make it easier to haul heavy loads is a mixture of ground mica and mineral grease which is manufactured by the Standard Oil Co., and sold everywhere under the name of Mica Axle Grease. This is the most perfect lubricant for all kinds of wagons. The reason is that the finely ground mica in the mixture forms a thin surface or coating on the axle, that is almost frictionless. It smooths over or fills up any roughness or irregular surface on the axle, making an almost glass like bearing. The practical result as a load lightener is wonderful. Furthermore, after this coating of mica has formed on an axle, only a very small quantity of axle grease need be used, thus making its use a decided economy.

Mica Axle Grease is put up in convenient tin boxes, and is sold nearly everywhere in hardware and general stores. It saves horseflesh, money and time.

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AGRICULTURAL REVIEW

Glenn.

A FREAK SQUASH.—Orland Register, September 18: P. S. Mason brought a freak squash to the Register office Thursday morning which cannot but remind one of the Siamese Twins. It is of the variety known as the sweet potato squash, and is double. It has the long, crooked neck, and the two parts joined together the full length, the larger parts having only a thin connection. The vine upon which this squash grew was brought along and it was found to measure 41 feet and 4 inches—and this grown without irrigation.

Fresno.

THESE ONIONS ARE SURE PRIZE WINNERS.—Fresno Republican, Sept. 19: A. B. Price, who farms on the Laguna grant, twelve miles west of Laton, yesterday brought to the office of W. E. G. Saunders in this city a sack of prize onions. There were just 96 onions in the sack, the total weight being 100 pounds, the onions weighing on an average of over a pound each.

TESTING VINES.—Hanford Sentinel, Sept. 20.—At the experimental station in Fresno county some 300 varieties of grape vines are being tested for the benefit of the vineyardists of the county. These varieties embrace raisin, wine and table grapes.

BOUGHT SOME THOROUGHBREDS.—Oscar Duke, of Conejo, Fresno county, has purchased of B. V. Sharp, three hogs to add to his band and improve his stock. The three include one imported Poland China boar, and two thoroughbred sows of the same breed, and all are registered animals. Mr. Sharp has a fine herd of Poland Chinas, and Mr. Duke has bought good goods.

Kings.

POULTRYMEN POSTPONE MEETING.—Hanford Journal, Sept. 18: Kings County Poultry and Pet Stock Association meeting was postponed until Saturday, September 22, at 2 p. m., held in Justice Meadow's office. It is to be hoped that a large attendance will be present at the meeting, as important matters of business must then be transacted.

STATE MEETING AT HANFORD.—Horticulturists from All Over the State Will Be Her in December—Good Time Assured.—Hanford Journal, Sept. 18.—The convention will be in session several days—from the 3d to the 7th.

KINGS COUNTY DAIRIES.—Geo. W. Carr, a member of the firm of Chamberlain-Carr Co., stated Friday that he has recently received several inquiries relative to the dairying industry of Kings county, from prospective settlers and investors.

PROFITABLE DAIRYING.—Roy T. Bailey, foreman for W. J. Weber, the well known artesian well contractor, was in Hanford Friday looking for additional help to assist in putting down the fourth well for G. Martella, at the Dallas cheese factory.

In a conversation recently, Mr. Martella stated that by manufacturing his cream into cheese he received 33 1-3 per cent more from the product of his dairy cows than

if he marketed the cream in its natural state. He makes a shipment of cheese twice each week to Fleischman & Co., of Los Angeles, receiving a contract price for each shipment, of two cents per pound above the San Francisco quotations.

SOME FARMING OPERATIONS.—Hanford Sentinel, Sept. 18: W. A. Sage was in town Monday from his camp down near Alpaugh, where he has several traction engines attached to huge plows that are turning over the soil at a great rate. Mr. Sage and his company are going to sow about 20,000 acres to wheat on the lake this winter and are just getting a good start on the job. Mr. Sage states that the water is receding rapidly now and that the plows are following the water back as far as the soil is dry enough to plow. The water was turned in by the company, and is not a part of the lake, and there is no doubt that a great harvest will be the result of the preparations.

WINERY OPEN.—Hanford Journal, Sept. 20: There are now some grapes being brought to the winery, and in a few weeks that institution will be running full blast. A large quantity of wine has been shipped out lately, in order to make room for the product of this year's crop of grapes.

A GOOD YIELD ON A SMALL VINEYARD.—Hanford Sentinel, Sept. 20: R. R. Hitchcock, whose productive place is a short distance south of Armona, was a caller Friday. He has finished picking his 5-acre raisin vineyard, and reports having taken off 4055 trays therefrom. The trays are 2x3, and he says the grapes are of excellent berry. He finished picking Wednesday.

HANFORD PRODUCTS WON.—Hanford Sentinel, Sept. 20.—The Hanford cheese, made by J. V. Canham at his factory in Hanford, won a prize at the state fair, at Sacramento, the cheese scoring 94½ points. His Ribbon brand of butter, which scored 95 points, also won a prize. This butter was in competition with the product of northern counties, and the highest score was 96 points.

Madera.

SHIPPING HOGS.—Hanford Sentinel, Sept. 20.—D. G. Sanders, buyer for the Cudahy Packing Company, left Tuesday morning for Madera, from which place he will ship three cars of hogs. Mr. Sanders is doing a rushing business now-a-days,

and will ship eleven cars of hogs this week. The price is \$6.30 per hundred pounds.

Orange.

BIG BERRY PATCH.—Riverside Press, September 17: The latest development of Orange county's fertile acres is well-matured plans for a 140-acre strawberry patch and vegetable garden near Garden Grove.

SHIPPING PEPPERS.—Anaheim Gazette, September 20: W. C. Mauerhan is shipping green chiles to Los Angeles for local growers, shipments going as high as a carload and a half daily. He will ship 700 tons of green peppers, which bring growers \$25 per ton net, an exceedingly profitable rate. In Los Angeles these chiles are peeled and canned, and form a most healthful article of diet. There are also grown hereabout 50 tons of ground chiles, and 150 tons of evaporated peppers, which fetch growers ten cents per pound. Last year's chile crop brought in \$80,000. Mr. Mauerhan states this year's yield will amount to nearly \$200,000. Eight hundred acres are planted to this crop, and next year the area will probably be increased.

Placer.

FINE CROP OF ASPARAGUS.—Sacramento Union, September 20: Roseville, Sept. 19.—Louis Bahrs went into the business of raising asparagus. The industry is an entirely new departure in this district, and neighboring farmers were somewhat skeptical as to the success of the undertaking.

Mr. Bahrs has made a great success of it and will begin to reap a profit the coming spring, when several acres of the plants will be four years old and ready for cutting. He has plants in all stages of propagation, from small seedlings to three and a half years old, and in the near future will have many acres under cultivation.

DOES ALFALFA PAY?—Placer County Republican, September 20: Mr. Goldsberry has between thirty-five and forty acres in alfalfa, and buys six inches of water to irrigate it. He cuts three crops of hay, averaging a ton to the acre, besides pasturing fifty head of milk cows. He irrigates by flooding the whole field at one time, instead of in sections. Last year he got \$2 more a ton for alfalfa than for wheat or oat hay. This year also

alfalfa is higher than wheat or oat hay. Mr. Goldsberry is satisfied that alfalfa is a paying crop, even where it is necessary to buy water for irrigating.

BEATS THEM ALL.—Placer County Republican, September 20: J. C. Manning brought to the Republican office on Saturday an apple of the White Astrakan variety which beats anything we have seen. It was a perfect beauty, measuring sixteen and seven-eighths inches in circumference and weighing thirty-one and three-quarters ounces. The fruit was grown on Mrs. Manning's ranch southeast of the city, on rocky soil. The White Astrakan is one of the finest cooking apples grown.

Riverside.

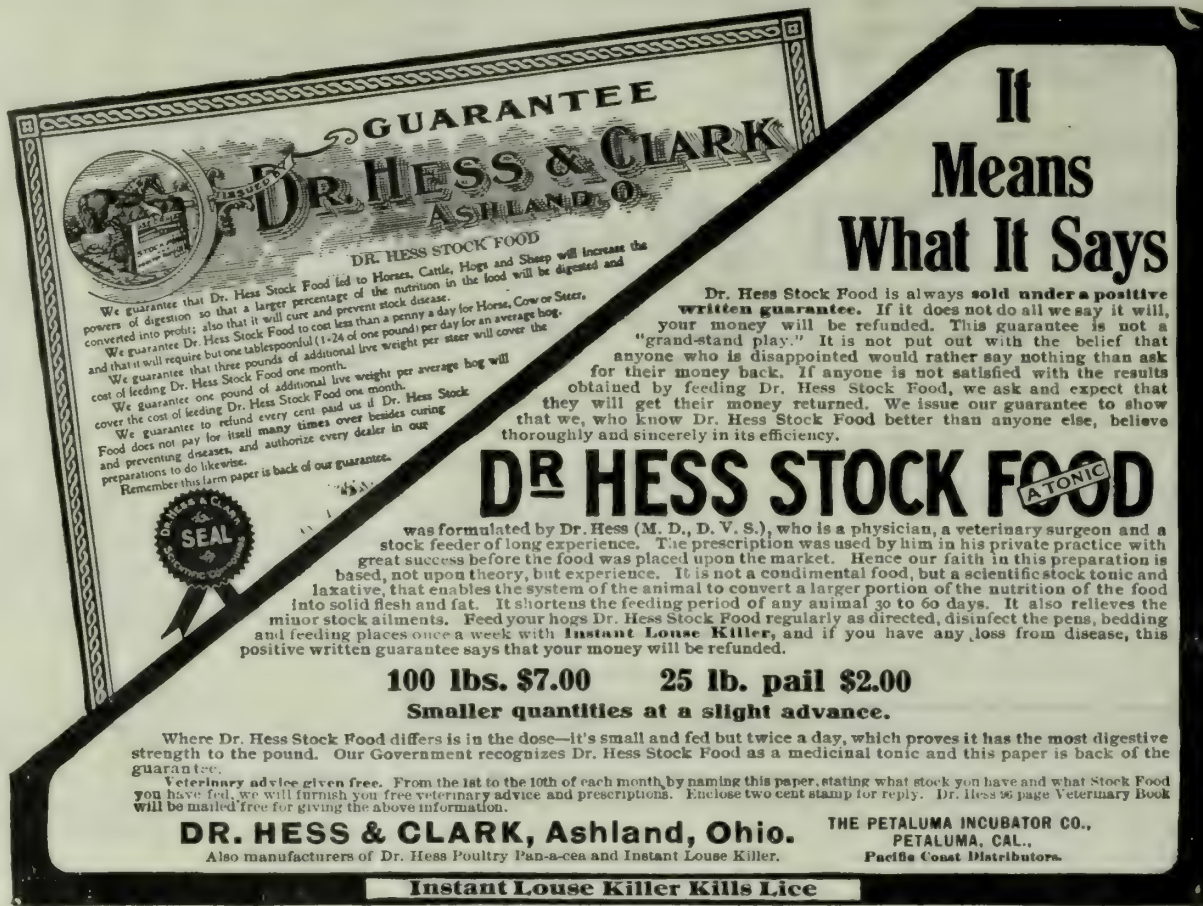
A FEW ORANGES STILL SHIPPED.—Riverside Press, September 11.—Riverside shipped six cars of oranges and three cars of lemons last week. Several cars of lemons will go out this week, and the season's crop will climb up to 500 cars, the largest output in the history of Riverside. The Southern California shipments have been 20,842 cars of oranges and 3590 cars of lemons. The season's output of lemons will be the largest for the season in the history of the industry in Southern California.

GRAPES AND QUINCES.—Mrs. H. O. Higgins of West Riverside has left at the Chamber of Commerce three handsome clusters of Muscat grapes as one could wish to see. They are almost perfect clusters and the berries are large and solid. Mrs. Higgins has also donated three perfect specimens of orange quinces, which were grown on the West Riverside ranch.

12,000 TO 15,000 ACRES.—There will be twelve to fifteen thousand acres sown to peas and vetch this season in Riverside. Many acres that were not sown last year are being inoculated in seeding this year.

GOOD ORANGE CROP.—B. P. Bradley of Palm avenue says he is going to have a bumper crop of oranges on his Arlington Heights grove. This grove consists of 19 acres and is located a mile above the Gage canal; it is four years old and Mr. Bradley says he will have at least \$2,500 worth of fruit from these trees next season.

CORN GATHERED ON HORSEBACK.—Elsinore Press: W. L. Wilhite, who lives on the Corona road, three and one-



It Means What It Says

DR. HESS STOCK FOOD

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half miles from Ellsimore, brought to the Press office a sample of corn grown on his place without irrigation, that measures eleven feet in height. On one stalk there are five full-grown, well-matured ears, the top one being over nine feet from the ground. Mr. Wilhite has over two acres of this kind of corn which would cause a Missourian to wonder what state he was living in. To pick this corn one needs to be on horseback.

Lake.

BARTLETT PEARS ARE A PROFITABLE CROP IN LAKE.—Lake County Bee, September 16: One large firm of dealers will ship this year more than seventeen thousand boxes. Many go to their own canneries, but most of them will be marketed, fresh, in the east. The boxes weigh 50 pounds each, the pack of this one firm thus far amounting to 425 tons, worth at an average price of \$22.50 a ton, nearly \$10,000.

Some of the growers have contracted to sell their pears at a stipulated price for terms of years ranging from three to ten. Others will not contract in advance, preferring to take chances on the market.

There are about 30,000 Bartlett pear trees in bearing in the vicinity of Kelseyville, and 20,000 non-bearing. The average yield of a ten-year-old orchard is from seven to ten tons to the acre. The orchards average about ninety trees to the acre. The price of \$22.50 a ton is paid at the packing house. The dried fruit brings from eight to ten cents a pound.

Shasta.

BROUGHT DOWN BEEF.—Redding Searchlight, Sept. 18: Fred Apfel brought down a bunch of fat beef cattle for the local butchers Friday from his summer range in Trinity county and immediately started back for some more. The price is not what he would like to obtain, but he thinks it better to sell young beef when they are ready for the block.

CATTLE BUYERS ACTIVE.—Sacramento Union, Sept. 20: For over a week past cattle-buyers have been making purchases of stock in the eastern part of this county. Over 1000 head of beef cattle have been bought, and delivery is being made here and at Cottonwood as rapidly as the drives can be made. About \$30,000 was required to make payments. The price per head ranged from \$27.50 to \$35 for each lot, 5½ cents the average price on foot.

Stanslaus.

BIG MONEY FOR A BLACK FIG CROP.—Modesto Herald, Sept. 20: Horticultural Commissioner A. L. Rutherford, who was in town today, recently visited the Kelsey ranch in the La Grange vicinity, where 60 acres of black figs are being harvested. The crop is immense, the estimated profit of which is \$15,000. The black fig is much easier handled than the white variety. The fruit is simply allowed to drop from the tree and after a few days' drying is ready for the market.

Santa Barbara.

ELLWOOD COOPER THANKED FOR HIS WORK.—Santa Barbara Independent

Sept. 19: J. A. Filcher, secretary of the State Agricultural society, addressed a letter to State Horticultural Commissioner Cooper, expressing appreciation of the interest that Mr. Cooper took in the recent state fair.

H. E. Owen of Goleta is pointing with pride to his sunflowers, which he believes are the largest ever grown in this state. They are the single variety and the blossoms average 18 inches in diameter and stand ten feet high. As there are three acres of the regal flowers, they present a gorgeous sight.

GROWS FINE APPLES.—Santa Barbara Independent, Sept. 19: Homer C. Snyder brought to the Chamber of Commerce yesterday some exceedingly fine specimens of Johnathan and Bellefleur apples grown at his ranch in the Santa Ynez mountains fifteen miles from Santa Barbara. Mr. Snyder's ranch is on a small plateau 2800 feet above sea level. He asserts that at this elevation he can grow as fine an apple as is grown in any of the orchards of Michigan, Missouri, Illinois or Iowa.

MANY TROUT TO BE PUT IN LOCAL STREAMS.—Santa Barbara Independent, Sept. 19: A consignment of 50,000 young trout from the hatcheries in the northern part of the state was received in this city today and was taken in charge by Henry J. Abels, district patrolman for the State fish and game commission. At the several points to which the fish must immediately be forwarded there are men who have volunteered to attend to the work of placing them in the streams. It is expected that the state fish and game commission will soon send another consignment to be distributed in the streams.

Sutter.

SHIPPING WINE GRAPES.—Sutter County Farmer, September 14: Wine grapes are being shipped from this county in large quantities. Some of the growers have sold to the Sacramento winery, while others are shipping to Napa. The price is from \$11 to \$15 per ton.

LARGE FORCE AT PACKING HOUSE.

—Sutter County Farmer: The Rosenberg Brothers packing house at this place is rushed now with the fig-packing, besides other dried fruits coming in. From 300 to 400 hands are now employed and more help is needed. Shipments are being made daily and the work will be rushed along as fast as possible.

THIS VALLEY GROWS SUGAR BEETS.—Sutter Independent, September 13: Although the manufacture of sugar will not be begun at Hamilton City for a week or ten days, tests are being frequently made of samples of beets. On August 31 tests were made by the chemists of quite a number of samples from various localities, and the results were highly satisfactory, and in one instance the beets showed a quite marvellously high percentage—22.02 per cent saccharine of a purity of 87.4.

Sacramento.

BEANS RIPEN SLOWLY.—Sacramento Union, Sept. 19: On account of the cool weather about Isleton the bean crop is at the present time ripening very slowly. In the event of early rains many of the pink beans will be damaged.

San Diego.

RAILROAD MAGNATES TO PLANT MANY TREES.—Riverside Press, Sept. 18: Three great corporations are planning to plant thousands of acres in trees for commercial use in San Diego county. It was announced today that the Santa Fe would put in 500 acres of trees at the San Dieguito ranch the coming winter. A portion of the land is to be used for experimental work. One thousand acres will be planted with alfalfa and 150 acres are to be planted in different varieties of trees, mostly of the semi-tropical variety, for the purpose of demonstrating that

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the value of the land can be greatly increased by their production.

Tehama.

Chico Enterprise, Sept. 20: The melon season is about over in the Corning section, and has been a prosperous one. Besides the numerous small individual shippers, one firm has shipped to points in Oregon and Washington 1737 crates of canteloupes, 1816 crates of tomatoes, and seven cars of watermelons, 2000 to the car, or 14,000 melons in all. This good showing over previous seasons is directly attributable to the fact that irrigation has been resorted to.

Ventura.

VENTURA BEANS.—Anaheim Gazette, September 20: The lima bean harvest is on in this county in earnest, with the prospect of as good a crop as last year, when there was an output of 650,000 bags. In some instances the late crop, on those fields where it was necessary to replant owing to late rains, will not yield very heavily, but this will more than be made up for by the increased acreage and the greater yield than last year in other sections. Bean raisers across the river in the Oxnard and Hueneme, Springville and Camarillo sections are anticipating an immense yield this year, more than ever before.

FORESTRY WORK IN STATE.—Sacramento Union, September 14: State Forester Lull was surprised yesterday. The first county to come forward voluntarily and ask the benefits of his department put in an appearance. It was the application of Ventura county for Mr. Lull or one of his deputies to come to that county and explain what is necessary to be done to enable Ventura to set up the forest fire warden system.

Yolo.

YOLO COUNTY IS SHIPPING GRAPES TO SACRAMENTO.—Sacramento Union, Sept. 18: Six carloads of grapes from the vineyards near Woodland, Yolo county, have been received by the California Winery, and it is understood that other shipments will follow. A special train was made up to haul the grapes. The grapes were unloaded from the cars direct into the great crusher vat, and the wine making process followed.

THE QUESTION OF LABOR.—Sacramento Union, September 18: With tons of grapes on the vines, prices soaring skyward, and the rain due any day, vineyardists are looking in vain for an adequate supply of labor to harvest the vintage. Vineyard-

Continued to Page 201

Williams' Shaving Soap

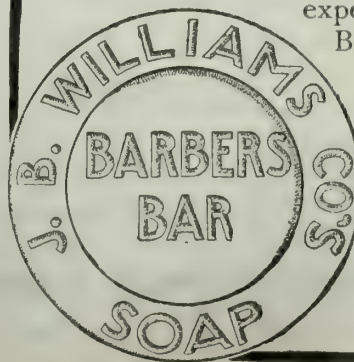
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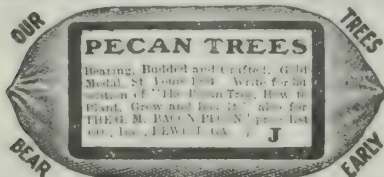
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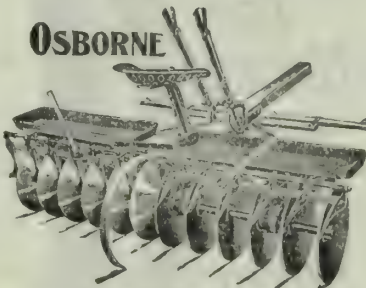
Just A Few

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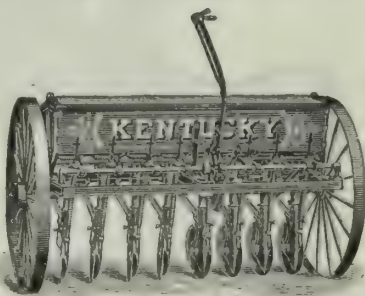


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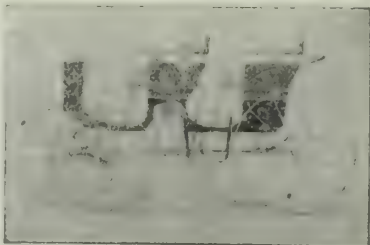
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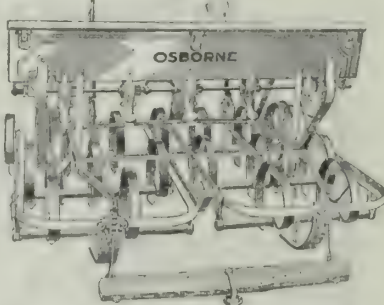
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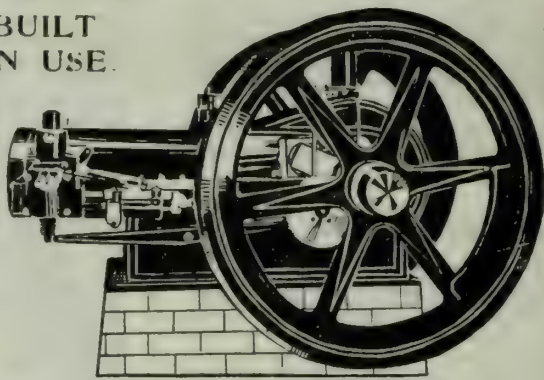
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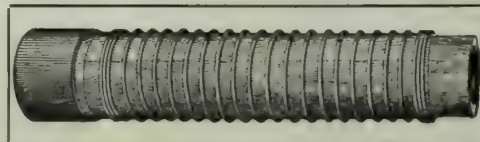
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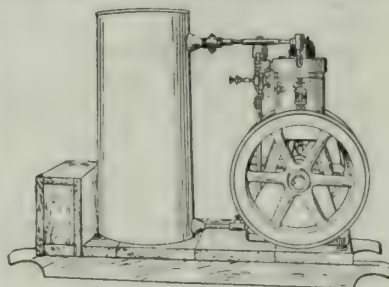
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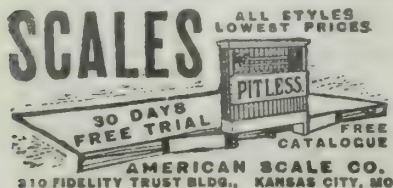
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LXXII. No. 14.

SAN FRANCISCO, SATURDAY, OCTOBER 6, 1906

THIRTY-SIXTH YEAR

SCENES IN MEXICO.

We look with growing interest upon Mexican scenes. The old quiet of the country is being widely disturbed by the spirit of progress and industrial development. Investment by foreigners in mining and agricultural enterprises is rife and in the latter line with which we are most familiar there is now particularly notable movement not only among newcomers, but the old owners are affected by a strong wave of enterprise. It is a great tribute to American agricultural science and practice that so many from Mexico are making American pilgrimages to learn our methods by observation and are seek-

en, one under the other (zigzag) at a convenient grade for walking up and down and carrying out the ore and waste in baskets on the backs of the miners, who were Indian slaves or prisoners. A number of old mining tools of iron and copper and the remains of an old copper lamp were found at a depth of 120 feet in the old workings, the copper of the lamp being in pieces and almost eaten away by corrosion; the iron drills and chisels are reduced to about one-quarter of an inch in diameter, the supposition being that they were originally about one inch in diameter. There was also another remarkable find, namely, the skull of a jabali or Mexican wild boar, on which was carved the following inscription:



Old Copper and Iron Relics Found in the Manzanal Mine. The Horn is Supposed to Have Been Used for Carrying Powder for Blasting.

ing trustworthy descriptive literature to guide them in their undertakings. California is a popular place of study, and we have met more wideawake people from Mexico during the last year than during a preceding decade. Mexico is also becoming more and more attractive to American tourists, and the numbers of Californians who make the winter excursions to the south country are constantly increasing. All this is interesting indicative of Mexico's share in an All-American advancement.

But Mexico is a country with a past and has had hitherto perhaps too much of a retrospective habit, but certainly the country has a most charming background for the picture which the present century will develop. Sometimes the present consists of a re-awakening of the past. For example, two of our views relate to the revival of an ancient enterprise. La Mina Marques Manzanal, an old Spanish mine, which has recently been rediscovered and opened, lies about 25 miles south of Cananea, in Sonora, Mexico; it is in the Manzanal mountains, a group of hills taking its name from the mine. The mine was re-located on December 24, 1905, by Gaston Schwab of Cananea, and is being cleaned out and explored. The ore is rich, and at a vertical depth of 160 feet the vein is nine feet wide. The old workings are remarkable from the fact that instead of the usual Mexican shaft (with notched log ladders) inclines were driv-



La Mina Marques Manzanal.

"Mina Marques Manzanal MDCCCXCII" (1812) and on the side a sketch of a chalice or communion cup used in the Catholic churches. The mines seem to have been hurriedly abandoned about this time, 1812, as the skeletons of two men, supposed to be Indian miners, were found in the first of the old workings opened at about 100 feet from the surface. It is supposed they were killed while at work and left there by hostile Indians who no doubt caused the closing of the mines.

The third picture on this page presents a charming valley view in the State of Mexico, about 90 miles northwest of Mexico City. In the foreground are the buildings of a mine while the expanse beyond constitutes a broad valley which is quite Californian in its general aspect and environment.



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THE WEEK

A correspondent writes to us as follows: "I presume you get your market reports from commission men, but they are very misleading. Your prices for prunes and pears for the last two weeks have been very good, when in fact commission men have reported to me no market and fruit dumped."

This does seem to indicate a peculiar situation. We are charged with getting reports from a class of people who report a good market to us and no market to you. If this were true, it would not be the newest thing in the world, because commission men have been often charged with furnishing good reports to editors to draw in consignments and then bad reports to consignors to escape paying for the goods. We say they have often been charged with doing this, but we do not believe they are often guilty of it. If they were often guilty, or if many of them were, then commission men would be a gang of thieves. Even this is not new, for such a conclusion has been often expressed in just such terms. We do not believe such a conclusion is warranted, though we doubt not there are some in the commission business who are about as bad as they can be. There is then, it must be admitted, a chance that your commission man may have given you a false report and may have sold for a good price produce which he reports as having been thrown into the bay.

But there is another thing about market reports. They refer of course to produce that is in good marketable condition. If your prunes were overripe and smashed or if your pears were wormy and rotten, it would not matter much how good the market were reported; your consignment might have to be dumped as worthless. Growers do not as a rule attach enough importance to getting their produce in good shape. They read that prices are good and they send along a lot of bruised, wormy ungraded fruit, loose enough to shake around or tight enough to be crushed in boxing, and are then disappointed when they get a report of no value while the general market is good. If growers would take pains enough to go to the city and see their own shipments opened up, note their condition and compare it with the goods which bring good prices, they would not have so much to say about dishonest merchants and misleading market reports. Market prices are for good goods, well packed and arriving in saleable condition, and when prices are good they are for such goods and not for others. There is a chance, then, that your fruit was thrown away even though the market was willing to pay profitable prices.

Our market reports are prepared by a specialist who knows the markets. He does not simply take down what a dealer may say to him. He keeps the run of values, he watches supplies and the demands for them. He depends upon dealers for information as there is no other source of information as to current transactions, but he can tell whether a dealer is giving him the facts or not, because he learns to know his men and he knows also many things which would tend to verify or to cast doubt upon any man's statements about trade. Our reports are not made by a man in the trade, but

by an expert who has the advantage of his own watchful observation and the advice of many men whom he has learned to depend upon. These facts are evidence that he has no business interest to be served by his report and he has the advantage of many observers and thinkers besides himself. He is not likely to have much to do with men who report one thing to him and another to their consignors, because such men soon come to be known as tricky and untrustworthy, and no one has so good a chance to see into the methods and motives of men as an experienced market reporter. He has a sort of an instinct which warns him that he has a sharper to deal with and he soon sees through and avoids him. A good market reporter has a reputation to maintain. The chances are that his report to us was correct for the date of its writing, but as every one must know, the condition may have changed soon afterward. That cannot be avoided.

How can the actual condition of the markets be made better known than by the records of the expert reporters for reputable journals? That is an easy question to answer theoretically, but a very difficult thing to effect practically. The open market with auction sales of produce as it arrives is the solution of the matter, but what sustained and laborious efforts have been made to secure this in San Francisco! No man has put more self-denying and unrequited work into the effort than Mr. Edward F. Adams. He upturned the trade, the legislature, transportation companies and the municipality itself in a devoted effort to secure open sale and publication of actual sale's prices for all kinds of produce. Just how much he actually accomplished we do not know, but he was certainly well along with the period of agitation which every reform demands from its advocates. We presume that whatever progress he made was to some extent lost by the San Francisco disaster, which disorganized everything, for a time at least. He did most of his work unaided because even those who would be most benefited never sustained and supported him except by spasmodic efforts. The time will come, however, we believe, when all interested will know through disinterested sources what goods were found worthless and just what prices all saleable products secured at their entrance to metropolitan trade. We do not expect to live to see it.

The State Commission of Utah, appointed by the Governor to report on the possibility of uniting the State Agricultural College and the State University of Utah, has reported in favor of the plan. The Commission, after careful investigation, found that by uniting the two institutions, not only over a million dollars would be saved in fifteen years, but that the useless duplication of subjects would be done away with and better instruction could be given at a great saving and that the money saved from the lack of duplication of instructors, apparatus, books and equipment could be devoted to agriculture and its special subjects, thus giving the Department of Agriculture, as part of the University, much more strength than it would ever have as a separate institution. The commission in addition to examining local conditions, secured as complete information as possible from the experience of other agricultural colleges and universities with departments of agriculture that would throw any light upon the situation. It was found in all cases where the Department of Agriculture was incorporated in the university that its growth had kept pace with the growth of other departments. The movement for union seems to have the hearty support of both the agricultural and other interests of the State.

It is an interesting fact as reflecting the rehabilitation of San Francisco that the British ship Wanderer, which cleared for the United Kingdom last week, carries 70,000 cases of canned fruit, valued at over \$250,000, of which a local cannery furnished fully sixty per cent, all canned in San Francisco, in a cannery built and equipped since the April fire.

QUERIES AND REPLIES.

CALIFORNIA TURKEY GROWING.

To the Editor: I would like to know whether the following plan for raising turkeys on a large scale in California would be successful, and would esteem your opinion in the matter very highly. My plan is to fence in about 50 acres of land, having some trees for shelter, with 5 ft. woven wire poultry fence and put about 50 turkeys into the enclosure. Would clip the turkeys' wings so they couldn't fly away. The turkeys would be left to run as though they were wild, and would be allowed to set and raise their turkeys, whenever and wherever they pleased. I have observed that turkeys that are allowed to steal their nests and raise their turkeys entirely by themselves do better than those that are cared for. Would be pleased to know, also, whether the foothills around Mountain View would be a good place to have the yard. Perhaps, however, there wouldn't be enough feed for the turkeys and a person would have to buy feed for them. If that were the case for part or all of the year, would the price of grain in that part of the country be so high as to make such a plan impracticable? Perhaps there are other parts of the State more adapted to turkey raising.—ENQUIRER, South Dakota.

With reference to turkey growing in California, you will find important articles in the Pacific Rural Press of September 9 and October 28, 1905, which contain the experience of Mrs. N. Frank Morse, of Fullerton, in Southern California, who operates upon rather valuable land and whatever she has accomplished can be done in the district of which you speak, except that hill land is usually scant in green feeding. You should be able, however, by using a certain amount of water, to grow green crops in the summer, and grain enough during the rainy season to carry the number of birds which you mention to the acreage, together with their offspring, up to selling time. Their wings need not be clipped, if the range is large, with such a fence as you propose. It is a fact, however, that most turkeys are grown in California on large, free ranges in the interior valleys, where the climate seems to be quite suitable and the land cheaper. There is also a large turkey product in some of the upper coast counties, like Lake county, where there is almost an unlimited amount of wild land for ranging.

CALIFORNIA TREE SEEDS.

To the Editor: Some time ago I met a man gathering cones from cypress trees. He stated that the seeds of the cypress, redwood and madrona brought good prices, and that he gathered them every year. We have hundreds of fine old redwood trees, a few cypress, and many madrona trees on our place. Can you tell me if there is a market for such seed, and when is the time to gather the seed?—AMATEUR, Santa Cruz.

There is, as you say, a certain demand for tree seeds, but it is not wise to expend much labor in gathering them until you make a contract with some dealer to receive them, and to give you suggestions as to times and methods of gathering for best results. This is a particular business, which is understood best by those who have had experience in the trade. We advise you to write for information to seed dealers advertising in the Pacific Rural Press. It may take some little time and correspondence to arrange for the work, but it is better to do this than to make a false start.

CRACKING ORANGES.

To the Editor: Kindly let me know if there is any explanation for oranges (while green, at this season) bursting open.—GROWER, Colusa.

The cracking of oranges while still green, and even later, has not satisfactory explanation. Although there has been a great deal of discussion, and a great many theories advanced, no demonstration has yet been reached. It is a very serious trouble in all orange growing regions, and will, we trust, ere long be satisfactorily accounted for.

MESQUITE GRASS.

To the Editor: I have a gravelly loam soil, more gravelly than loam, near the Llagas creek in San Martin. Will mesquite grass thrive on such land? I am a novice. I am told by some, yes; others tell me, no. That is why I appeal to you.—FARMER, Santa Clara county.

It will not be easy to find a grass which will live through the dry season on such leachy land as you de-

scribe. In fact, there has no perfectly satisfactory plant yet been found to make summer growth, or even maintain its life, without irrigation on such land. Mesquite grass (*Holcus lanatus*) is rather a poor grass, but has considerable drouth-resisting quality, and for that reason is grown to some extent in pasture lands immediately upon the coast, where it is undoubtedly helped through the dry season by the frequent summer fogs. It is, of course, possible that if moisture is near the surface in your gravelly soil, it might connect down and maintain itself. The best way to determine that would be to get a small quantity of the seed and sow it as soon as sufficient rain falls to start the plant. It should make a good winter growth, and then you can tell how well it will endure the ensuing drouth.

PRUNING JAPANESE PLUMS.

To the Editor: I have an orchard of Satsuma, Burbank and Kelsey plums. The trees are spreading out so it is difficult to cultivate them. If I cut off three or four of the large limbs will it stop them from bearing the coming year?—GROWER, Riverside county.

The removal of the branches will not interfere with the bearing of these plums; it is not desirable to take off many at once, if it can be avoided, although probably no serious results would follow. If you can raise them sufficiently by taking off one or two a year it would probably be, on the whole, better.

WHY NOT GRIND BARLEY HAY?

To the Editor.—If ground alfalfa hay is such a good thing, would not ground bearded barley hay be a still better thing? It seems to me it would almost be equal to bran or middlings. But for the beards, what a delicious thing is barley hay. The beardless is no comparison. I make this suggestion hoping it will be tried and told about. By the way, is the hay grinding done alone by mill men? Are the mills for sale?—H. E. DYE, Visalia.

The question is a pertinent one. It would probably be just as much of an improvement as ground alfalfa. Professor Henry is credited with saying that the jaws of an animal are the cheapest grinding mill he knows of. Probably the chief question lies in the cost of grinding and the profit which the grinders claim. These two items make the product cost more than it is worth for ordinary hay purposes at least. Fine grinding can only be done with the best machinery and not by such mills as a farmer could afford to run for his own use.

KEEPING APPLES.

To the Editor.—We have about 300 bearing winter apple trees that have an excellent crop on. They are mostly of the Spitzenberg variety, and as they are good keepers, we do not care to sell before later in the season. Is it safe to pack in boxes when picking from the trees and have ready for shipment, or had they better be put in house in a loose condition? How can we arrange a house that can be kept cool, and at as near an even temperature as possible, and that can be arranged so that one can have easy access to all apples for sorting over in case any rot?—GROWER, Shasta County.

There are all kinds of houses used for keeping apples in California where hard freezing does not have to be guarded against. The main point is to prevent too great heat and give sufficient ventilation, yet not allow too much dry air, which shrivels the fruit. This shriveling by dry winds is prevented by closing the house and sprinkling the floor, and for this purpose many growers think that dirt floors are preferable. The apples should be stored in shallow bins or trays raised a little from the ground and not more than six or eight inches in depth of apples. In this way they can be readily looked over. They should not be put into the marketing boxes until final selection is made at the time of packing. The house should be out of the sun in shade of large trees or on the north side of a hill or partly into a hillside if you arrange for proper ventilation.

SEAWEED FERTILIZERS.

To the Editor.—Will you please give information about the use of seaweed and kelp as a fertilizer; how prepared, when and how applied, its value as com-

pared with stable manure; what, if anything, should be used with it, etc. I wish to use it on a low, flat piece of wet, sandy, very poor land, lying along the ocean bluff.—DAIRYMAN, Mendocino County.

Seaweed is a useful fertilizer, but as it contains from two-thirds to four-fifths of its weight of water, it cannot be profitably moved far in a fresh state. It may, however be dried by spreading in thin layers on the beach. Seaweeds are especially rich in nitrogen and potash and it can be used to advantage in connection with phosphates, of which it is scant. Seaweed fertilizer is particularly good for grasses and clovers. Close comparison with stable manure is difficult, because both are so variable in composition. In a rough way, it may be considered a substitute, because on European sea coasts the cow farmers get good grass with seaweeds and save the cow manure for fuel. The succulent seaweeds or algae are best; the eel grass is least valuable because so difficult to decompose.

DURUM WHEATS.

To the Editor.—What are the peculiarities of durum wheat other than for macaroni and kindred products? Has it any advantages over other wheats for chicken feed? Rust-proof, is it not? Can seed be obtained in this State?—FARMER, Ventura County.

The Latin "durum" means hard, and durum wheats are hard wheats. Not all of them are fully suitable for macaroni, but all the macaroni wheats are durum varieties. For chicken feed, these wheats come nearer to a balanced ration because they are richer in proteids than the soft or starchy wheats. They are as a rule harder against rust and some of them practically resistant. Leading seedsmen should be able to supply the seed of such varieties now, as the public interest is so wide.

THE PUBLIC LANDS.

To the Editor.—Where should I write to obtain maps and literature of the public lands of California? I am particularly interested in timber and grazing lands, and would like to gain all the information possible concerning them. Could you also tell me where I might obtain a copy of the laws for pre-emption of public lands?—READER, Santa Clara.

There are no such maps and descriptions published. You will have to consult the official records in the land office in the district where you find the land. There are five or more such offices in California. The first thing usually is to find the land and then go to the land office and see if it has been filed upon. County assessors can often tell you where the public lands are in their counties. Occasionally there are advertisements of land laid open to entry. The best account of the land laws and how to operate under them is to be found in "Copp's Settlers' Guide," published in Washington, D. C.

FOR CABBAGE LICE.

To the Editor.—How can I kill lice on cabbages and cauliflowers.—GROWER, Contra Costa County.

For a small amount of cabbages and cauliflower perhaps the best preventive of the multiplication of lice is to spray them frequently with cold water from a hose, and if you have water under pressure in the garden this can be quite readily accomplished. By beginning early and knocking off these lice with a strong force of water, it seems to be impossible for them to multiply to the destruction of the plant. They can also be killed with applications of kerosene emulsion, tobacco infusion, or any of the simple insecticides which are used for garden purposes, but the cold water is handiest if one can remember to make early application of it.

DODDER IN ALFALFA.

To the Editor.—We expect to use quite a quantity of alfalfa seed next spring, and noting your article in September on dodder in alfalfa seed, I ask if you will kindly give us a description of the dodder weed or vine? Also if you know where clean seed can be purchased? Does Utah seed have dodder in it?—SUBSCRIBER OF MANY YEARS, Chico.

A close description is not needed to enable you to recognize dodder. If you see a pale yellow vine hugging the alfalfa plant to death, encircling the stems with its threadlike growth and throwing its great surplus of thirsty stems all around the plant, making a spot ghast-

ly with their winding and interlacing, no one will need to tell you it is dodder. We do not know where you can get clean seed, for the whole commercial stock has been doddered and the Utah seed has become very foul of late years. Probably the seedsmen will look to the fields whence their supply is taken and will be able to offer clean seed. They ought to do it this fall.

OBSERVATIONS ON ALMONDS.

To the Editor.—I send a small box of almonds, supposed to be seedlings. If they are a named variety, would like to know, and if not are they a desirable variety? The kernel seems plump, comparatively sweet and are prolific bearers. I would like to know of a desirable variety to graft from. These is just one tree in the orchard.

In this same orchard of five acres, mostly I. X. L. and Nonpareil, the latter bear the better. On the west side the I. X. L. yields well, much better than those toward the center of the orchard. Can you give a reason for this? The soil toward the center pulverizes, while near the west remains more in lumps. Can the dust from the county road on the west have effect?—GROWER, Byron.

The almond is all that you claim for it, but it has the very bad point of coming in double-kernels or philopenas. While there is sometimes sentimental significance in the twin kernel, the irregularity of the kernels is against them for candymakers' or caterers' uses. The demand is for a symmetrical kernel, with a shape tending toward length and slimness which appears in extreme form in the Jordan. On the form of the nut it would not be desirable to propagate from the tree.

Your observations on the bearing of the other varieties in different places are interesting. We cannot explain them without knowing more about the conditions, and might miss it even then. There are many conjectures which might be indulged in.

IRON NOT A SUBSTITUTE FOR COPPER.

To the Editor.—Have you any data at hand regarding the substitution of iron sulphate for copper sulphate in the Bordeaux mixture? If the change would be practicable it would make the spray much cheaper.—C. E. D., Kingsburg.

Iron sulphate or "copperas" cannot be substituted for copper sulphate or "bluestone," because it is vastly less effective as a fungicide. Its inferiority in this regard is greater than the difference in cost.

THAT CHINESE SINGLE-FRUITING GRAPE.

To the Editor.—I have read with interest the letter from Santa Cruz about a Chinese fruit like a grape, but which grew singly and not in clusters. I asked my Chinese cook about it, and he says there are two kinds of them, one sweet and one sour. He says that in the Stanford garden at Palo Alto there are vines of it that were procured for the late Senator Stanford.—GEORGE THRESHER, Gridley.

Thank you for the information. There are really few "new things" being introduced or talked of which have not been brought to California during the half century of restless hunting for rare plants which Californians have indulged in. Common experience is that such things prove inferior to the fruits we already have, and therefore make no impression here.

COW PEAS.

To the Editor.—Please tell what the cow pea is and when to plant it. I have a small piece of land I can irrigate almost any time. Would the cow pea make winter feed, or is it easily hurt by frost?—FARMER, Visalia.

As we have explained before, the cow peas belong to the bean family and not to the true peas. They are much more tender to frost than the peas, but they will grow better during the moist season than the dry if the temperature does not fall too low. On lowlands they do, however, better in summer than in autumn, because the heat is high and the air moderately moist; on warm mesas they make a good fall and winter growth.

Consul-General Guenther reports a poor grape crop in the Rhine country. A new and dangerous disease has appeared. If not checked before the harvest days the loss will be very great.

HORTICULTURE.

HORTICULTURE A PROFESSION FOR WOMEN.

(By Mrs. Harriet W. Strong, Whittier, at the University Farmers' Institute.)

In every department of human activity, industry or enterprise, there is a call for the highest technical skill and fullest equipment—in other words, the call is for "the prepared," and the prizes are for the prepared. The demand is urgent that unused energy may be no longer wasted, but employed to the fullest as an economic factor in modern progress—activity in all lines and methods.

In speaking of horticulture for women in California, it must be borne in mind that the demands and requirements of the profession are the same for women as for men; but there is an exceptional combination of circumstances in this State that not only invites the special attention of women, but a promise of sure reward to those who intelligently pursue this calling—empty-handed it may not yet be possible, empty-headed, never.

To the woman of means and brains there is no place where honesty of purpose and action will bring such sure results as dealing directly with nature. Our land—none richer; our climate—none nearer perfection; our products—those of the whole world, growing side by side in our kindly soil, which gives ready response in golden harvests! Our gardens are always green, our dooryards full of bloom; vines and shrubs extend into and overlap their usual bounds and definite habits of growth, shrubs becoming vines and often trees. Heliotrope grows to second-story windows. There are hedges of geraniums that almost startle with their magnificence of color. Hedges of la France and other choice roses, acres of callas; while rare exotics are the growing shrubs of the roadside. There is but one California, with its 800 miles of coast; its mountains and valleys, giving every climate and condition of the known world; let me add there is also but one Southern California. It is here in this San Gabriel Valley that Nature honors with her choicest smiles. At Christmas time, a few years ago, we had at my home thirteen varieties of fresh fruits and fifteen varieties of flowers.

It may seem rather advanced to talk about the science of business—uninteresting, prosaic business—but let me prophecy the time not far distant when business as well as horticulture will rank as a profession, and have its colleges of equal rank with those now considered at the top. [The University of California already has a College of Commerce.—Ed.]

I mean the word "profession" in its exact technical value. Note the evolutionary processes going on, the creeping up of the two I mention. There is now a cabinet officer a Secretary of Agriculture; it may be remembered when there was none; and more recently, the portfolio of Commerce and Labor has been introduced. You see business closely follows agriculture in the councils of the nation at headquarters. Nor will this upward movement cease. Our State University has always had its College of Agriculture; and greatly is this State benefited by the work done there, and through the various channels emanating from that center; of special note being these Farmers' Institutes, distinctly advantageous in their administrative work in propagating knowledge of great value; showing us our mistakes and how to correct them; covering large fields of activity, and pointing out the way to us. It devolves upon us, however, to pave that way; to make the road smooth or leave it rough; but we must take the steps along that way ourselves. No one can do that for another; each individual must act for himself.

The subject of equipment, then, is of paramount importance. Secretary Wilson was present, if I remember rightly, when one young girl was graduated at the University of California, from the agricultural department, and through him she was at once given a position in her special line. One example proves the possibility for many to take advantage of the same opportunities.

In 1893, at Chicago's World's Fair, Kentucky ranked above California in the value of its horticulture. A recent report places California first of all the States in the industry of canning and preserving fruits and vegetables, excluding fresh fruits of all kinds, with a return of \$23,809,988. With the returns of fresh fruits included, the figures would be very great. In addition to this citrus fruits alone amounted to \$20,000,000 for the year just closed.

When you consider that citrus fruits are produced with irrigation, and consider that irrigation requires higher talent and better thinkers than where rainfall is depended upon, you may safely predict in the future a population of no mean intelligence.

The adaptability of women to become cultivators of the soil is not an open question. History discloses to us the fact that agriculture was developed by women

who were the first inventors of agricultural implements. Primitive man was engaged in war and hunting, which left the care and maintenance of the family to the women, who were first to plant seeds and gather the crops.

In the north of Europe and in some of the northwest-ern portions of this country the seed grain is still in the hands of the old women, who become skillful in the selection of the best and give it out for planting.

There are enough successful women in agricultural and horticultural pursuits in California to prove their adaptability, but not enough to make a class. I would not discourage, but encourage such enterprises, as fate or choice may send to women until we do become a class.

In the first place, is the purchase and improvement of land a good investment for a woman with idle money? I say yes, with conditions mentioned later.

Second, shall the woman with land left her sell it and invest the money in interest-bearing securities and live on a reduced income? I say to her, no. Keep your land; improve it; make it do your work and earn your money. But what shall the woman do to this end?

Study, think, act. Intelligently use your own judgment. Study soil conditions and quality. Have, if you think best, the soil examined at the university, and ask what it is best adapted for; what crops can be successfully grown. Then set to work to master every detail of the business you have undertaken. Develop your reasoning faculties. Put as much thought into your trees as you would into your new spring outfit in the old days, and thus be born again into a new world full of delightful surprises, the greatest of which will be yourself! Your ability to bring about things worth while, things worth doing.

Do the best you can. No one can do more than his best, and you, my friend, "the best you can" will be the best anyone can. But of all things, don't apologize for yourself or your enterprise—because you are a woman. You must believe in yourself, to have others believe in you, always remembering there is no disgrace in work, but in doing it badly.

"He who by the plow would thrive must either hold the plow or drive," is no longer the golden rule in soil cultivation, for now one becomes a brain worker, or remains one. One must be supplied with good, practical sense and knowledge. The city woman can do this as well as the city man who transports himself to new fields.

Next, every woman to succeed must not only investigate and learn all she can, asking many questions and opinions from the well-informed on her subject, but she must then thoroughly classify and study what she has acquired from every point, especially the adverse side; then make her own decision, use her own judgment, carry her own responsibilities.

I said a few words some years ago to the ladies of the Oakland Ebell Society by request on how I planted my walnut orchard. A member of the club whom I knew slightly, wrote to me later, asking of me answers to a list of questions bearing upon the subject of walnut culture. She stated that she had written to quite a number of others.

My reply, she said, was the shortest. I did not answer a question. Yet she wrote thanking me earnestly for my letter, which has been an encouragement to her, an inspiration, indeed. She is now famous, and gets eighteen cents per pound for all her nuts. I have recently asked her what there was particularly in my letter. She writes me it was this: "You do not want any of our methods or varieties. A man, fifteen miles distant, has a walnut orchard, same age as mine, and it has never borne fruit. Mr. Luther Burbank of your town is the one for you to advise with." This was ten years ago.

This led her to investigate and find a walnut suited to the climate with late frosts. Thus we never know how a seed is planted, or what will be the result of a kindly word, which depends always on the condition of soil, and the care that follows the planting.

The day for planting a seed or a tree and letting nature do the rest is happily past. Technical knowledge, gained by hard experiences, has been our schooling in the past. Women are quick to observe; as a rule they love Nature, they love flowers and rural scenes; and when these can be coaxed into increasing revenues, they readily respond.

I have a long list of individual women, who have reached a high position in these fields. A banker's wife near San Mateo, left penniless and widowed, without skill or means of livelihood except a worthless piece of land, eighty acres in extent. This she converted into a flower garden that made her independent and gave employment to many men and women.

Another city woman planted out a ranch of 400 acres in Vaca Valley; Mrs. Shepherd of Ventura was one of the most skillful in nursery business; issued her own catalogue, and placed herself in the front rank. Also

Mrs. Sherman, Miss Eshleman of Philadelphia, all of whom I have known very well and am proud of.

Women in every part of California have made good records, financing their business, making loans, when necessary, for improvements; keeping up interest and paying off mortgages, where property has been left already encumbered. Women are natural-born financiers, or they could not in everyday life, as most women have to, make one dollar answer for two. The poetry of country life, the beauty appeals to women, and they find joy and companionship in the living creatures, trees and flowers that they call their own.

Given the necessities for skill, the opportunities to employ skill, and a large unemployed class, rich and poor, who have no skill or technical knowledge, how can all these be harmonized and made a great economic factor in the evolutionary progress of this State? The past is ours only as we can make a great future out of it for our betterment. For ten years nothing else has engaged my attention to such a degree as seeing the lack, and hoping for the right solution; namely, practical training schools and colleges of horticulture, where everything pertaining thereto can be learned.

Two classes of women need instruction. First, owners who would know thoroughly the profession in one or all of its branches. Second, those who would be prepared to take charge of places as overseer and manager. I will cite as illustration the practical workings of the horticultural college established by Lady Warwick and the horticultural college for women at Swanley in Kent, both in England.

The latter graduates its students after a three years' course. Here is taught the chemistry of soils; plowing, the student may or may not actually plow; the planting, and propagating of all seeds; budding, grafting, hybridizing; also poultry raising, bee keeping and dairy work as elective studies. They also make a special branch of floriculture, including the artistic handling of cut flowers, making them into bouquets, and the grouping of flowers, as well as greenhouse work, which is much more important in England where so many of the fruits and vegetables are raised under glass even in summer. In July we saw long glass houses, 200 and 300 feet, filled with magnificent ripe grapes, and melons worth \$1.25 each as they are taken from the greenhouse. One girl graduate was coming to Southern California. Bee culture was her specialty.

The lady graduates are very popular as head gardeners on estates, particularly on account of their skill and agreeable manners. It is proverbial that men who know much of flowers and shrubbery dislike to have an owner say a word about anything. I have had friends whose gardener would not allow a flower to be picked or an expression of preference for anything, or change to be made; in other words, an old gardener is generally an autocrat.

These skilled lady horticulturists have, in some instances, to overlook numbers of workmen. The demand for them in England is greater than the supply, and they are wanted in the colonies as well.

Such a college here would be a great boon to all classes interested, and I expect in the near future to see one such college established near Whittier; and I doubt not there will be others well endowed before another twenty years. All we need is a working model. With the able men of practical and technical experience now in the field, it would not be a difficult problem to introduce further new material upon which to work. Good results will speak for themselves. Many questioners now asking "What shall we do for our girls?" would find ready answer in the departments of a well equipped horticultural college.

In closing, let me call your attention to the fact that California farmers are facing a ruinous state of affairs when there is not enough labor to harvest the crops—\$2,000,000 worth of fruit lost every year for lack of proper handling. In six months I have had enough helpless boys apply for work; helpless because untrained, to do all the work on my ranch. They knew nothing of the work that had to be done among trees. Those brought up on a farm could "team." I have had trees this year damaged beyond computation by the ones who thought they could plow, but did not care. The remedy is plain to be seen. First, there must be training schools and colleges where boys and men can become skilled; where they can learn the value and purpose of trees, and how to handle them. Second, when employed they should, to encourage good work, have some co-operative interest in the returns or profits of the business; co-operation, not competition, is the true key to every situation where there are now differences, and antagonistic conditions can be met by a system of working together for a common end, namely, profit for all concerned. Both remedies must of necessity come from the side of the capitalists, the land owners, who may thus convert waste energy into skilled economic force. Our

State would become reconstructed, and there would appear a second paradise on earth with "peace and good will to man."

GIANT, SPLENDOR AND SUGAR.

Mr. Felix Gillet of Nevada City gives our northern contemporary, the Oregon Agriculturist, the following note: "As to the Giant and Splendor, the first, as every one who has tried it knows, is not a prune, but a plum, the Splendor has the disadvantage of not dropping when mature; hence, must be picked, and having no superiority over the French, must be discarded as a commercial product." Though the sugar prune from the point of view of the commercial prune grower is a failure, it is fine, large, juicy, very nice to eat fresh, quite prolific and very early; it dries in the evaporator without dripping, and stewed, is the equal of other prunes; but preserved, peeled, in glass jars, it is simply delicious, and it does not get musky, keeping firm, tastes like the apricot of which, preserved, it has the color. It is to say that though for commercial purposes the Sugar prune is not an improvement on the French prune, still it has merit enough to deserve being planted in any garden as a family fruit, and also to be raised for canning and curing.

FRUIT MARKETING.

POINTS ON HANDLING APPLES.

Mr. E. Cyrus Miller, of Haydenville, Mass., president of the Franklin-Hampshire Fruit Growers' Association, recently contributed a valuable article on the business of apple growing and marketing to "The Springfield Republican." There are so many points of local value on this coast that we reproduce a good part of it.

When to Pick.—The first essential to determine is when to pick. Just when and how the fruit should be picked for best market results depends very largely upon the variety of apples, and greatly also upon the distance it is to be shipped. The closer and better the market the riper the fruit should be when it is taken from the tree. If one is fortunate enough to have a special or personal market, delivering the fruit to the consumer direct, then he can hope to retain this market only by sending in the products in the very finest desert condition. Such consumers are generally willing to pay a sufficient extra price for the advantage of having the fruit taken from the tree when it is in its highest state of edible quality. With the apple it may be said that in general the samples keep longest when they are picked greenest, but they suffer thereby in point of quality. There are no well marked lines between greenness or immaturity, ripeness or full maturity, and overmaturity and decay. The one stage passes into the other insensibly, and it is a part of the normal chemical history of the fruit that it should begin an incipient breaking down and disorganization of tissue as soon as the ripening process is thoroughly complete. Hence in the case of apples it is generally best to pick them, if they are to be stored or exported, just as they have arrived at their full size and when they have attained only a part of their full color. Over-ripe or fully ripe fruit must be sent to the market at once or else they must be kept in artificial cold storage, in order thoroughly to stop the chemical processes within the fruit, and when they are taken from storage they are very likely soon to decay. Apples which are picked slightly green, however, generally continue to keep well after being taken from cold storage. Another factor in favor of moderate earliness in picking is to avoid the high winds and heavy rainstorms which one may encounter if the fruit is left too long on the trees. The riper the fruit the more easily it is detached from the spur.

How to Pick.—It is one of the prime essentials to be prepared for picking, with an ample supply of barrels or crates, baskets, ladders and such other orchard equipment as will facilitate the work and enable it to be done in the quickest possible manner. The best wagons for use in orchards are those which are of the platform style, with the low and very broad tired wheels, and the platform extending over the wheels. Such wagons are not only capable of carrying a very heavy load, but do not cut up the ground, and are easily managed among the limbs in low orchards. The style of the ladders to be used must depend directly upon the height of the trees. In old apple orchards it is essential to have long ladders, but they should be as light as possible. Extension ladders may be sometimes used, but they are usually more cumbersome and difficult to use. It is right at this point that the advantage of low headed trees is apparent. Where it is not necessary to use a ladder more than 15 or 20 feet long, besides being able to pick much of the fruit while standing on the ground, it can be readily seen that there is a great saving in

labor. In picking it is ordinarily better to use a basket and not a bag, for there are few pickers who can use a bag slung over the shoulder without bruising the fruit, and although careful picking is only one of the many details that go to make up the successful harvesting and marketing of apples, the apple growers of Hood River, Ore., have demonstrated the importance of this part of the operation, for they pick and handle their fruit like eggs, and are thus enabled to ship their fruit 3000 miles, and the price of their apples has risen from 85 cents a box until last year, when the entire output was sold on contract at \$2.60. If we in the East were obliged to find a market for our product some thousands of miles away there would doubtless be many changes in our present methods of doing things.

All baskets should be of the half-bushel type, round bottomed, with a swinging handle, and should be provided with a strong iron hook that can be hung upon a limb or on the ladder, allowing the picker to have both hands free. Stepladders are not usually desirable in apple picking, because that portion of a tree covered by a stepladder can be equally as well picked from a longer ladder, and an experienced picker prefers not to move his ladder more than is necessary, and also desires to cover just as much surface on the tree as is possible with one moving. The rapidity with which an experienced picker can gather apples where the picking is good is astonishing. One picker has a record of gathering one hundred barrels of apples between daylight and 6 o'clock in the afternoon. Two barrels were picked in just ten minutes, being at the rate of one hundred and twenty barrels for ten hours. Such picking is not desirable, but it simply demonstrates how extremely active and skillful some pickers may become by constant practice. It may be said that a good, fair day's work should average eighteen to twenty barrels. This means, with good picking, that the fruit should be carefully picked and placed in the basket, and emptied into barrels in such a manner as to prevent bruising.

Sorting and Picking.—Apples should never be handled more than twice, once from the tree and again from the sorting table. When the sorting and packing are done in the field the picker may deposit his apples direct upon the table; otherwise they should be placed in boxes, crates or barrels and be removed at once to the packing house, at which place they will be cooler, and sorted at some later time. Apples ripen up very rapidly in the pile if they are exposed directly to the rays of the sun. It is always well, therefore, if it becomes necessary to leave them in the field, to place them in some shady place, if possible; but, no doubt, the very best results are obtained in long keeping qualities when the apples are taken directly from the trees to a cool room and there kept in storage, where the ripening process is wholly or partially checked. This is especially important if they are to be shipped long distances, and particularly if they are to be exported. All these details are simple enough, but they all require forethought, and unless a man has an eye out for all the little things he will be left behind when the rush of apple picking and packing arrives.

The advantages of a good storage building are twofold, especially in commercial orchards. When picking time arrives every effort should be made to harvest the crop at the earliest possible moment, and if the grading and packing were done in the orchard at the same time it would not call for any extra number of hands, and in these days, when scarcity of labor and high prices for the same are such factors in crop production, it is by far better economy to concentrate all efforts toward harvesting the crop before attempting to prepare it for market. Again, if packing is attempted at the same time with picking, the manager's attention will be divided between the two operations, with the probability that neither will receive the care it should have; and still again, unless fruit is to be immediately placed in chemical cold storage, it is far better for it to be stored in a building which can be thrown open at night when the air is clear and crisp, as it will be at that season of the year, and have the storage closed tightly in the daytime. Many dealers today give decided preference to fruit which has been stored in a well ventilated storehouse; they claim it will keep practically as well up to March or April, and that there is much less danger from scald when it is taken out of storage.

What Is First Class Fruit?—The very first thing to be considered in the packing of fruit is to determine what first class fruit is. Even among those persons who sell apples for the export trade there is very little exact practice in the sorting of apples. Growers' ideas as to what constitutes first-class fruit varies in proportion to the quality of the fruit they produce, and dealers' ideals are usually based upon the quality of the fruit they are in the habit of handling and the demands of the trade to which they are catering. It is ordinarily con-

sidered that any fruit which is sound enough to reach its destination is good enough to be called first class, but such standard is a serious error. The fruit should not only reach its destination in approximately the same condition in which it leaves the orchard, but it should also be attractive and uniform in quality and capable of being held for some time when it reaches the wholesaler. All the specimens in a package should grade up to a more or less uniform standard of shape and size, and any fruit which is ever so perfect in itself would not be considered first class among fruit which averages either very much larger or very much smaller. In other words, there is a great difference between a perfect specimen and a first-class package.

Usually it is better for a grower to sell his fruit before it is packed and let the buyer do the packing or direct the same, according to his ideas; in that way many misunderstandings are avoided. Perhaps it will answer all requirements to define first class fruit as such as are free from bruises and injuries and all insect and fungous blemishes, are fully characteristic of the variety and are in that stage of maturity which the market demands at the time of their exposure for sale. It should be especially impressed upon the grower and packer that uniformity in size is quite as important to a package of fruit as excellence in the individual specimen, and it is a question if in the near future we do not find apples graded for size as well as peaches and oranges. This work must be done by hand, for high quality apples which come through the grades apparently without blemish usually show discolored spots in a few days. It is evident that if fruit is sorted two grades will result—the first class grade and the remainder. In most cases, however, apples are made into three grades, the third being generally known as culls or cider apples. The methods of packing must depend very greatly upon the market which is to be reached, upon the quality of the fruit and upon the package which is to be used. In the East most of the apples are packed in barrels, while in Colorado and on the Pacific Coast the so-called bushel box is the standard package.

How to Command a Market.—To facilitate handling fruit for packing a sorting table should be used, which should be about waist high, four feet wide and long enough to accommodate the desired number of sorters; there should be a ledge running about the table to retain the apples and on which the sorting baskets may be hung by their iron hooks.

Shiftless packing really accounts for more than one-half of all the unsatisfactory returns from fruit, and to remedy this trouble calls for the united efforts of growers and dealers. They should realize that their interests are mutual, and not antagonistic; that whatever tends to build up the apple industry affects one as well as the other. Our Eastern fruit is, as a rule, better than the Western, and, being grown near the consumer, ought to command a superior price; and yet it is a fact, because of the better sorting and packing, that Western fruit drives the home fruit from the markets. Upon the best brand of fruit a trademark is often important—some neat pictorial design, or even the name of the farm or orchard where the fruit is grown.

However, it must be remembered that very much of the success of the fruit upon the market depends upon how it is grown as well as how it is handled. It is now pretty well demonstrated that apples from trees that have been tilled, fertilized and sprayed have a better appearance and keeping quality than those which are grown upon neglected trees. As a rule, it will not pay the fruit grower to build iced storage or chemical storehouses for his fruit unless he has a very large acreage. This cold storage of fruit is really a business by itself, and requires a great deal of capital and skill to carry it through successfully.

[Pacific Coast growers will not admit that the Eastern grown fruit is better. Taking some of the up-to-date, specially developed apple regions of this coast, and it will not be difficult to prove that the fruit is handsomer and better as well as packed in a more taking manner.—Ed.]

WHAT MAKES NEW ZEALAND PROSPEROUS.

The prosperity of New Zealand is ascribed by the chairman of the National Bank of New Zealand chiefly to the increased price of wool, which has now reached a figure unknown for many years past. The dairy industry, too, appears to be making rapid strides, while the fresh-meat trade is not quite so satisfactory. The commercial activity is greatest in the north island, which has hitherto been more backward. A shareholder belonging to the farming community in New Zealand estimates that three-fourths of the \$22,000,000 increase in the exports last year represented net income to the farmer.

SYLVICULTURE.

SHADE AND ORNAMENTAL TREES IN NEVADA.

Dr. P. Beveridge Kennedy has prepared a bulletin on this subject for the Nevada Experiment Station at Reno. The facts are widely suggestive for mountain valleys and plateaus in California and we condense as follows:

Green Ash (*Fraxinus Pennsylvanica lanceolata* Sargent).—The green ash is noted for its bright green foliage, making a delightful contrast with the dark green foliage of most of our trees. It is very hardy and will adapt itself readily to new surroundings. Specimens in Reno that have been planted in good soil and given plenty of water have made a remarkable growth. It is a little late in leafing out in the spring and loses its foliage again rather early in the fall. In this climate it is free from borers and other insects. As an avenue tree it is very satisfactory, having naturally an upright growth and requiring but little pruning.

White Ash (*Fraxinus Americana* L.).—The white ash resembles the green ash in general appearance, but it is not quite as hardy, so that in this climate the green ash is to be preferred.

Basswood or American Linden (*Tilia Americana*).—There are probably not more than half a dozen trees of this excellent species growing at the present time in Reno. The large obliquely heart-shaped leaves are especially attractive, and in spring it bears numerous pendant clusters of flowers that emit a very pleasant odor. The honey obtained from the flowers is said to be excellent in quality. Judging from the healthy appearance of the trees which have been planted, it would seem safe to recommend the basswood for street planting, and especially where variety of character and coloring is desired. It is somewhat subject to sunscald, so that for the first few years it might be advisable to protect the trunk with burlap or hay bands.

Beeches (*Fagus*).—None of the beeches have been found hardy enough to withstand our hot summers and variable winters.

Birches (*Betula*).—The birches are among the most graceful and beautiful of our trees, and it is much to be regretted that our experiments with them have, up to the present time, proved a failure. Notwithstanding, there are to be found several fine specimens growing in different parts of the State; all, however, in protected localities. At Senator Newlands' residence, Reno, protected by the library building, at the home of Mr. W. Smiley, Starr Valley, Elko county, and at the late Mr. Gilbert's at Paradise Valley, Humboldt county. Strange to say, these species are of European origin, viz: the European White Birch and the Cut-leaved Birch.

European White Birch (*Betula alba* L.).—The white birch is a native of Central and Northern Europe, and is a tree of graceful habit with silvery white bark and slender branches. It is very desirable for ornamental purposes for grounds and parks, especially when planted with evergreens, as its delicate branches are beautiful both in summer and winter.

Cut-leaved European White Birch (*Betula alba laciniata pendula*).—This handsome cut-leaved variety of the European white birch is perhaps the most graceful tree used for ornamental purposes. The branches droop down almost to the ground and are covered with small finely divided lace-like leaves. It is very desirable for private grounds and parks in protected situations.

The Western or Hardy Catalpa (*Catalpa speciosa* Warden).—The hardy catalpa grows to a height of about thirty or forty feet. The leaves are very large, light green and heart-shaped. It blooms about the middle of July and bears large clusters of white flowers spotted with yellow and purple. The seed pods, which form during the later part of the summer, become more than a foot long and remain on the trees all winter. It is not suitable for street planting, as it is apt to produce irregular branches and a crooked trunk, which presents an ugly appearance throughout the winter. Another objectionable feature is the lateness in which it leafs out in the spring, usually about the middle of June. That the catalpa will outgrow the injuries by frost is evidenced by the fact that a number of trees in Reno are now about twenty-five feet high and give every indication of good health. For private grounds and parks it is greatly desired, but only as a member of a group to give variety to the composition.

Japanese Catalpa (*Catalpa Kempferi*).—This species is a more upright grower than the hardy catalpa. The leaves are purple-veined, and the flowers are yellow, spotted with purple, and smaller than those of the hardy catalpa. We have only one specimen, but this seems to be quite as hardy in this climate as the hardy catalpa.

Elms (*White Elm*, *Ulmus Americana* L.).—The white elm is a majestic tree, attaining great size and living to a very great age. In Reno the young trees are apt to grow one-sided on account of the continuous west winds,

but this difficulty can usually be overcome by judicious pruning. The branches, as they ascend gradually, spread and divide into broad, graceful curves, which give a very pleasing effect in elm avenues of long standing, where the branches from the trees on each side of the street often meet overhead. Unfortunately it has become a custom in Reno to trim back our white elm trees just when they are about to present their greatest beauty. They appear too straggling for some tastes.

Cork-Barked Elm (*Ulmus racemosa*).—The cork-barked elm is sturdy, symmetrical and strong, and is perhaps more largely planted in the streets of Reno than any other tree. The leaves of the cork-barked elm remain until very late in the fall before falling, which is a point very much in its favor.

Horse-Chestnuts and Buckeyes (*Aesculus*).—The white and red flowering horse-chestnut trees are magnificent for street purposes wherever they can be grown successfully. In this climate, however, they are very unreliable, and their growth should only be attempted in sheltered locations and good soil. There are some fine specimens at the State Asylum grounds near Reno.

Honey Locust (*Gleditsia triacanthos* L.).—The honey locust can usually be recognized by the large, ugly thorns on the trunk and branches. It is fairly hardy in this climate, and some large trees are to be seen on West street, near Third, in the city of Reno. There is a great difference of opinion as to their beauty, depending upon individual tastes. It is objectionable as a street tree on account of its tardiness in leafing out in the spring and the unsightliness of the persistent pods.

Black Locust; Yellow Locust (*Robinia Pseudacacia*).—The black locust is hardy and resists drought well, two essential requirements for many parts of Nevada. The wood is hard and will not readily receive the staple in making fences. For fuel it is excellent, but it is not recommended as a street tree on account of its tardiness in leafing out in the spring, and the unsightliness of the persistent pods.

American Mountain Ash (*Sorbus Americana*).—There are few trees of this variety growing in Reno, but as yet it should be planted only in an experimental way.

White, Silver-leaved or Smooth Maple (*Acer dasycarpum* Ehrh.).—The silver-leaved maple grows best in rich, moist soil. Owing to the brittle nature of the wood it breaks off at the crotches when exposed to severe winds. It is a remarkably beautiful tree with its silver bark and finely divided leaves, which are bright green above and silvery beneath. Its beauty and rapid growth make it desirable for use as a shade tree. In this climate the sap rises very early, making it dangerous to prune it at the usual pruning time in February and March. It should be pruned in late autumn or at least before Christmas. During severe winters the tips of the branches are frequently injured.

Manchurian or Ginnallian Maple (*Acer Ginnala* Maxim.).—This hardy little maple is a native of Manchuria and North China. That it is well adapted for growth in this climate has been established beyond a doubt. Although small, it is an exceedingly rapid grower. The leaves are prettily cut or lobed, making it ornamental throughout the summer, and in the fall the leaves assume delightful hues of red and scarlet. It is not recommended as a street tree, but for lawns or parks where masses of shrubbery are desired it should occupy a prominent place.

Boxelder or Manitoba Maple (*Negundo aceroides* Moench).—The boxelder is well known in this state, and is to be seen in almost every mining town. It will withstand long periods of drought, being very tenacious of life. It is a rapid grower and succeeds well on all kinds of soil. Being naturally of a very branching, irregular habit of growth, it is not to be recommended as a street tree for city purposes. It also loses its leaves too early in the fall and is short-lived, both objectionable characteristics in a tree for street purposes. The boxelder is to be recommended when a temporary windbreak is needed to aid and protect more valuable species. Where the conditions are unfavorable for tree growth, like in many of the small mining towns, on account of the scarcity of water or severe climatic conditions, it will perhaps give the best satisfaction.

Russian Mulberry (*Morus tartarica*).—The Russian mulberry will grow well in some localities in the State, but it has been rather a disappointment in Reno. It has a tendency to send forth its leaves early in the spring. These usually get nipped by the first frosts and new shoots come out later. It is certainly not to be recommended as a street tree, but on private grounds or ranches a small grove may be maintained. We have also tried the American mulberry, but it has not withstood the test.

Oaks.—There are no large oaks growing in this State at the present time, yet experiments seem to indicate that some of the species can be successfully grown.

White or Silver-leaved poplar (*Populus alba* Linn.).—This is a very rapid growing and handsome poplar, but it is rather irregular in habit, which excludes it from use as a street or avenue tree. The downy white silvery foliage and white bark make it a useful species to plant in groups to enliven the more sombre trees. Owing to the fact that it is not so easily propagated from slips as most of the poplars, it has not been planted very extensively. The wood, however, is much superior and is useful for fine finishing work. It can be propagated by taking rooted sprouts from the base of the old trees. The leaves differ in shape from the more common poplars, having from three to five pointed lobes.

Bolle's Poplar (*Populus alba* L. var. *Bolleana* Mast.).—This magnificent poplar has not yet been extensively planted in Reno, but as soon as its good qualities are known it is bound to become popular. It is a native of Turkestan and was named for Dr. C. Bolle, of Germany. The bark is of a beautiful olive green and the leaves are like the silver-leaved poplar, but more deeply divided, like a soft maple. It is rather difficult to propagate, but by taking the slips in the fall and burying them in dry sand about two feet under the ground they will become calloused and when planted the following spring will root satisfactorily.

Lombard or Italian Poplar (*Populus pyramidalis* Salisb.).—Many trees of this species have been cut down within the last few years. As they are easily grown and very hardy, they were planted extensively by the settlers along the irrigation ditches in the Truckee Valley and in other parts of the State. Being short lived, however, they soon began to die at the top and became unsightly. Vigorous pruning or removing the tops every two or three years will generally prolong their life. Owing to its stiff outline and erect symmetrical form it does not give a pleasing effect to a landscape when planted in rows. A single specimen planted in a group of trees will often add life and beauty to an otherwise monotonous view. For planting along the ditches its place should be taken by the more useful and longer-lived Carolina Poplar.

Carolina Poplar (*Populus monilifera* Mill.).—The Carolina Poplar is the most rapid growing tree we have and as it will do well where any of the native cottonwoods will grow it is much to be preferred. Two points greatly in its favor are its freedom from borers and the entire absence of cotton. With good care it will reach a height of 40 feet in six years from a slip. It can be propagated very readily from cuttings by saving the discarded branches at pruning time and cutting them into pieces about a foot long, and inserting them in a sloping manner about eight inches in the soil. If given plenty of water they will produce stout, strong, well-rooted trees in two years, when they should be transplanted to a permanent location.

Golden-Leaved Poplar (*Populus monilifera aurea*).—This resembles the Carolina poplar in its habit of growth and is simply a variety with golden-tinted foliage. It is not recommended for street planting but to give variety of coloring in corners of grounds and in parks and cemeteries.

Balsam Poplar or Cottonwood (*Populus balsamifera* L.).—The balsam poplar is a very hardy native tree found growing abundantly along the Truckee river. If male cuttings are selected they develop into handsome trees, but the female trees produce such an abundance of cotton that many of them in the cities and towns of Nevada have been cut down. In its native state it is badly attacked by borers and other insects and under cultivation it suffers still more. Although it will grow rapidly and soon make a shelter, it is not to be recommended on account of the danger from weakened limbs caused by borers. The buds are large and covered with a sticky gum which has a balsam-like fragrance. The leaves are more pointed at the apex than the other species and are dark green and shiny above and rather whitish below.

Fremont's Poplar or Cottonwood (*Populus Fremontii* Wats.).—This is another native cottonwood found growing extensively at the Indian Reservation at Pyramid Lake and throughout the watered valleys south into Lincoln county. In the southern part of the State it makes a remarkable growth. Fence posts when set in the ground and given plenty of water will produce trees twenty and thirty feet high in two years. The ranchers in the southern country could very easily rid themselves of the annoyance caused by the cotton if they were to chop down the female trees and select male trees only for fence posts and for cuttings.

Trembling Aspen (*Populus tremuloides* Michx.).—You can find this interesting tree throughout the northern section of the State in the watered valleys and in the mountains. At high elevations and where moisture is abundant it forms a dense chaparral while along the streams at lower elevations it grows into a stately tree with a well-formed trunk and symmetrical branches.

It is best known by its leaves, which tremble ceaselessly, even in the slightest breeze. Owing to the small size of the leaves and the open character of the tree it is of little value for shade. For parks and river banks it may sometimes be used, but on account of the continuous motion of the leaves it denotes unrest and should not be used to any great extent in a landscape.

Tamarisk (*Tamarix amurensis*).—The tamarisk is perhaps more of a shrub than a tree, but some old specimens growing in Reno have reached such great size, twenty or thirty feet high, that it seems best to include it in this bulletin. This pretty shrub is very often mistaken for an evergreen, as the leaves resemble some of the cedars. A glance at it in the winter season, however, will show you that its leaves are deciduous. It does not attract very much attention from the general public until it sends forth its delicate sprays of pink blossoms in the month of June. It is a very hardy, drought-resistant and partly alkali-resistant shrub and should be extensively used in this State for the beautifying of river banks, parks and private grounds. The plant can be propagated by cuttings planted in the fall.

Red and White Thorn (*Crataegus*).—The thorns make desirable trees for private grounds and parks. We have specimens growing of both the white and red flowered varieties. The first year they grew but little, but now that they have survived two summers and two winters they appear vigorous and healthy and will no doubt make fine specimens. They are noted for their gorgeous display of double-red or double-white blossoms.

Tree of Heaven (*Allanthus glandulosa*).—The tree is quite striking in appearance and has a semi-tropical aspect, with its long, tapering stems of leaflets. There is only one specimen growing in Reno, about fifteen or twenty feet high and is quite young, so that further investigation and experiment are necessary before it can be recommended for general cultivation.

Black Walnut (*Juglans nigra* L.).—The black walnut can be successfully grown in this climate if attention is given to some of its particular requirements. It is very difficult to transplant successfully, so that the purchase of trees from the nursery usually results in failure. The tree can readily be propagated by means of the nuts which can be placed in dry sand during the winter and planted the following spring, or they may be planted in autumn. Unless transplanted when young and very carefully handled, failure is almost sure to result.

English Walnut (*Juglans Regia*).—The English walnut has survived the trying climate of Nevada and there is a magnificent specimen, fully forty feet high, which has been raised from seed by Mrs. K. Lewers of Franktown, Washoe county, Nevada. The tree is perhaps twenty years old and bears fruit almost every season and occasionally an abundant crop. The nuts are sweet and delicious and perhaps slightly undersize. The ranch is situated in a cove on the eastern side of the Sierra Nevada mountains, and the tree is growing in granitic soil.

American Weeping Willow (*Salix Americana pendula*).—This willow will become a great favorite as soon as it becomes better known. It is a fine, quick-growing, large tree, with pendulous branches. If given plenty of water an excellent tree can be produced from a small cutting in four years. The small twigs are sometimes injured in the winter, but it soon outgrows any harm from this source. It is one of the first trees out in the spring, and one of the last to lose its foliage in the autumn, sometimes lasting even until Christmas, if the fall season has been a mild one. The Babylonian weeping willow is similar to the above, but is not as hardy in this climate.

Russian Golden Willow (*Salix vitellina* var. *aurea*).—The Russian Golden Willow is hardy in this climate and makes a large, handsome, symmetrical tree if judiciously pruned. Few, if any, of our deciduous trees give such a pleasing effect to the landscape in winter. This is caused by the bark of the young twigs which turn a light golden-yellow. It can be grown as a shelter or wind-break in the form of a hedge.

The Laurel-Leafed Willow (*Salix pentandra* L.).—This is a handsome willow whether left in its bushy form or trained into a tree. The large dark-green leaves shine brilliantly from their glossy surface. It was noticed that on the experiment station grounds this willow was not attacked by caterpillars while others growing in close proximity were severely damaged. It will also make an attractive hedge if clipped frequently. This is a very desirable species for this locality and is so different from any of the willows that few recognize it as belonging to that family. It can be readily propagated from cuttings.

Kilmarnock Weeping Willow (*Salix caprea pendula*).—This is a small low growing willow which is sometimes used on lawns. It is grafted on to one of the common willows about five feet from the ground. The grafted portion produces an umbrella-shaped top with numerous

reddish-barked drooping branches. The tree is not always hardy, apparently much depending upon the condition of the graft. Very frequently the tree will die above the graft and strong vigorous shoots will come from the base. These are only common willows and would not produce the effect desired when making the purchase.

Evergreens.

This admirable class of trees has been sadly neglected in Nevada. The general opinion seems to prevail that they will not do well here. It has been demonstrated by the excellent specimens now growing in Reno, and by the large number, though small, that have survived three summers and winters on the experiment station grounds, that many varieties will succeed. Two main points must be remembered in connection with evergreens. Never to let the roots dry, not even for a minute, in transplanting, and to apply plenty of water at all times. The trees should never be sprayed with water during the day, as the tops are very susceptible to injury from the hot suns if the leaves are wet. Compared with the deciduous trees they are very slow growers.

Yellow or Bull Pine (*Pinus ponderosa*).—There are some noble specimens of this native pine in Reno. It once densely clothed the eastern side of the mountains, but the giants were needed for underground timbers for the Comstock mines and years have and still must elapse before young ones can be grown to take their place. Many, many times has the experiment been tried of bringing down a small yellow pine from the mountains and planting it in the yard, but usually without success. A nursery grown specimen, however, which has gradually become accustomed to artificial handling from the seed bed will grow very much better. It is not an easy tree to transplant, but it is hardy and drought-resistant when once established.

Jack Pine (*Pinus Banksiana*).—The Jack pine is not so much of an ornament but it has been found very useful in many States for reforesting sandy areas of no value for agricultural purposes. In some parts it is used for railroad ties, for fencing and for fuel. It grows rapidly when young and is perhaps the hardiest and most drought-resistant pine we have.

Scotch Pine (*Pinus sylvestris*).—The Scotch pine, although a native of Europe, seems to thrive better under cultivation than our own native species. It has proved itself hardy almost everywhere. For this region it is strongly recommended where an evergreen windbreak is desired. It will make the cheapest and quickest growth and if given reasonable care will be sure to grow.

Spruces.—Nearly all the spruces can be made to grow well in this climate. We have the following growing on the station grounds: Black, White, Norway, Douglas and Colorado Blue Spruce.

Norway Spruce (*Picea excelsa*).—The Norway spruce grows to a height of fifty or seventy-five feet. It is one of the most popular evergreens planted, being a rapid grower and very graceful in form. Most of the evergreens now growing in Reno are of this variety. **Colorado Blue Spruce (*Picea pungens glauca*).**—This variety grows abundantly in the mountains on the eastern side of the Sierras. It is used extensively for Christmas trees in the city of Reno. Strange to say it has not been introduced into cultivation to any extent.

Irish Junipers (*Juniperus Hibernica*).—This fine little evergreen with its deep green foliage and erect symmetrical growth makes a very desirable tree for ornamental purposes and especially for small private grounds.

Swedish Junipers (*Juniperus Seucica*).—The Swedish Juniper somewhat resembles the preceding, but the foliage is of a lighter color with a rather bluish green tinge. Although we have only tested two varieties, yet it seems quite probable that a number of other varieties listed in the catalogues would also grow satisfactorily.

Arbor-Vitae or American Cedars.—The following have been tested and are making an excellent growth: **Pyramidal Arbor Vitae**, which grows about fifteen feet high and produces a dense pyramidal tree. **Golden Arbor Vitae** with the leaves splashed with Golden Yellow. **Globe Arbor Vitae** forms a pretty evergreen globe. **Siberian Arbor Vitae**, although slow growing, remains very green until late in the winter, and has exceedingly large, broad, flat branchlets.

Incense Cedar (*Libocedrus decurrens*).—This is a native of the Sierra Nevada mountains. Occasionally a few specimens can be seen on the eastern side of the mountains, but it is not abundant. It can be recognized by its cinnamon-red, scaly bark, and scale-like leaves spread out into flat, fan-like branchlets which closely resemble the Arbor Vitae. Some fine specimens of the incense cedar are growing in Reno. It is very probable that they were brought from the mountains when very young and planted by the early settlers. Two evergreens represented in the catalogues, *Cryptomeria Japonica*, and the *Lawson's cypress* (*Cupressus Lawsoniana*) have

been thoroughly tested for two seasons in this climate and found unsuitable. The *Cryptomeria* is too tender and the *Lawson's cypress*, being a native of the Pacific Coast line, requires a moister atmosphere.

THE GOAT HERD

THE CALIFORNIA ANGORA GOAT BREEDERS' ASSOCIATION MEETING.

(Official report prepared for the Pacific Rural Press.)

The twenty-first annual meeting of the California Angora Goat Breeders' Association meeting was held at Sacramento as usual during the State Fair. President C. P. Bailey presided and expressed his regret at being absent last year, for said he:

"That was the only meeting I have missed in the twenty-one years that our Association has been in existence. It gives me great pleasure to be with you again, and I wish to try to give you some idea of what I saw of the mohair industry while I was abroad. I had been planning to make this trip to Europe for a number of years, but business matters have always prevented me from going. Last year, however, I had the pleasure of spending six months in Europe, and you can be sure that the most interesting part of the trip to me was the visit to Bradford, England, the center of the mohair industry. One of the first persons whom I met in Bradford was Mr. Crabtree, who is probably the leading mohair merchant or dealer in Bradford. He buys large quantities of mohair in Constantinople and South Africa, and stores it in his warehouse to be re-sold to the spinners and manufacturers. He showed me many bales of Turkish stuff, and I found that the fleeces in each bale had been carefully skirted so that only the sides and the bellies of the fleeces were left. The back and hip had been culled out, so, of course, the mohair was extra fine. The African fleeces were quite different. African mohair is divided into winter and summer clips. The one clip representing about an eight months' growth, and the other about a four months' growth. The African hair is not as carefully graded as the Turkish stock. On the whole, I think our American mohair will average up very well with the Turkish clip, except, of course, our fleeces are not skirted.

"One of the things that pleased me most in Bradford was the visit to the long-established mohair mills of Messrs. Mitchell Bros., Foster, and Roberts. These mills are certainly immense affairs, and they turn out enormous quantities of mohair yarns and mohair goods. To see these mills with their thousands of employees makes one feel that the mohair industry is upon a very secure basis. Our American mills, too, are large affairs, and are doing a good business in the manufacturing of mohair plushes and braids.

"Since returning to America, I have been much gratified to see the rapid strides that the Angora industry is making here at home. The Association now numbers about 60,000 registered Angora goats, and the demand for bucks this year is far in excess of what we could have expected. Our own orders have been for lots of ten and twelve animals in a place; this, too, when mohair is at a very low ebb; in fact, the only discouraging feature of the Angora industry today is the low price of mohair in America. We who have been years in the business have seen this happen before, and we know that prices must and will right themselves.

"Good mohair is not worth over 20c to 30c a pound, when two years ago it found ready sale at 35c to 45c. Of course, the large demand then for mohair for ladies' hats increased the price even of low-grade stuff marvelously. Some lots of short, kempy mohair brought at that time as high as 40c a pound.

"It has now been thirteen years since we made our first importation of South African bucks, and at that time there were comparatively few fine Angoras in the United States. Now there are thousands, and the Association this year donated \$200 to the Oregon and Texas fairs, to be distributed in prizes to the best goats shown. We regret that the California Angora Goat Breeders' Association was not included, but I believe that if California Angora Goat Breeders would take more interest in our yearly exhibition, we would be entitled to an appropriation from the National Association."

The breeders present then discussed the features of the mohair market. W. W. Wright said: "I am told that there are only four regular factories in the United States, that is mills that are running entirely upon mohair, and that they are in close touch with each other, and it is but natural that they should pool issues to secure the fleeces as cheaply as possible. Mohair manufacturers are no exception to the rule, for we are all human. They induce the grower to ship direct to them, which is in effect to make them dictators of the price.

What the mohair industry needs is an entirely different system of marketing the product as well as energetic measures to exploit mohair goods. It is increased consumption that keeps wool high, and increased consumption will fill the pocket of the Angora man when he gets busy looking after his own interests. I am holding my this year's clip, and I do not expect to sell it until I get a reasonable price."

Others present expressed the same sentiment, and it is possible that quite a large amount of mohair will be held in storage. C. P. Bailey & Sons of San Jose, Calif., said that they had over 10,000 pounds in storage and that they would hold this mohair until a reasonable price was offered. After the election of officers, the meeting adjourned to convene again in 1907 during the State Fair.

THE MARKETS.

Wheat.

The wheat market is dragging along with very little change, and buying is still very moderate. Farmers are by no means satisfied with the prices offered, and are showing as strong a tendency as ever to hold their crops. Buyers, on the other hand, do not look for an advance, and are about as indifferent as the growers. In spite of this indifference on both sides, some buying is being done. The bulk of the business is, however, done in the interior, as San Francisco has not regained its normal interest in the wheat trade. Considerable arrivals are reported at Port Costa, but receipts for the week have been below the average. Dealers are well pleased with the quality of the wheat reaching the market, and, if the samples do the crop justice, the California yield will be up to the best of previous years. Local wheat handlers are not agreed as to whether or not the coming crop will be sufficient for the California demand. The ruling opinion is that it will just about go round and that little or no outside wheat will be needed. Northern markets are quiet and very little is being done. Holders are demanding all the way from 5 to 10 cents more than buyers are willing to give, and are not anxious to sell at any figure. Advices from Portland show that a great deal of the Oregon and Washington crop is pinched and shrunken and will be of little use for milling. Foreign reports show a good crop in Chile with a probability that that country will supply a good part of South America's needs.

Flour.

The flour market, being very materially influenced by the condition of the wheat market, is naturally dull just now and the price is off. There is not much life in the situation even at the lower prices, though some little buying to meet immediate needs has been done. From a speculative point of view the situation is absolutely devoid of interest, as prices are expected to change but little for some time. The bulk of the flour consumed here continues to come from Stockton, but some arrivals from the north are reported this week. Millers in the north are very inactive as large exporters and other buyers are not convinced that the wheat market has reached the bottom. Even since the late drop, millers report a scarcity of orders.

Barley.

Barley continues about the same as last week, with the price tending upward. The supply is, however, quite plentiful, and some dealers claim that the advance is not justified by conditions and that a drop is probable. Growers are, however, showing no desire to let go, and, if the buying pressure eases up, it is likely that the barley still in the hands of the growers will be held for some time. Considerable shipments have been made to Port Costa and Los Angeles this week. Probably the bulk of the crop has already been sold, especially in the southern part of the State. Receipts continue to show up well as to quality. Some little damage is reported by rain in the northern end of the State, but elsewhere no damage was done.

Oats.

In spite of plentiful receipts, oats remain unchanged. Growers are satisfied with prices and are showing a desire to get rid of their crops, and, on the other hand, buyers are exhibiting a willingness to buy in a way that is leading to considerable business. The crop is of good proportions and, if the dealers continue to rush their holdings to the market, it would not be surprising if the price weakened before long. Some dealers are already prophesying lower figures and are arranging to carry light stocks for the time being.

Corn.

Corn continues to be dull in the local market, with few receipts. The quality of corn reaching this harbor is good, however, and merchants are buying to a limited degree. The cultivation of corn in California is grad-

ually increasing and dealers are of the opinion that before many years it will occupy an important place among the cereals.

Millstuffs.

Barley for feed purposes is demanding considerable attention in the local markets and not a few sales have been transacted during the past week. Corn is also being used to a certain extent, but in comparatively small quantities. Shorts and bran continue to be plentiful, but very little buying is being done. The supply of bran and shorts is expected to be somewhat above the usual mark this year, as a great deal of northern wheat has proved to be poor. Oats are demanding only fair prices, as the supply is above normal despite the fact that recent reports show a much smaller output than was at one time anticipated. The price is only fair, and it is generally predicted that all varieties of feedstuffs will sink to a somewhat lower basis.

Beans.

Very few changes have occurred to alter the bean situation this week. Prices remain about the same. Shipments are a little below what they normally are at this time of the year, but this is due to the lateness of the crop and to the fact that nearly all buyers are waiting for new beans. The 1905 carryovers are good in quality, however, and are expected to bring top prices when the market opens. The harvesting of limas continues and results are satisfactory both as to quantity and quality. The lima crop is estimated at from 800,000 to 950,000 bags. This is somewhat greater than the output for 1905. Limas are plentiful and the price is tending lower. Blackeyes are good this year, but prices are expected to barely hold their own. The recent showers have very materially aided the crop of pinks, and no damage to any other variety has been reported. Bayous are beginning to come in gradually and prices are seeking a lower level. Cranberry beans are expected to open fair, but decline as soon as the first orders are supplied. Garabanzos continue quiet. The Los Angeles bean outlook is not so good as a year ago. The visitation of a new pest in the shape of a bug and the late rains have caused the crop to be somewhat under the 1905 yield. The output of limas in Ventura county is very good. The yield for the county is placed at 700,000 sacks, as against 650,000 for last year.

Seeds.

Seeds continue to be stable and very few changes in the market have been noticed for the past month. The garden seed market is nominal and very little or no trading is being done. The weather has been unusually good and the seed harvest is practically over. The yield has proved to be good in nearly every line, and growers are well satisfied with returns. Yellow mustards are nearly all gone and Trieste is held firm at higher prices.

Hops.

The hop harvest is advancing rapidly, despite the recent bad weather. The Sonoma crop is about all gathered and hop pickers are becoming very numerous in those parts. The price is fair, and growers who have not previously contracted their crop are realizing good returns. Various reports show that the yield has not been very uniform throughout the country. The Washington crop was light and turned out far below expectation, while up through the Mendocino country in California the crop was immense.

Wool.

There is very little to be said in the wool market. The price is almost universally controlled by associations, etc., and sales are fairly uniform. The bulk of the crop is pretty well out of the growers' hands, and the fall clip has proved to be very satisfactory, and sheep men are very much encouraged concerning the future of the business.

Bags and Bagging.

No changes have been noted in this line during the past week. Local dealers are finding it all they can do to supply the demand and the number of bag dealers is comparatively small in San Francisco and this is having a tendency to keep the market up. Cotton goods and bean bags are occupying most of the bagmakers' time at present.

Butter.

Butter is scarce and the price is firm and high, the best butter selling at 39 cents. The demand for good butter is probably a little more brisk this week, and the scarcity in supply is making it hard for local dealers to keep enough on hand.

Eggs.

Eggs are selling at 39 cents for the best and at present there is no reason why they should not reach even a higher mark. The supply is very scanty, and the demand is growing daily.

Cheese.

Cheese remains about the same as last week, with receipts a trifle heavier. The price is about the same, but not quite so firm as a week ago.

Poultry.

The poultry market has suffered little change since last week, large young stock being in good demand and selling at fair prices. Receipts of ducks and geese have been about normal. Turkeys are still in demand, especially for the younger stock. Fancy pigeons are selling well at a very good figure. There is very little demand for old stock, especially roosters.

Vegetables.

Vegetables are still plentiful and are selling at unchanged prices. Tomato receipts are about normal and are selling at about the same figure. Receipts of string beans are probably a little more numerous than last week, but the price is unaffected. Receipts of squash, peppers, cucumbers, lettuce, etc., are about normal, and the price is unchanged.

Potatoes.

Potato receipts are about normal this week, but the price has taken a turn downward. The best are selling for \$1 to \$1.10, a figure somewhat under quotations for last week. The yield is proving only fair and prices are expected to at least hold their own in the long run. The potato raising industry is attracting much attention throughout the country, and, as a result, a much better quality of potatoes is reaching the market. Growers are receiving almost one-fourth more this year than last for the same quality of potatoes.

Onion.

Onions have suffered a slight decline this week, but as a rule prices have been fairly uniform. The quality is fair and the crop is about the same as usual.

Fresh Fruits.

Fresh fruits in general are a little more plentiful this week and the quality is a little better as later shipments arrive. Apples and peaches especially are showing a marked improvement in quality since the opening of the season. The demand is good in general and dealers are able to end up the week pretty well cleaned out. Grapes are plentiful and selling at unchanged prices. Thompson's seedless are selling best and large quantities are sold daily. Pears are arriving constantly, and no shortage is complained of.

Dried Fruits.

Dried fruits are so well distributed over the State that it is nearly impossible at present to make any estimate of what the crop will be. Fruit is reaching this part in limited quantities, however, and so far the quality is very satisfactory. The prune crop is reported somewhat smaller than has been expected. Peaches are scarce, but the quality is excellent. Growers are receiving as high as ten cents for fruit in the sweat box. The Fresno fig crop is attracting some attention among those dealers especially interested. The crop is larger than last year and prices are very good. The figs chiefly packed are the white Adriatics, but some little attention is being paid to the Calimyrna variety. The trade here is still quoting prunes at from 2¼ to 2½ cents for the four sizes, and from 3 to 3½ cents for larger sizes, but dispatches from New York state that the outlook is for higher prices in the East.

Raisins.

The raisin market has pretty well settled down, and the price is fairly well established. Growers are receiving from 3 to 4 cents. The output of raisins this year is somewhat below the usual crop, but there being some little hold-over from last year, the shortage is not expected to be noticed. California raisins are demanding top prices East, and growers are satisfied with everything except quantity.

Nuts.

The walnut harvest is well under way, and the crop bids fair to be one of the best for years. The weather has been ideal for the ripening of the nuts, and harvest is almost a month earlier than last year. The only complaint of growers is the scarcity of labor, which makes it almost impossible to secure help enough to harvest the crop.

Honey.

Honey remains unchanged with a fair demand. The demand for comb honey is, however, above normal and the price is tending upward. The supply in the local houses is scarce and prices are expected to at least maintain their present state.

Citrus Fruits.

Citrus fruits are occupying more and more of the dealers' time as the year advances. There is a brisk demand for fancy lemons and a fair demand for limes. Oranges are very scarce in the local market as very few shipments are reaching this harbor. Grape fruit is comparatively scarce and is selling at fair prices.

THE DAIRY.

DAIRY FEED PROBLEMS.

(An address by Dr. James Withycombe, Director of the Oregon Experiment Station, Corvallis, Ore., before the Oregon Dairymen's Association.)

Paramount to breed and individuality of the dairy cow is the feed that she consumes. With the volumes that have been written in the interest of modern dairying, it would seem that little can be said that is new to the up-to-date dairyman. The modern cow is a complicated machine and at times it may seem that she has been inordinately developed while the education of her attendant has been somewhat neglected. A modern cow and a dull, haphazard attendant makes a poor combination indeed. However, dairymen as a rule are alive to their interests, and the great majority of our cows are fed and handled with exceptional skill.

The abnormally high prices of the various feedstuffs make this subject of especial interest at this time. For maximum production the cow must be well nourished and this not only means an abundance of feed, but also that it should contain the proper composition. The balanced ration, known as the German standard, is about correct for conditions prevailing here. There is a possibility, however, that the dairyman may yet produce inexpensively the equivalent of a balanced ration on his farm. There is an encouraging field presented by many of our forage plants, especially vetch and alfalfa. These, with clover and other leguminous plants, as is well known, are rich in protein. From investigations conducted at the Oregon Experiment Station, we learn that individual vetch plants possess a marked variation in the protein content, ranging from 12.19 per cent to 23.31 per cent in moisture-free hay. Now suppose that we can produce a family of vetch that will yield twenty-three per cent of protein. It would only take about twenty-four pounds of such hay to supply a satisfactory balanced ration for an ordinary cow in full flow of milk. Twenty-four pounds of such hay will contain approximately 4.19 pounds of digestible protein. This would be slightly a pound and a half more protein than the cow would require. Protein contains approximately 50 per cent of carbon, thus the carbon in the excess of the protein can, in all probability, be

utilized by the cow as a substitute for fat and carbohydrates. It would seem that there is a possibility that vetch and alfalfa hay with a supplementary succulent food, such as silage or roots, will almost supply a balanced ration without much of the high-priced mill feeds.

Reports of good results from alfalfa hay have reached the Experiment Station. A small farmer in Jackson county reports \$32 as one month's return for butterfat from three cows fed exclusively on alfalfa hay. The herd of twenty miscellaneous bred cows owned by Mr. O. A. Stearns, Klamath Falls, averages 250 pounds of butter per cow per year. This herd is fed exclusively on alfalfa hay in the winter and runs on alfalfa and native grass pasture during the summer. Thus it will be seen that fairly good results in dairying can be secured when alfalfa forms the exclusive diet of the dairy cow. If these can be secured from alfalfa equally as good results should be obtained from vetch provided it can be cured in a bright, fresh condition. The average total composition of the two hays are as follows:

	Alfalfa hay.	Vetch Hay.
	Per cent.	Per cent.
Protein	14.28	18.52
Crude fibre	26.01	22.94
Nitrogen free extract	42.68	38.04
Wat	7.15	2.93

It will be noted that vetch hay is appreciably richer in protein than alfalfa.

For best results, vetch and alfalfa should be cut early. When vetch is grown on good, rich land, it is possible to cut it twice in an ordinary growing season. To do this it should be cut before seed pods are formed. Early cut vetch, nicely cured, contains the maximum amount of digestible nutrients.

The total weight of the crop may not be so great as if cutting were deferred until a ripper stage, but the early cut will have a higher digestibility.

It is not intended to convey the impression that dairying can be successfully accomplished on alfalfa and vetch hay alone, but to show that by proper attention to these crops they can be made to supply a larger proportion to the nutrients, thus lessening the expense of mill feeds.

In feeding alfalfa hay, especially if it is slightly coarse, it is found that by

passing it through a cutter before being fed improves its food value twenty-five per cent. In fact, many large feeders of cattle run their alfalfa hay through a cutter before stacking. It is doubtful if cutting will improve the food value of soft, fine, palatable hay, but any coarse, unpalatable hay will be improved by cutting.

Generous feeding of good cows even with high-priced feeds, gives better financial results than where feed is less generously bestowed.

The present high values of the standard mill feeds stimulate the tendency among dairymen to purchase freely of the special dairy feeds offered on the market. We venture a word of caution here, as from analyses made at the Oregon Experiment Station of some of these feeds it was found that the market price is out of proportion to the nutrients contained therein.

There is a psychological problem in the dairy cow to which the dairyman should give some attention. Milk secretion is evidently influenced by the frame of mind of the cow. Hence an effort should be made to have the cow in the best possible frame of mind at the time of milking. Perhaps the best way to do this is to feed the cow the most palatable feed immediately before milking, so that when the time for this operation arrives the cow will be standing in pleasant composure, with her longing for the feed she likes so well fully appeased. In this way, if the cow is properly trained, her whole thought will be centered upon the operation of milking, with the result of a maximum secretion. It will not do to give feed shortly before milking which contains odor or volatile oils "that will develop objectionable flavors in the milk."

SALES OF REGISTERED HOLSTEINS.

Mr. F. L. Houghton of Brattleboro, Vt., Secretary of the Holstein Friesian Association, sends the following account of sales in California:

Cows—Belle Setake Josephine, Clarodina DeKol, Cisteria Mechthilde Josephine, Cisteria Overton Mechthilde 2d, Edith DeKol Burke Piebe, Edna DeKol Burke, Empress Setske Josephine, Gerben Parthenea Josephine, Joanna Mercedes DeKol, Leda Gerben DeKol, Leda Hartog Twisk 6th, Leda Hartog Twisk Mechthilde, Leda Pietertje Hengerveld, Leda Pietertje Hengerveld 2d, Mechthilde Queen

Lost Strayed or Stolen—One Cow

That is about what happens each year for the man who owns five cows and does not use a Tubular cream separator. He loses in cream more than the price of a good cow. The more cows he owns the greater the loss. This is a fact on which Agricultural Colleges, Dairy Experts and the best Dairymen all agree, and so do you if you use a Tubular. If not, it's high time you



did. You can't afford to lose the price of one or more cows each year—there's no reason why you should. Get a Tubular and get more and better cream out of the milk, save time and labor and have warm sweet skimmed milk for the calves. Don't buy some cheap rattle-trap thing called a separator; that won't do any good. You need a real skimmer that does perfect work, skims clean, thick or thin, hot or cold; runs easy; simple in construction; easily understood. That's the Tubular and there is but one Tubular, the Sharples Tubular. Don't you want our little book "Business Dairymen," and our Catalog A.131 both free? A postal will bring them.

The Sharples Separator Co.
West Chester, Pa.
Toronto, Can. Chicago, Ill.

Mercedes, Mercedes Aaggie Wayne, Parthenea Mechthilde Josephine, Parthenea Mechthilde Josephine 2d, Shadybrook Gerben Abbekerk 2d, Shadybrook Gerben Abbekerk Ononis, Shadybrook, Dora Parthenea, Shadybrook Gerben Parthenea 2d, Shadybrook Gerben Parthenea 3d, Winnifred Johanna DeKol, J. H. Williams to C. T. Brown & Son, Portersville.

Cleopatra Fox Josephine, Cisteria Overton Mechthilde 3d, Dora Jeek, Edith Mandel Wayne, Edna DeKol Korn-dyke, Gerben Parthenea Josephine 2d, Leda Hartog Gerben Josephine, Mercedes Korndyke DeKol Johanna, Parthenea Mechthilde Josephine 3d, Shadybrook Gerben Empress, J. H. Williams to L. M. Owen, Portersville.

Bulls—Korndyke Piebe DeKol, J. H. Williams to L. M. Owen, Portersville. Sir Skylark Ormsby Hengerveld, J. H. Williams to C. T. Brown & Son, Portersville.

PAID FOR ITSELF IN 30 DAYS

"COHOES, N. Y., Sept. 14, 1906

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By keeping an accurate record I found that with the U. S. I was getting about 40 quarts of cream per day from 20 cows, a difference of \$2.50 in favor of the

U. S. CREAM SEPARATOR

making a gain of \$75.00 in 30 days. Then I value the skimmilk at 33 1-3 cents per hundred quarts for feeding purposes on the farm, amounting to \$15.00 for 30 days at 150 quarts per day. As the total amount gained by the U. S. paid for it in 30 days, I will say that it is the best investment I ever made.

If those who may read my experience with the U. S. Separator have any questions to ask or want any information other than what I have given, if they will write me, I will answer and do it with pleasure.

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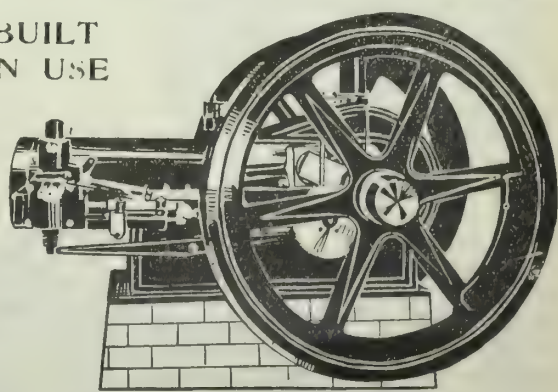
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BELLS OF THE ANGELUS.

Bells of the Past, whose long-forgotten music

Still fills the wide expanse,
Tingeing the sober twilight of the Present
With color of romance!

I hear you call, and see the sun descend-
ing

On rock and wave and sand,
As down the coast the Mission voices,
blending,
Girdle the heathen land.

Within the circle of your incantation
No blight nor mildew falls;
Nor fierce unrest, nor lust, nor low am-
bition
Passes those airy walls.

Borne on the swell of your long waves
receding,

I touch the farther Past,—
I see the dying glow of Spanish glory,
The sunset dream and last!

Before me rise the dome-shaped Mission
towers,

The white Presidio,—
The swart commander in his leathern
jerkin,
The priest in stole of snow.

Once more I see Portala's cross uplifting
Above the setting sun;

And past the headland, northward, slowly
drifting
The freighted galleon.

O solemn bells! whose consecrated
masses

Recall the faith of old,—
O tinkling bells! that lulled with twilight
music

The spiritual fold!
Your voices break and falter in the dark-
ness,—

Break, falter, and are still;
And veiled and mystic, like the Host
descending,

The sun sinks from the hill!
—Bret Harte.

A GOOD TIME FOR JENKINS.

Before Harrowscome met a girl, who was the most wonderful creature the world had ever seen, and married her, thus retiring into oblivion so far as most of his friends were concerned, he and Jenkins had been bosom friends.

Matrimony having whisked Harrowscome off to the suburbs, he and Jenkins had seen little of each other in the three years which followed.

Jenkins had paid his wedding call and had been asked out to dinner, but suburban time tables finally got in their deadly work, so it had been many moons since he and the Harrowscomes had met in a social way.

Rushing into the bank just before closing time the other day, Jenkins ran full tilt into Harrowscome.

"Why didn't you ever come round and see us?" demanded the latter. "Can't you come tomorrow night? We'll have a regular good old time. Grace has a pretty girl visiting, and we'll play whist. And you have never seen my boy."

"I'll come," said the innocent Jenkins, lured by the whist and the pretty girl. If there is anything he likes it is a good game of cards with congenial friends and a decent cigar to follow.

Miss Barrett did not belie the reputation given her. She was more than pretty—she was charming. Jenkins knew it the minute he laid eyes on her. And he was to face her across the card table all the evening, besides talking to her at dinner!

It was after the cigars were finished that the first cloud appeared.

"Now for the boy," Harrowscome said, blaming. "I've got a treat for you, Jenk, old man. You're to be allowed to come up to the nursery and see him put to bed. He's the greatest fun."

"Oh, certainly!" said Jenkins, politely. Miss Barrett smiled sweetly and said she would read till their return, as the nursery was small and would not hold a crowd. Jenkins reflected that the ordeal would soon be over. He surveyed the infant with the nervous air of an amateur.

"What's your name?" he asked, his face contorted by what he felt to be a smile.

"Oh, pshaw!" broke in Harrowscome, indignantly. "Don't you know anything at all? You'll be offering him a cigar next."

Harrowscome junior objected to the sleep-producing process and howled lustily.

"Aren't his lungs great?" asked the proud father.

"They seem all wool and a yard wide," said Jenkins, with feeble mirth. He was thinking about Miss Barrett in the library below.

"And muscle!" began Harrowscome. "Sometimes he kicks when he gets cross—maybe he will tonight. Do you think he will, Grace?"

"Will there be room?" asked Jenkins anxiously, with the hope that he might escape downstairs, where the attraction was.

"You needn't get nervous," said Harrowscome. "I want to tell you what he did the other day. If he isn't the smartest kid in the world, tell me!"

The story lasted fifteen minutes, but Harrowscome junior was finally tucked into bed, and Jenkins arose with alacrity.

"You go down, Grace," said Harrowscome senior. "Jenk and I'll stay here till the boy is asleep. He always wants his father to sit with him till bye-bye comes," explained Harrowscome fatuously, to his now hopeless friend.

It was half an hour before the small tyrant sunk into slumber. His father put in the time rehearsing his feats. Jenkins' one timid inquiry as to Miss Barrett's home and the length of her visit at the house was totally unheard.

At last they went downstairs, and the load went off Jenkins' mind. Miss Barrett was still as beautiful as ever and not a whit less charming than when he had been torn away from her.

For twenty minutes there was peace and happiness. Jenkins decided that her eyelashes were longer than any he had previously seen, when there was a wail from upstairs.

The card game was stopped. Mrs. Harrowscome went up to investigate the trouble, but Jenkins did not mind that, because he could look at Miss Barrett with undivided attention and deep admiration.

For about one minute—then the hostess called Miss Barrett up to the nursery.

In undisguised gloom Jenkins sulked and listened to his host's recital of more juvenile brilliancies for an interminable time, till the two women returned. Then Jenkins rose.

"You're not going! they cried.

"It's time for my last train," said Jenkins quite coldly. "No; I'm sorry, but I can't wait any later. I've had a delightful evening, I assure you. Oh, yes, thank you, I'll call again."

The only thing which saved him from bitterly concluding the Harrowscomes had wrecked the romance of his life was the later discovery that Miss Barrett lives only six doors from his own home. So he has forgiven them.—Illustrated Bits.

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DOMESTIC HINTS.

STEWED BEANS SPANISH.

Put one pint of red or pink dry beans in cold water and boil quickly until the beans soften. The beans at the first should be well covered with cold water and as the water boils away should be replenished with boiling water, just enough to keep the beans covered. When the beans boil tender, drain until dry, saving the sauce. Fry one good-sized onion brown in one and one-half tablespoons of butterfat. Add the beans and one red or green chili pepper chopped fine. Fry well, stirring constantly, until the beans are well mashed. Then add the sauce or boiling water in which the beans were boiled. Place on the back of the stove and cook slowly until the beans are as dry as desired. Then add salt to the taste and serve hot.

TOMATO PICKLE.

The ingredients for this are: One and one-half pecks of green tomatoes, one ounce of white mustard seed, one ounce of whole cloves, one ounce of allspice and twelve green peppers. Cut the tomatoes and peppers in half, removing most of the seeds of the peppers, and sprinkle salt over them and let them remain overnight. In the morning, drain off the liquor and place them in a granite kettle with a layer of tomatoes and then the spices and the peppers and last the rest of the tomatoes. Pour over them pure cider vinegar and boil fifteen minutes.

GOOD PLUM PUDDING.

One cup molasses, one cup sour milk, one cup suet (scant) chopped fine, one cup currants, one cup raisins, half cup each of lemon, orange and citron peel, one teaspoon soda, half teaspoon each of cloves, nutmeg and cinnamon, two eggs; boil four or five hours. Mix molasses, milk and soda, then eggs, then flour and spices, and last the fruit. Make the batter good and stiff, or the fruit will go to the bottom. About two cups of flour will be enough. Boil in a five-pound lard bucket.

RHUBARB CREAMS.

Clean and cut up two small bundles of rhubarb; put it into a baking dish which has been rinsed with cold water; cover it closely and let it cook in a moderately hot oven until it is quite soft. The rhubarb must be looked at occasionally from time to time to prevent it burning; on taking it from the oven, sweeten it, add the grated rind of a lemon, and pass it through a sieve. Whip some cream, sweeten it and mix it by degrees with an equal quantity of the prepared rhubarb, and color it with carmine. Fill

some little china cases with the cream and serve with a glace cherry on the top of each.

GINGER COOKIES.

Put one-half cup each of sugar, butter and boiling water with one cup of molasses and stir in flour mixed with two level tablespoons of ginger and one level teaspoon of soda dissolved, sifted well through the flour. The dough should be stiff enough to knead. Roll as thin as possible and cut in rounds; bake in a moderate oven. The cookies should be dry and crisp.

HINTS TO HOUSEKEEPERS.

After blankets have been washed and hung on the line and are thoroughly dry, beat with a carpet beater. The wool will become soft and the blanket like new.

It is said that flies will not congregate on the outside of a screen door if the woodwork is rubbed occasionally with kerosene, the odor of which seems to be offensive to them.

If in whipping cream the amount of cream is limited, add the white of an egg, which will increase the quantity without hurting the flavor and will make it whip much quicker.

A custard cannot be boiled. Boiling at once curdles the egg. But a custard put in a jar in a saucepan of water may have the water boiling around the jar with good effect. A milk pudding will curdle with an egg beaten up in it if the oven is too hot, but will be creamy and custardlike if cooked slowly in a moderate oven.

If you have a pane of glass to put in and wish to remove the old putty, heat your poker red hot and apply quickly to the putty, being careful not to touch the woodwork or you will scorch it and so discolor the paint. When the putty is thoroughly heated slip a knife between it and the wood, and the putty will come off easily, leaving the wood smooth and clean.

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ENTOMOLOGICAL

HIGH HEAT AND INSECT EGGS.

To the Editor: For the past ten or twelve years on my late place near Calistoga, my prune trees were greatly injured by the destructive canker-worm, notwithstanding that I put bands of paper around the trees and painted them every ten or twelve days for some months, with a black, sticky substance that I bought in San Francisco.

By this means an innumerable multitude of these worms were killed, but I began to think I would certainly have to give up fighting them, as they literally swarmed on many of my trees, and denuded the foliage almost entirely from many of them, which, of course, ruined the prunes. The first ten days of July, 1905, were excessively hot, the mercury standing for several hours every day at 110 degrees in the dense shade of a large walnut tree, and on several occasions went as high as 115 degrees for a short time.

I told many of my friends at that time that I certainly thought such extreme heat would cremate nearly if not all of the eggs laid on the ground by the canker-worms, and if so, their destructiveness would be at an end. I had so much

faith in the cremating process that I did not paint my trees in the winter and spring of 1905-06, although one of my neighbors who had a large orchard did. My predictions were verified. I do not think I saw over fifty canker-worms on my trees this season, and they were thriftier than I had seen them for years, and loaded with prunes. I would be pleased to hear through the columns of the Rural if the canker-worm eggs were cremated in San Jose and other places where prunes are raised extensively. The eggs of the voracious black squash bugs were also cremated, as I most certainly thought they would be.

I trust that this hastily written article will prove to be of some interest to your many readers.

IRA W. ADAMS.

Potter Valley, Cal.

[The observation as to reduced numbers of insects following high heat is interesting, and we would like to hear other

The chimney has as much to do with the light as the lamp has.
There is only one make of good lamp-chimneys; there are many poor ones. Macbeth is the good one, the only one advertised, the only one worth advertising.

observations on it, as Mr. Adams suggests. He is, however, mistaken in some way about the canker-worms. They do not come from eggs laid in the ground. The wingless moth comes from the ground and lays her eggs on the twigs of the trees. The sticky application on the trunk is to catch these wingless moths before they get up to lay their eggs. Probably Mr. Adams has some other insect in mind.—Ed.]

Gentlemen:—

I have given Tuttle's Elixir a trial and find it is the best Horse Medicine on the market. I have used it for stiff joints and bruises and it is all right. I would like one of your books.

Yours truly,
Alongo P. Baxter, Snider Mountain N. B.

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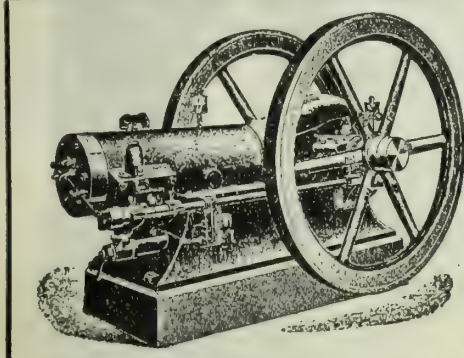
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AGRICULTURAL REVIEW

Glenn.

SHORTAGE OF FRUIT PICKERS.—Willows Transcript, September 24: The serious shortage of prune and other fruit pickers is so badly felt by orchardists in the Manton section that several of them have turned their hogs into the grounds, and in this way will dispose of their surplus fruit. Hogs were bought in all parts of the county, and on Thursday there was a procession of hog wagons from the river section to town. On that day about \$6000 was divided among the farmers. Yesterday a number of shipments were made from Norman and Delavan, and only the shortage of cars prevented the shipment of several carloads from this point.

Kings.

BLACK BASS.—Hanford Sentinel, September 21: The last flood in Kings river resulted in the black bass, with which the San Joaquin river is well stock, swimming over the divide into Kings river, and now the waters of that river are teeming with that game member of the finny tribe. Thousands of them have no doubt found their way into Tulare lake, and the chances are they have come to stay, for they are most voracious and warlike, and are said to be sure exterminators of that worthless fish, the carp.

PRICE OF BUTTER RAISES.—Hanford Sentinel, September 21: Kings county dairymen will not complain because the price of butter took a jump in Los Angeles. The price has been 57 1-4 cents a two pound roll, and today the price jumped to 60 cents. The consumption of butter in Los Angeles is greater than the California supply that is sent in there. The San Joaquin Valley is the butter cellar of that country.

STOCK FOR THE FAIR.—Hanford Sentinel, September 21: The first stock for exhibition at the fair was taken out to the grounds Friday by J. W. McCord and Robert Doherty. The stock was shipped here from Newman, where it was purchased by the two gentlemen. There are four head of thoroughbred Shorthorns belonging to Mr. McCord, and Mr. Doherty has five head of Shorthorns and one thoroughbred Holstein. All the cattle are fine animals.

Los Angeles.

SAN FERNANDO FARMS NEED WATER FOR CROPS.—Fresno Republican, September 22: The question of water rights in the San Fernando valley promises a lively and stubborn fight between the ranchers in that district and the city of Los Angeles. Under a recent decision of the local courts, the city of Los Angeles

was given the rights to the waters of the entire San Fernando valley, and ranchers could draw from that supply only when the city was not in need of it. Now, however, the city water commission declares it is in need of all the water available in the valley, and notices are being served upon ranchers to cease pumping for irrigation at once. A committee of ranchers has engaged counsel to fight the injunction of the Superior Court. In the meantime, they declare they will continue to pump water to save their crops, and some of them declare they will greet with shotguns any one who attempts to turn it off.

Mendocino.

FOREST FIRES RAGING IN MENDOCINO FORESTS.—Chico Enterprise, September 21: The most disastrous forest fire of the year is raging in the woods of the Northwestern Redwood Company, near Willits. It has already burned for two miles along Grouse ridge, in some of the finest timber in the country. Immense quantities of split stuff, wood and tanbark have been consumed in addition to the timber ruined. The damage so far is estimated at nearly \$20,000, most of which falls on the Northwestern Redwood Company.

Monterey.

MILKING APPARATUS IN USE.—Arroyo Grande Herald, September 22: The Burrell Lawrence Kennedy cow-milking apparatus, which enables one man to milk 30 or 40 cows an hour, is being used in the dairies near Salinas. The machine milks two cows at the same time, and one man can operate three or four machines. The impossibility of securing competent men and women milkers made a mechanical device necessary. A form of this machine has been in practical use in the dairy sections of Australia, New Zealand and Great Britain for years.

Napa.

THE VINEYARDS AND WINERIES.—St. Helena Star, September 21. The vintage in Napa valley has begun, and by next week will be in full sway. Last Saturday the directors of the California Wine Association held a meeting for the purpose of establishing the price of grapes for Napa valley. It was finally decided to pay for Burgundy, Petite Bouschet, Cabernet, Semillon and other choice standard varieties, \$27.50 per ton; for Zinfandel, \$25 per ton; for Mission and inferior varieties, \$20 per ton. Grapes seem, for the most part, very choice this year, the past two weeks of warm weather ripening them rapidly and raising the per cent of sugar to the required standard. Wine-makers look for a successful vintage if the grapes can be gathered to the best advantage.

Placer.

ROCKLIN FAIR A SUCCESS.—Sacramento Union, September 26: The second day of the Placer county fair at Rocklin drew out a very large company. There were not less than 3000 people on the grounds. There were five racing events, and very good ones, especially in two contests of speed; two of them also were between Sacramento horses. The livestock exhibit is very creditable, and especially emphasizes the growing interest manifest in the breeding of superior domestic animals. It is not a large stock exhibit as to groups of animals, but of single ones brought in by the agricultural community from many points. It is a showing full of interest and encouragement; indeed, competent judges say it is an excellent exhibit throughout.

Riverside.

ENORMOUS APRICOT HARVEST.—Evening Index, September 24: Some good returns were made from the apricot crop this year in the vicinity of Hemet. P. J. Perrine, from a twenty-acre apricot ranch, took 12 1-2 tons of dried fruit,

which sold for \$3396. Owing to the inability to obtain help, Mr. Perrine found that over \$1,000 worth of apricots spoiled from dropping before they could be harvested. Mr. Perrine also has about ten tons of choice dried peaches which he holds at ten cents a pound. Everything in the Hemet region is prosperous, and the crops this year were nearly a month ahead of time.

SOME TALL CORN.—Riverside Press, September 20: Several stalks of corn which measured 18 feet 2 inches in height have been presented to the Chamber of Commerce by Mrs. M. Shoemaker. The corn was pulled out of the ground, roots and all, and the measurement was taken from the bottom of the roots to the tip of the stalk.

Solano.

A MODEL PACKING HOUSE.—Solano

Republican, September 21: The new dried fruit packing house of the J. K. Armsby Company, being erected on the Fairfield side of the railroad track, will be one of the largest and best equipped fruit packing establishments in the State. Dried fruit is now being received in large quantities and stored in the building to be packed and shipped as soon as the plant shall be ready for operation.

The capacity of the establishment, in fancy packing, is three carloads per day.

SHIPPING DRIED FRUIT.—The Ernst Luehning Company has begun packing and shipping dried fruit, peaches and pears being the varieties now handled. Owing to the practical failure of the apricot crop, the season for handling dried fruit has been late in opening this year,

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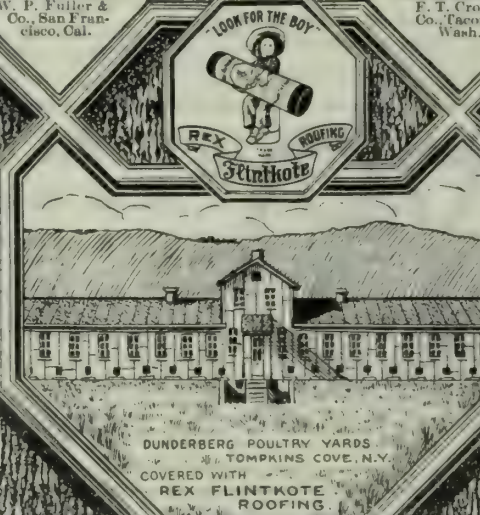
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but, as soon as the prune crop, which is quite large, shall be received, the packing houses will be busy the balance of the year. The company has purchased large quantities of dried fruits, comprising the various varieties.

Stanislaus.

A VAST ENTERPRISE—Oakdale Leader, September 21: Samuel Haufman is here to take charge of the 1400 acres of land recently purchased by an Eastern company. Mr. Haufman stated that the pea canning plant, which is to be located in the southern suburbs of Oakdale, would be built at a cost of \$100,000, approximately, and it was the intention of the company to plant not less than 500 acres of peas this winter. In addition to the cost of building, he further stated, at present prices no less than \$8000 would be required to purchase the mules to be used in conducting the business.

Sonoma.

GRAPE CRUSHING PROGRESSING.—California Fruit Grower, September 21: Grape crushing is under way at the Italian Swiss colony at Asti. That section reports a good yield this season and grapes splendidly filled out and full of juice. The Italian Colony estimates a yield of 5000 tons of grapes in its own vineyards, in addition to which outside grapes have been contracted for. Brandy will be manufactured in considerable quantity at Asti this season.

Shasta.

WEATHER IS FINE FOR DRYING PRUNES.—Redding Searchlight, September 21: The present warm spell means much for the prune growers of Anderson and vicinity. It means that they will be able to market their crop, and it means that they will be able to dry the fruit. During the cool weather that followed the rain, the demand for prunes went down to nothing. Sales could not be made at any price, because the buyers thought they would perhaps be unable to cure the fruit. But since the warm weather set it with a prospect of lasting for some time, the demand for prunes has revived.

Santa Barbara.

SALE OF GOLETA TRACT TO LOCAL MEN.—Daily Independent, September 22: Report of the sale of the Koberts and Cassel tract of 186 acres of valuable walnut land in Goleta, has been confirmed today. The price paid for the property was in the neighborhood of \$56,000, or on the basis of \$300 an acre. This is the largest individual sale of property in the Goleta district for many years. As a walnut orchard, the property ranks among the best in that section of the county. There is not a little speculation as to the object of the syndicate in purchasing the tract. Just as a matter of conjecture, for instance, attention is called to the fact that the property possesses very valuable water rights. The San Jose creek runs through it and there is no doubt that an abundance of water could be obtained by proper development.

San Joaquin.

BOUGHT GREEN GRAPES.—Lodi Sentinel, September 22: According to private advice received from a former Lo-

dian now residing in Sioux Falls, S. D., a carload of Lodi Tokays were sold there last week and the grapes were too green to be eaten. As high as \$2.25 per crate was paid.

EXPERIMENTING WITH TOKAYS.—Lloyd S. Tenny, the government's assistant and promologist, is in Lodi from Washington, D. C. He was sent here by the United States Department of Agriculture for the purpose of making a test on the cold storage of grapes for Christmas and New Year trade. Several hundred thousand dollars worth of Spanish grapes are imported and sold in this country each year, and the Department of Agriculture believes that it is worth a trial to see what can be done in producing this fruit at home.

San Bernardino.

LARGE GRAPE CROP.—St. Helena Star, September 21: Reports from Cucamonga and Bloomington advise of a large output of grapes in that section. The crop is above par, more especially with the better grade of table grapes. Many of the grapes are being shipped from that county to Eastern markets.

OLIVE CROP IS LIGHT THIS YEAR.—Evening Index, September 19: The Bloomington Land Company has set out fifty acres of oranges this year, making their holdings altogether about 200 acres, something over one hundred good bearing trees. The olive crop is very light this year, consequently the mill will not do the work of last year. Bloomington is getting to be a second Petaluma. Several residents are going into the chicken business quite extensively.

Santa Clara.

POULTRY ASSOCIATION PLANS ANNUAL SHOW.—San Jose Herald, September 21: The Santa Clara Valley Poultry and Pet Stock Association held an interesting meeting yesterday. The principal business of the meeting was the making of arrangements for the poultry show, which will be held in November. The California State Poultry Association has shown its interest in the coming show by having a handsome silver trophy made. This trophy will be awarded to the owner who exhibits the best birds of any class. The State association has also offered to render any assistance desired. It is expected that there will be between eight and twelve hundred birds on exhibition at the show, which will be held during the week of November 12. After the annual event it has been planned to inaugurate a series of interesting lectures at the monthly meetings. Men well versed in the raising of poultry will be secured and their talks will be beneficial to the local fanciers.

CALIFORNIA PRODUCES A VAST PRUNE CROP.—Washington, Sept. 23.—The consular report today says: According to trustworthy authority, the consumption of prunes in the United States exceeds 100,000,000 pounds annually. Prior to 1886 the prunes consumed were nearly all imported and sold under the designation of French or Turkish prunes. Now the importation of plums and prunes (they are classed together) for the fiscal year ending June 20, 1906, reached in value only \$53,348, but the exports of prunes alone in the same fiscal year reached \$1,410,360 in value. In the previous year the exports were of the value of \$2,455,056 and in 1904 they were \$3,410,497 in value. This very large decline in exports is not explained. Nearly all of the prunes were produced in California, Santa Clara county alone claiming to have produced over 100,000,000 pounds in one year.

Ventura.

SUGAR PERCENT HIGH.—Oxnard Courier, September 21: Beets received at the sugar factory still show high percentages of sugar. The factory sliced 1700 tons on September 15, the amount of sugar extracted being too great

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for the boilers, crystallizers, melters and granulators to handle. The number of beets sliced has since been reduced to from 1200 to 1500 tons a day.

Yolo.

GRAPES OF GOOD QUALITY.—Solano County Republican, September 22: Grapes are now arriving at the local wineries to the amount of five carloads per day and all the plants are now in full operation. The bulk of the shipments are coming from northern Solano and Yolo county, where the grapes are further advanced than in the local vineyards. The wine making qualities of the grapes from the north are of an exceptionally high grade this year. The quality of the grapes now nearly ripe in Green Valley will also be of a marked excellency.

YOLO GRAPES MOVING.—Sacramen-

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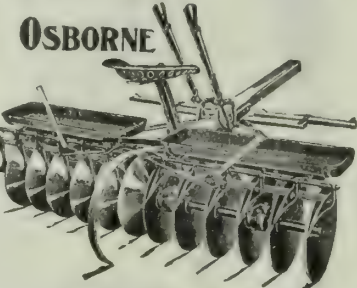
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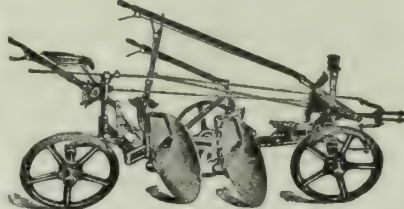
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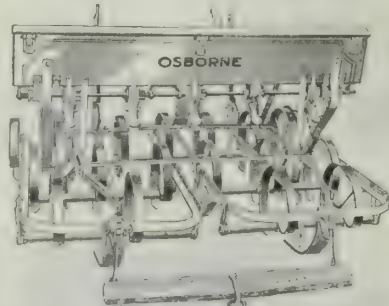
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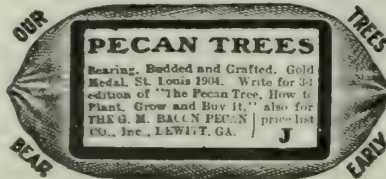
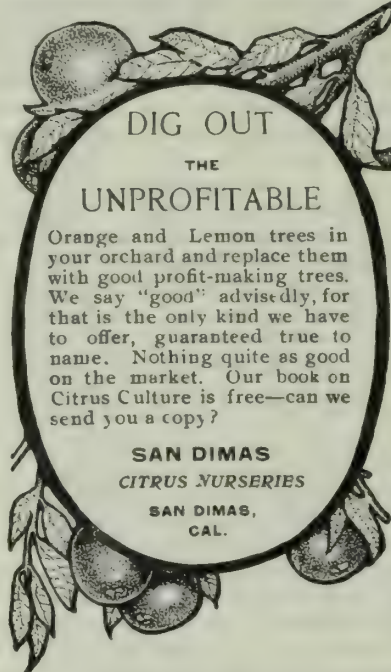
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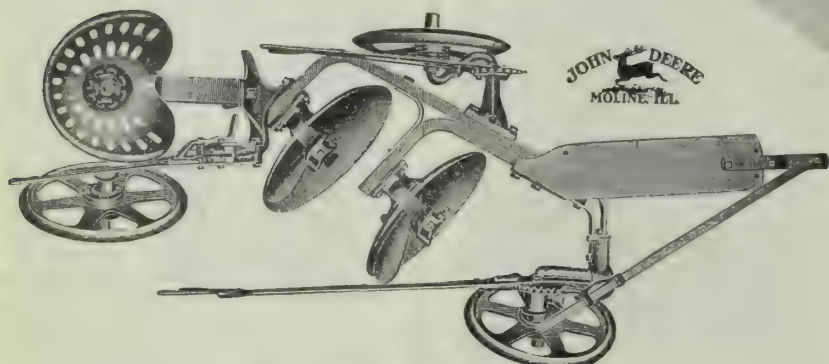
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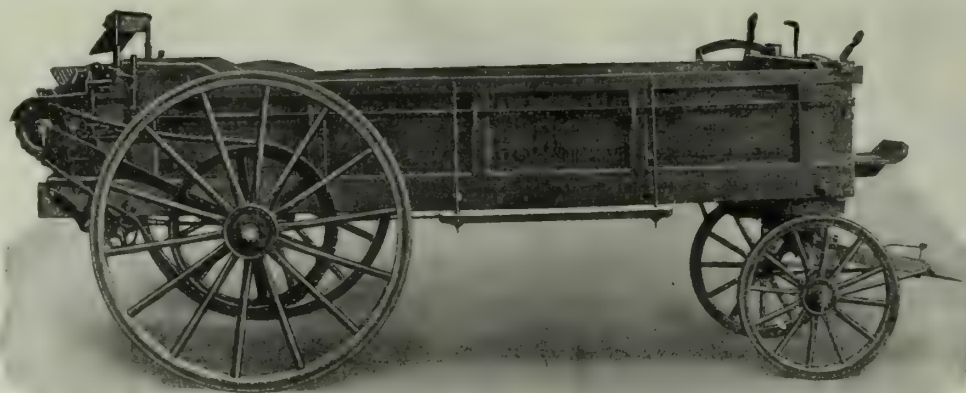
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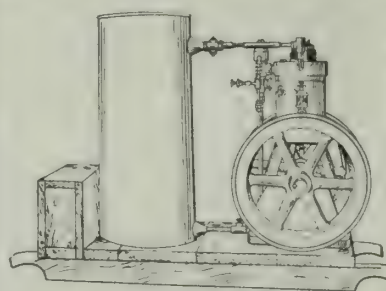
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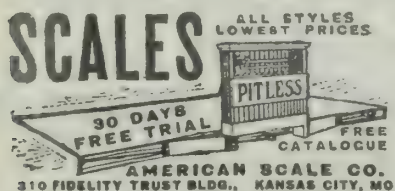
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AND CALIFORNIA FRUIT BULLETIN.

LXXII. No. 15.

SAN FRANCISCO, SATURDAY, OCTOBER 13, 1906

THIRTY-SIXTH YEAR

THE MOSQUITO PROBLEM.

Formerly people detested mosquitoes; now people fear them and as the latter emotion is the stronger there has arisen a warfare of extermination which interests science actuates hygienists and excites the people. As it is proven that some mosquitoes carry disease germs as well as impart irritation, it is decided that all mosquitoes must go. Manifestly the best way to escape danger from mosquitoes is not to have any mosquitoes. The fortunate fact is that if one will put forth proper effort, either individually or in co-operation with others, there need be no mosquitoes—at least in many places which are now infested with them.

The Agricultural Department of the University has undertaken under the leadership of Prof. C. W. Woodworth a campaign against mosquitoes in California and a recently issued bulletin goes quite thoroughly into mosquitoes and the ways to escape their presence. As they breed in standing water, the first thing to do, if possible, is not to have any standing water. Keep the streams moving and the tides moving and mosquitoes are done for, if this can be done. If this cannot be

done and ponds must be allowed to exist, then there are other things to do, but of this another time. Now we simply propose to illustrate drainage work on a small scale which any community can undertake and, if conditions are otherwise right, rid itself of the humming, piercing pests. This was done in the Burlingame neighborhood of San Mateo county, and the Bulletin gives in detail the plan of work and its prosecution, which was notably successful. Mr. Quayle, who had personal charge of the work and writes the report, gives one feature of mosquito occurrence which may be widely suggestive. He shows that mosquitoes will breed in any quiet water; the water may be very foul or it may be very clean. They are not found in large bodies of water, except, possibly, near the edges, but the small, insignificant pools are their favorite haunts. Not a few people at Burlingame and Millbrae believed their mosquitoes came from the Spring Valley lakes, and it was not until the present campaign was carried well into the summer that they were convinced of their error. On account of the continual rippling of the water in these large bodies, and also because of the fact that fish are usually present, no mosquitoes are found, barring the borders,



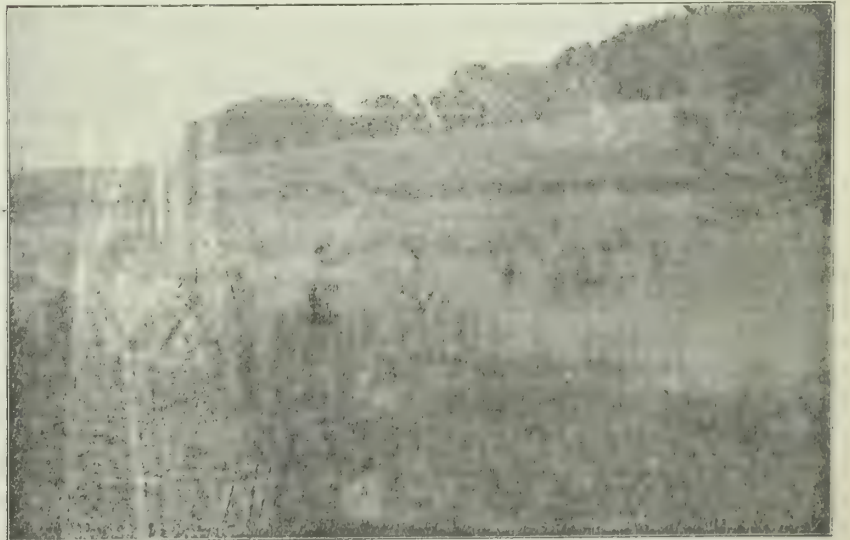
Releasing Water from Small Breeding Pond.

in such situations. A very general breeding ground in the bay region of California is furnished by the numerous creeks from the hills, drying up with the cessation of rains and forming pockets and other stagnant pools along their course. Small containers of water, such as pails, barrels, or even a tin can, may also furnish sufficient annoyance for a family during a season.

In the experience in San Mateo county the residents considered a very small contribution of funds, and the satisfaction of having a mosquito-free district was very great. On waters which could not be disposed of, oiling was done and of that we shall speak at another time.



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THE WEEK

Nothing depresses our agricultural spirit so much this week as the loss by fire of the splendid collection of Southern California products and the demonstration of the resources of that part of the State made by the Los Angeles Chamber of Commerce. Many of our readers are of course familiar with the enterprising work carried on for years by that organization and many have seen the large and varied museum display largely in agricultural lines which occupied the whole top floor of a large metropolitan building. It was an educational display which has taught thousands of people what to do in California and has indicated places for the investment of millions which have contributed to the upbuilding of the State. It has taken years of work and large use of money to secure and install the significant material and the only consolation now is that it did its work so well and returned many times its cost in public benefits. Of course we cherish the hope that its record will appeal so strongly to the enterprising people of Southern California that another similar collection will be immediately entered upon and that, in accordance with California ways of doing things, the new will be like the old but more abundant. The State needs such an equipment of exponents of industrial achievement in Los Angeles and just such a place for assemblies in the interest of advancement as the Los Angeles Chamber of Commerce has for many years maintained.

Speaking of State development, we cannot help expressing our satisfaction that a man who has consistently labored for years for such interests and has never forgotten agriculture in pursuit of professional duties is to be voted for as presiding justice of the Court of Appeal in the Third Judicial District. We do not do much with politics, except to vote as we think right, nor do we discuss candidates or political issues in these columns, but General N. P. Chipman is such a conspicuous example of a man who can appreciate the agricultural point of view in the discussion of public affairs and has done so much for the elevation of agricultural standards in this state, that we cannot resist the temptation to use a few words which may help him to be better known and understood. This temptation might be resisted were the office one which carried greater partisan issues and therefore more sharply contested and better understood, but a high judgeship seems to invite discussion on a higher and cooler level. We assume that Judge Chipman's judicial record is distinctly creditable. We never heard it questioned. The point which, aside from that, prompts us to speak is his public spirited interest in agriculture which has been effectively manifested for the last quarter of a century in all movements for the upbuilding of the interest in the State at large and in the Sacramento valley, to the development of which he has contributed long and earnestly. The conduct of his farm in that valley has helped him to understand the needs and opportunities of the region. One phase of his public work for agriculture has been his voluntary service for fifteen years as president of the California State Board of Trade. No man in the State has, without pecuniary reward, written more or done more to bring to the attention of the world the resources and possibilities of this commonwealth. Such disinterested public services should not be overlooked.

We have to scold a little just to keep from being too dead sweet and so we will suggest that if the Consular

Reports of the Department of Commerce and Labor at Washington were given a little agricultural editing before publication they would have a more intelligent aspect. In a recent issue this item is given: "An important drug product of the Monteserrat district of Spain is the dried milk of the pawpaw fruit. The peasants have lately developed this as an industry, the exports of which have steadily increased since 1900. The milky juice (latex) which exudes from the fruit when the skin is scored is collected and sold to dealers, even being carried for miles to market. The revenue probably constitutes the largest direct form of monetary payment reaching the peasantry during the past two or three years. The pawpaw grows freely in many American states, but has not yet been made to render any commercial tribute." The writer of the foregoing evidently only knows the American pawpaws (*Asimina*) of which two species are cultivated, for their berry-like fruit, in a good many of the states east of the Rocky mountains, but this is not at all the pawpaw of literature and commerce. The great pawpaw is a *Carica*, bearing fruit as large as one's head and this is the fruit which is scored to favor the exudation of the milky juice which contains various medicinal virtues which remain with it in its dry state. No such thing is possible with the American pawpaws. Again the *Carica* is a semi-tropical plant and is only to be thought of in Florida and California. If the paragraph we quote had been agriculturally edited the country might have been saved possible excitement at the thought of turning native pawpaws to uses for which they are entirely disqualified.

This gives us a chance to preach a little on a text which sometimes makes readers tired and that is the value of botanical names long and jargonistic as they may appear. The term pawpaw is a common name made from the specific names of the two fruits: *Asimina papaya* and *Carica papaya*. While the common name only is considered one really does not know which of the two plants is in view. The generic names *Asimina* and *Carica* are, however, perfectly distinctive and the plants distinguishable. Common names can, however, often be pounded into significance. For example if the name "melon pawpaw" had been used our Washington writer might have checked up at it and saved himself from confusion, for the berry like pawpaw of the East and South is not at all melancholy. But in places where either of these pawpaws grows the other does not grow, so that the Spanish say "pawpaw" and the East Americans say "pawpaw" and mean one thing to themselves and two very different things to each other. All this confusion is avoidable by recourse to the botanical names and everyone will know them some day at least so far as they refer to plants in common use and interest.

But there is another indictment we must bring against the consular reports which is also capable of removal by agricultural editing. Another recent consular report has a paragraph entitled: "World's Yield of Honey." It proceeds to expound the subject in this way: "Vice-Consul Charles Karminski, of Seville, furnishes recently published statistics in relation to the world's production of honey, which designates Spain as second in the supply of that product, the total number of her beehives being 1,690,000 and the quota of honey furnished by her 19,000 tons out of 80,000, the world's yield. Germany, with 2,000,000 beehives, produced 20,000 tons of honey, a larger quantity than all other countries. Austria, ranking third, produced 18,000 tons of honey, France 10,000, Holland and Belgium less than 2,500, and Greece, Russia, and Denmark 1,000 tons each." How it was possible for the Washington editor to allow a "world's" honey report to pass him without any mention whatever of American production of honey we cannot understand. Probably the vice consul at Seville knows nothing about honey at all and so readily took up the Spanish self-glorification without thinking, but it is unpardonable that the government of the United States should publish such an item with the whole western hemisphere left

out of the world. The figures may be right for Europe so far as we know, but they should not be spread over the surface of the earth. An intelligent editor would have been thrown away Mr. Karminski's "world" report or would have added a note to it that the United States produced in 1899, 30,598 tons of honey, which is 50 per cent more than either Germany or Spain and that present product is probably as much as both of their products together. But we are writing too sourly on so sweet a subject.

Evidently the world has not people enough and old Malthus, who is perhaps in part to blame for it, ought to be burned in effigy. If he were still living he would be kicked to death by storks whose business has apparently fallen off sadly through his interference. We often speak of the scarcity of labor in this country and the prohibitory attitude to which wages are rising and expect relief from the immigration of the better European classes. But there seems to be little hope of relief in that quarter, if German experience goes far. "The Deutsche Bergwerks-Zeitung in a recent issue refers to an extraordinary scarcity of workmen now prevailing in the Rhineland and Westphalian districts of Germany, which surpasses that of any previous year. This scarcity is noted not only in the iron, steel, and coal industries, for which these districts surpass all others in Germany, but in the building trades as well. The activity in the latter trades is especially noteworthy. Employees in the building trades are for the most part German citizens, while on public works, in mining, etc., large numbers of foreigners find employment, native labor being wholly insufficient to supply the demand. And so Germany is importing labor and using all kinds of inducements to obtain it. Germany has a very short haul from the densely populated parts of Europe and ought to have great advantages over us in getting help. And yet we must not help ourselves by getting what we need of the best kind of Asiatics. The situation is rather trying to say the least of it.

Uncle Sam is making some progress with tea growing. There was recently in Washington the official opening of a package containing the first output of black tea from the Government tea farm recently established at Pierce, Tex. Twenty-five acres of tea have been planted there, and the preliminary picking indicates that a very high grade of tea will probably be produced, although not as good a crop as might be desired, owing to a drought which retarded the growth of the young tea plants. Last year over nine thousand pounds of tea were made at the Government tea farm at Summer-ville, S. C. Negro children, under the instruction of experts, soon become very adept tea pickers—their work compares favorably with the most expert Chinese pickers in the Orient.

QUERIES AND REPLIES.

BELIEVES IN MILCH GOATS.

To the Editor: I have received letters from people regarding milch goats, since your reference to my work in the Pacific Rural Press. Please accept my thanks for your kindness. The milch goat industry is receiving my careful attention and I hope to have the finest herd in the State at no distant date. I started with two Spanish and one pure bred Saanen doe. I secured a good buck that was brought from Ohio, and then by watching my chance I bought four more American and Spanish does. From them I now have forty, including a fine half breed Saanen hornless buck which I prize highly. Four of the does are good milkers giving four quarts each per day. A year ago last summer I sold the milk in Los Gatos for an experiment and found the people ready to use it, and in order to give me a better chance to breed and grow more stock I moved in the mountains 20 miles from San Jose with Edenvale as my postoffice. I have a few good young goats for sale. They have not been tested because of age and my letting the kids run with them in order to better raise them. This is only a word as to what I am doing and intend to do in the goat industry.—H. C. WARREN, JOHNSON, Edenvale.

This is very interesting. It is a part of our fixed policy

to recognize and promote such enterprising efforts. Perhaps later on you will prepare us an account of your places and attainments for publication.

WINERY REFUSE AS A FERTILIZER.

To the Editor: Is winery pomace valuable as a fertilizer? I can get it for the hauling. Is waste from a brandy distillery better than pomace from a winery?—VINE GROWER, San Bernardino county.

Winery pomace is good for fertilization, provided it is not used in such a way as to render the soil sour. This is prevented by scattering the pomace thinly, or by using it in connection with slacked lime or wood ashes. There is, however, little danger of acidity providing the soil is itself rich in lime. The amount of sediment from the distillery would be richer in potash than an equal amount of pomace, because it is the lees of the wine rather than the refuse of the fresh fruit, which is particularly rich in potash. The lees may, however, be used in separating the tartaric acid and thus not count as the waste. Really one cannot tell the fertilizing value of a waste without analysis.

DITCH LININGS TO SAVE LOSSES BY SEEPAGE.

To the Editor: What is the best and cheapest way to save loss of water by seepage from ditches?—IRRIGATOR, San Joaquin county.

This is not easy to answer. The Experiment Station has experiments now in progress at Modesto to test the different methods of lining ditches to prevent seepage, with a view of publishing results which would indicate the relative efficacy and cheapness of different processes. This work will continue during the autumn and publication cannot be made until some time during the coming winter. At this moment we have no definite statement to make on the subject.

SPRAYING WITH BORDEAUX.

To the Editor: I would like to know if in winter spraying for peach blight it would not be as well to lower the lime content in order to strengthen the Bordeaux mixture, as to use double strength? Say use 5 lbs. sulphate of copper, with only 2½ lbs. lime or even leave out all the lime? Do you consider it necessary to use 100 pound pressure in applying, as that is a hard pressure to keep all day with ordinary spray pumps.—GROWER, Oleander.

For spraying during the dormant period a blue stone solution without lime might be used so far as any danger to the tree goes, but bluestone solution will not be held in place to act so long as when it is successively set free from the lime by new moisture. That is, it would be apt to be washed clean from the tree by heavy rains before getting in all its work. Reducing the lime would not increase the strength of the mixture in the way you imagine; it would, however, quicken and shorten its action. It is not necessary to use the high pressure you speak of, although California practice favors the high pressure. In the East a lower pressure is generally used. Higher pressure of course favors a quicker discharge of the same amount of mixture but it is still an open question probably at what pressure maximum efficiency is reached.

COTTONY CUSHION SCALE.

To the Editor: Enclosed herewith please find insects and leaves of lemon tree. The former are also on my orange trees. Kindly tell me what to do to save the trees. The lemon tree is loaded with lemons.—READER, Chico.

The insect is the cottony cushion scale. Write to Mr. John Isaac, secretary of the State Horticultural Commissioner, Sacramento, and ask him for a colony of *Vedalia cardinalis*—the Australian ladybird which lives on these pests.

ALFALFA AND CRIMSON CLOVER.

To the Editor: Can you tell me the best time in the spring for sowing alfalfa seed on the sandy soil west of Turlock, Stanislaus Co? Also, the best fall month? Can I sow crimson clover this fall on summer fallow in the same kind of soil with success? This ground will not be irrigated though in the irrigated district. If crimson clover can be sowed in the fall then how late can the seeding be done? I am a new comer in this region and

am told that you are the one who actually knows about these things.—BEGINNER, Turlock.

Quite wide experience on the plains in your part of the San Joaquin valley seems to indicate that February is the best month for sowing alfalfa seed. Sometimes very good results are obtained by sowing at this time of the year, if the land has been thoroughly irrigated and plowed, allowing the seed to sprout by the moisture imparted by previous irrigation, together with the early rain, but it is not advisable to sow very late in the fall because the small plant is quite subject to frost injury. Crimson clover is seldom successful in the fall, because it is perhaps even more subject to frost than alfalfa. The best growth of crimson clover comes in June, from a sowing as early in the spring as possible. Some years it might be sown as early as February. Crimson clover is an annual, and, therefore, has only temporary uses. Alfalfa is perennial.

MOSS ON FRUIT TREES.

To the Editor: For the past few years my prune and apple trees have gradually become covered with moss; and now the cherry trees (some 30 years old) are being affected in the same manner. Please inform me what spray to use, and when and how to use it, to cause the moss to drop off. I am told it can be done.—AMATEUR, Los Gatos.

Moss can be cleaned from fruit trees by spraying during the dormant season with concentrated lye, one pound to six gallons of water. This gives a clean bark, not only making the trees look better, but contributing to their thrift by destroying the parasitic growth which renders the bark hard and brittle.

POTATO BLIGHT.

To the Editor: Will you kindly let me know where I can get some authority on potato blight?—ENQUIRER, Eureka.

A good account of the organism causing the blight is given by Prof. R. E. Smith in Bulletin 175 of the University of California Experiment Station on tomato diseases for the fungus (*Phytophthora infestans*) causes the blight of the potato and the "winter blight" of the tomato. Suggestions are also given of treatment. You can also get a very good general account of the fungus which causes potato blight and the way to destroy it by sending to the Secretary of Agriculture, Washington, D. C., for Farmers' Bulletins No. 61, entitled "Potato Disease and Treatment," and No. 251, entitled "Profits from Spraying Potatoes." You are probably aware that there is often much advantage in getting a new variety of potatoes, as the old ones become more subject to blight as their growth is continued from year to year.

GRASS IN RESERVATIONS.

To the Editor: I am about to build a reservoir on my ranch 300 by 200 ft. and 10 ft. deep. I intend to use an earth bottom. Will you kindly inform me if there is any way or means to prevent a growth of grass in the bottom of the reservoir without contaminating the water or killing the fish? I understand that the United States Government has some way of preventing the growth of weeds. Would not clay make the best bottom?—FARMER, San Francisco.

We do not know of any way to prevent growth of grass in the reservoir without contamination of the water. A clay bottom well puddled, which is generally done by tramping of a band of sheep, makes a very good arrangement, but there would be a growth of plants which would have to be occasionally removed. The use of blue-stone, sulphate of copper, in water to prevent the growth of alga is quite feasible, and you will find full account of it in Bulletin 78, Bureau of Plant Industry, U. S. Department of Agriculture, entitled "Copper as an Algicide and Disinfectant in Water Supplies." But the destruction of alga and germs producing other forms of scum, etc., is different from the killing of water grass, and our belief is that no successful application for such purposes can be made without destroying the water, else it would be widely employed in the cleaning of irrigation ditches, instead of resorting to the expensive labor which is now necessary.

THE FLOURNOY CLING PEACH.

To the Editor.—I send you a box of white cling peaches. They are not what they could be owing to the fact that the trees were badly cared for and the irrigation about as poorly done as could be imagined. Some of the pits are split owing to improper care of trees and soil. I want to know what you think of them, provided they were well handled. We have a yellow cling that originated on my old home place. It is a grand peach, ripens just before the one sent.—G. H. FLOURNOY, Corning.

Col. Flournoy sent us these peaches September 10, but before speaking of them we desired to get more information about the variety. It seems that the white cling which he sent us and the yellow cling which he also mentioned, originated in a nursery which he planted some years ago and came on seedlings which did not take the buds put into them. The varieties when they came into fruit were so good that a neighbor began to propagate them, calling them Flournoy seedlings, and they are more widely grown than any others of their season in the neighborhood where they originated and sell readily. They are worth more attention. The white cling sent us we greatly admire for external beauty, whiteness and texture of the flesh, and absence of color at the pit, which are good points in a canning peach, but the irregularity of the shape, tendency to unequal sides, and toward an elongated or oval form are not so good, for the closest approach to spherical form is most economical, both in handling in the canning and reduction of waste. For ordinary culinary purposes, for which the cling is superior, it seems to me the variety would be very desirable, even if open to these criticisms, but Col. Flournoy assures us that they assume much better form under better treatment. They certainly have striking characters and are worth the attention of growers.

SALT IN IRRIGATION WATER.

To the Editor: We have been developing a spring in the country in order to increase our supply of water and the water has shown considerable indications of common salt. I would be greatly obliged to you if you could inform me how far it is safe to use water for irrigating purposes that contains salt. That is, what per cent of salt in the water renders it unsafe for irrigating purposes.—OWNER, San Francisco.

Professor Hilgard recently prepared a general statement on this subject for a University Bulletin on saline substances in soils and waters which shows that the answer to your question depends upon several conditions. It is not easy to give absolute rules in regard to the exact figures that constitute an excess of salts for irrigation purposes, since not only the composition of the salts, but also the nature of the land to be irrigated, and the frequency and amount of irrigation water required, must be taken into consideration.

Broadly speaking, the extreme limits of mineral content usually assigned for potable waters, viz, 40 grains per gallon, also applies to irrigation waters. Yet it sometimes happens that all or most of the solid content is gypsum and epsom salt; when only a large excess of the latter would constitute a bar to irrigation use. When, on the contrary, a large proportion of the solids consists of carbonate of soda or of common salt, even a smaller proportion of salts than 40 grains might preclude its regular use, depending upon the nature of the soil to be irrigated. For in a clay loam, or a heavy adobe, not only do the salts accumulate nearer to the surface, but the subdrainage being slow and imperfect (unless underdrained), it becomes difficult or impossible to wash out the saline accumulations from time to time, as is feasible in sandy lands. In these, moreover, as already stated, the alkali never becomes as concentrated near the surface as in heavier soils. Again, where hardpan exists in sandy land, saline irrigation water soon saturates the soil mass above it with salts.

It has been observed by Means that in the Algerian Sahara region, where the date palm is extensively grown in very sandy land, the trees are irrigated regularly with water that contains as much as 213 grains of alkali salts per gallon. The great depths and previousness of these lands, together with the fact that alkaline salts do not accumulate near the surface in very sandy materials,

HORTICULTURE.

DATE GROWING IN IMPERIAL VALLEY.

Mr. F. G. Havens, formerly Horticultural Commissioner at Riverside, but now a resident of the Imperial Valley (on the California side of the Colorado river, west of Yuma) writes for the Imperial Press an account of date growing in that region, which should be read by all who wish to be broadly informed about what California is doing with fruits:

Recently we had occasion to visit in the neighborhood east of Heber and while in that vicinity called on our friend, E. F. Chumard, at his date farm. Many of our readers will be surprised to learn there is such a thing as a date farm in this valley, and all of them would be if they should visit the farm itself and see what a splendid success is being made of date growing in our valley. We confess we were very much surprised with what we saw in the way of demonstrated date growing as well as what we learned of the outlook for this kind of fruit.

Mr. Chumard, of course, is enthusiastic over the prospect for date growing, and naturally feels elated over the manifest success that has attended his efforts. In an hour or more spent at his place, three miles east of Heber, he showed us over his place and explained many things of interest. From him we learned that the experiment was undertaken and is being carried on by the California Date Company, a corporation organized under the laws of Arizona, but whose principal place of business is at Manhattan, Kansas. This company has already spent more than six thousand dollars in their operations and expect to spend several thousand more if necessary to give the business of date-growing a thorough test. They first began operations in their present location in the winter of 1903. They bought a tract of land, and having previously sent to Africa for a number of date trees, got ready to set them out in the spring of 1904. The first shipment to arrive consisted of 156 trees, all of the Deglet Noor variety.

Imported Plants.

These came in June, 1904, and the work of transplanting them to their present location was completed on June 26th of that year. The date palm is a tree that requires frequent irrigations and is sensitive to any neglect along that line. For this reason the long journey from the home of their nativity in Africa to their new home at Heber, was a very trying experience for them. Generally about 50 per cent of the plants die as the result of such shipment and its resulting three to six months out of the ground.

But out of the entire shipment of 156 trees only seven have succumbed from all causes, leaving 149 trees in as clean, thrifty and growing a condition as anyone could ask to see. Of course the hard experience of such a shipment practically robbed the plants of a year's growth, as very little could be expected from them in that line during the season of 1904. It takes a year after transplanting under such conditions for them to grow a new root system sufficient to support the trunk and start a top growth. But during the season of 1905 they made such splendid headway that Mr. Chumard made up his mind he was going to grow some dates during the present year. So he made all preparations for pollinating the blooms when they should appear last spring. When the proper season arrived sure enough the bloom appeared.

Pollination.

In setting a crop of dates on the palm trees it is necessary to have them early enough to insure their ripening to maturity and making perfect fruit. It is therefore necessary to have the blooms come as early as possible and to pollinate only the early blooms. Mr. Chumard's dates began to bloom about the tenth of April last and by the first of May he had pollinated 107 blooms of 56 different trees. These 107 blooms are now fine bunches of dates, averaging probably ten pounds each in weight. Several of the trees have two bunches each and some of them three. He says some of the trees produced as high as seven blooms each, but most of them were too late to do well. He also exercised his judgment as to which trees should bear dates and permitted only the largest and thriftiest to do so. Nearly seven hundred blooms appeared on the trees in all during the season. However, not nearly all the trees bloomed or made any effort to produce dates. Quite a few of them and mostly among the most thrifty, put out shoots or suckers as they are called. These are what makes the date trees and in this way alone is the true fruit bearing tree propagated. Some of these trees have as many as eight of these suckers growing from their roots. As these suckers will all be ready to set out in four years and will be worth at least five dollars apiece at that time, it is

plain that date palms are quite profitable even if they only grow suckers.

Mr. Chumard explained many things about date growing and said he had learned much in regard to it in his experience at his present place. The trees as he has them set out figure out 48 to the acre and he says he never saw or heard of them doing any better or even as well in the old world as they do here. Over there they very seldom produce dates until they are nine or ten years old, while these, figuring them at five years old in the spring of 1904, would make them seven years old last spring. From this at least one year can be deducted for the stunt and injury they sustained in transplanting from Africa to California and laying six months out of the ground and without water. So it is Mr. Chumard's hope that with the suckers produced here he can have bearing date trees in seven years from the time the shoots appear above the ground or two years after they are removed from the parent tree.

A Blooming Estimate.

Speaking of the possible profits of the business, Mr. Chumard told us to do our own figuring. He said he had often seen 250 pounds of dates growing on a single tree, but for a sure thing he put the average at 100 pounds per tree for a ten to fifteen year old tree. With 48 trees per acre this would make 4800 pounds of dates. The variety he was speaking of was the Deglet Noor, which is the finest date produced and readily brings 50 cents per pound retail in the American market. At these figures \$2400 per acre would be realized. This can be cut in two a time or two for contingencies and still leave a very comfortable margin. And after the trees get to be ten years old or such a matter they produce dates and grow suckers at the same time. It is no uncommon thing for a large date tree to grow twenty or more of these shoots at once. With the development of the date growing business it is quite probable that the price of this nursery stock will rule very high. In the first place, the price must rule high on account of the very great expense of getting them here from Africa.

The Deglet Noor.

Another reason will be the manifold advantages the home-grown stock will have over the imported. It will not be damaged by the long trip and being out of the ground for several months, the purchasers can look at the parent tree and see exactly what he is getting. Taking all these facts into consideration, Mr. Chumard and his partners in the date growing business can feel assured of having a good thing in their venture. Mr. Chumard told us the Deglet Noor was the most difficult date to grow of all those produced anywhere. It has the longest growing season and requires the most heat. For this reason he is apprehensive that exceptionally cool summers may occur in this valley and this variety fail to ripen its crop fully at such times. The Deglet Noor, however, is the choicest variety grown, and it is an axiom that all other varieties will do excellently and ripen fully in localities where it only matures occasionally. This present crop being their first product, Mr. Chumard is watching them very carefully and studying their every development. He estimates that of the 107 bunches now growing on his trees he will ripen at least 800 pounds of dates, provided they all mature properly. He says the unusually large amount of moist and sultry weather we have had during this summer has been a very unfavorable condition, for dates do best in a dry heat. He is therefore, anxious for this kind of weather to give way to the drier sort, even if the temperature does not go as high. The dates are beginning to turn color, and it is his opinion that in a month or six weeks they will be quite well ripened. Should he succeed in getting 800 pounds of dates from his present crop, they will be worth at least \$400. [It strikes us that the estimate of 50c per lb. is too much to expect.—Ed.] Add to this the hundred or more shoots that are growing from his trees and he has quite a showing of results in the way of salable products at his date farm.

How They Are Grown.

He has alfalfa planted in strips between the rows of date trees, but says he will plow it all out this winter, as he finds the roots of the palms are reaching out in all directions and will need the soil now occupied by the alfalfa. Next year he expects great results both in the growth of the trees and shoots and in the production of dates. He irrigates his palms every week during the summer months and thus keeps the ground wet almost all the time. It is very clear that the soil where his principal date farm is located is well adapted for their growth. The palms are all thrifty and healthy looking and are certainly looking fine and growing fast. They present a most marked contrast to those on the government date farm at Mecca, which

we visited last June. Over there everything appeared to be either dead or dying. Very little new growth was to be seen and only two or three little stunted bunches of dates in the whole ranch. Our observation at the time was that the principal cause was the poverty of the soil and the unfavorable location on account of hard winds. We learn now that the date farm is to be moved to Yuma Valley. We are glad of it, for we would be glad to see those poor date trees given a chance for their lives. But to return to Mr. Chumard and his operations. In addition to his date farm, we have already described, he has another consisting of 300 trees located in the townsite of Heber. This was planted in the spring of 1905, the work being completed in April of that year. These plants seem to be doing fairly well, but it is the opinion of those versed in such matters that they are on land that is too heavy and stiff for them. Mr. Chumard is seriously contemplating moving them onto his farm on land adjoining his other date trees. Taken altogether, the date growing experiment in which Mr. Chumard and the California Date Company is engaged, is a most interesting one and is more than likely to prove of the utmost importance. They are exhibiting the true spirit and courage of the pioneers and are devoting an amount of energy, ability and capital to the enterprise that will give it a thorough test. Their success will mean thousands to them, but it can very easily mean millions to this valley. We hope their efforts will be crowned with an abundant success and that they may prove Imperial Valley to be, as experts have declared, the finest date country on earth.

ORCHARD CULTIVATION.

(By O. H. Barnhill of Holt, Montana, in the Oregon Agriculturist.)

Everybody admits the importance of clean cultivation for the orchard, yet how few of us practice what we preach, when it comes to doing the actual work. The fact is, to properly cultivate an orchard is a very difficult operation. Few kinds of farm works are more productive of sweat and swear words.

The advantages of orchard cultivation are manifold. It keeps the ground free from weeds, which rob the trees of moisture and fertility and harbor insects and other vermin. It increases the air and water holding capacity of the soil and prevents the escape of moisture by evaporation. This latter point is not clearly understood by many. It is generally known that uncultivated ground dries out more quickly than that which is cultivated, but why?

An interesting experiment.—A simple experiment will illustrate the movement of soil moisture and how it can be controlled. Take a lump of sugar and touch one end to water. The liquid will immediately ascend into the sugar until the lump is saturated with moisture, being drawn upward by what scientists call capillary attraction. This is what causes water to rise from the subsoil to the surface of the ground, where it is either absorbed by plant or evaporates; that is, changes into an invisible vapor and passes off into the air. Returning to the sugar experiment we find that if some loose powdered sugar be sprinkled on top of the lump the water will not rise through it, but only through the solid lump. In a similar way the escape of soil moisture can be checked by maintaining a mulch of dust or loose dirt by cultivation. When the ground is solidified by rain or tramping it should be again loosened by cultivation. Wet tracks are sometimes seen in a cultivated field, showing how water will rise clear to the surface when the ground is packed by tramping.

Practical Experience.

We cultivated an orchard of twelve acres for seven years in Iowa and another of three acres for three years. Since coming to Montana our experience in orchard cultivation has been obtained in a bearing orchard of four acres and five acres of young trees, planted last year. For the first few years after an orchard is planted the ground is plowed early in the spring with a stirring plow, throwing the ground alternately to and from the trees. The two furrows next to the trees are run with one horse, using a short single-tree. Corn, beans or some other hoed crop is planted between the trees for the first four or five years, after which all the ground is given up to the orchard. It is a mistake to sow small grain or plant berry bushes in an orchard, because such crops interfere with cultivation.

Harrow Cultivation.

When trees are small they may be tended with a one-horse cultivator and twelve-tooth harrow, but for large trees other implements must be substituted. In a country like this where the ground is generally loose and dry we consider the common lever harrow the best im-

plement for orchard cultivation. Of course the ground must be loosened up in the spring with a plow or disc, and sometimes after a rainy spell it is necessary to use one of these implements again; but it is often possible to do the bulk of the cultivating with the harrow. The teeth can generally be set sloping and with one hand on the lever next to the trees the harrow can be guided so that practically all the ground can be covered. The secret of success in using the harrow is to use it often. We have already gone over our orchard ten times this season, once with the disc, once with the hoe, twice with the weeder and six times with the harrow. Of course, after the weeds get started or the ground becomes solid a harrow is about as useless as a stump-tailed cow in fly-time. But the ground should never be allowed to get in this condition.

Disc and Weeder.

The disc is a splendid implement to use in the orchard, be it spake, cutaway or solid in form. We have one which is reversible, throwing the dirt either to or from the trees, thus keeping the ground level. It also has an extension head, which consists of an extra frame-work, throwing the two sets of discs wide apart, about eleven feet, outside measurement. This makes it possible to work up close to large trees as one set of discs can be run far under the limbs. We have also found the Hallock flat-tooth weeder useful for preserving the dust mulch, but, like the harrow, it is of little use except where the ground is kept loose by constant stirring. The spring-tooth harrow is another splendid implement for cultivating an orchard, especially for rocky ground.

THE STOCKYARD

TRIALS OF CATTLEMEN.

To the Editor: In your issue of September 8 you make editorial mention of the address delivered by Mr. Hebbbron of Salinas in which the woes of the cattlemen were recounted, and suggest further discussion. The address in question has not come under my eye, but the difficulties under which cattlemen labor are so well known that its general trend can be surmised with tolerable accuracy. You suggest further discussion. I suggest action. Discussion we have had from time immemorial, but so far no action.

We are familiar with the abuses existing. They have been gone over at every meeting of cattlemen, public or private, for many years. Discussion has not hurt or weakened or destroyed any of the abuses. In fact, they thrive on it. Speeches, resolutions and editorial utterances have failed signally to afford a remedy. Do you not think that the time for action is at hand? I suggest to each cattleman of California that he get a copy of Aesop and study thoroughly the fable of the lark and the farmer.

Every one connected with the cattle industry is doing well except the man who raises the cattle. The buyer, the slaughterer and the retailer are all waxing fat and prosperous, while the cattleman is striving hard to keep even.

There has been enough discussion. The malady has been thoroughly diagnosed. Let us have a remedy. I believe that if the cattlemen will act instead of talking, they can accomplish something.

The establishment, by the cattlemen, of slaughtering houses in the principal cities of the State upon a co-operative plan affords, I think, a simple remedy. The difficulties lie in the application of the plan, but they are not insurmountable. Graft dies hard and there would be a struggle between the allied cattlemen and those who have been plundering them so long. To this struggle there can be but one end if the cattlemen stand firm. The fact that they are scattered from Mexico to the Oregon line is their principal element of weakness, but it can be overcome, as can every other difficulty if it is met intelligently and in unison.

No harm would befall the general public by reason of the cattlemen coming into their own and getting better prices for their cattle as they get no benefit when they get less. The consumer pays the same for his beef, whether cattle are worth six or seven or eight cents a pound on the hoof.

The jobber and the retailer get the money. The same applies to the thieving system by which the seller of cattle is compelled to submit to a shrinkage of one-half of the weight of the animal when it is a matter of common knowledge that the actual shrinkage ranges from thirty to forty per cent.

I am confident that my plan will work. It might be necessary to go direct to the consumer for a while, but that is not a serious matter.

I am getting tired of talk, and complaints, and resolutions and would like to see organized effort tried instead of hot air.

H. J. CORCORAN.

Willows.

DRY FEEDING APPROVED.

A few weeks ago we gave an outline of an experiment to be tried at the Maine Experiment Station to determine the standing of various feeding materials and policies for poultry. Mr. G. M. Gowell, in Bulletin 130 of that station, gives some results in some of these undertakings.

The Use of Mashers.—For many years warm mashers made from mixtures of different meals, sometimes with the addition of cooked vegetables, were given to the hens every morning during the winter season, and in warm weather mashers of similar composition, but mixed with cold water, were fed. The hens seemed to like mashers made in this way better than anything except corn, and if fed anywhere near enough to satisfy their appetites, they would load themselves with food and then sit down in idleness during the early part of the day. They were not willing to scratch in the floor litter for wheat, oats and cracked corn that had been buried there for them.

The losses of hens from what appeared to be the system of feeding caused the change of the time of feeding the mash from morning until near night, and giving the cracked corn, wheat and oats in the litter in the morning and near noon.

These changes resulted in the better health and productiveness of the birds, but the crowding for the mash at feeding time and the hurried filling of their crops to repletion even near bedtime, did not argue for the best.

Several different plans of feeding were compared by testing them for a year, and finally the moist mash was abandoned altogether. The present system of feeding has been practiced here for two years and is regarded as the best method thus far used. The dry meal mixture is composed of the same material in the same proportion as the moist mash was, but the method of feeding is different. It is kept within reach of the birds at all times, but they never stuff themselves with it, either because they do not fear an exhaustion of the supply by their competing mates, or else it does not taste so good to them as to cause them to eat of it to repletion. Yet they appear to eat enough of it. It is rich in the materials from which hens make eggs. Hens that lay many eggs must be generously nourished. In the changes in feeding made here, it was not the quantity or composition of the ration that was altered, but the feeding habits of the birds.

It is not proved that our present system for feeding is the only correct one. Some other methods may be better, but at the present time it is giving excellent satisfaction with Plymouth Rocks.

Dry Foods Only.—Early in the morning, for each one hundred hens, four quarts of screened cracked corn are scattered in the litter, which is six or eight inches deep on the floor. This is not mixed into the litter, for the straw is dry and light, and enough of the grain is hidden so the birds commence scratching for it almost immediately. At 10 o'clock they are fed in the same way two quarts of wheat and two quarts of oats. This is all of the regular feeding that is done.

Along one side of the room is the feed trough, with slatted front. In it is kept a supply of dry meals mixed together. This dry meal mixture is composed of the following materials—viz.: Two hundred pounds of good wheat bran, 100 pounds of cornmeal, 100 pounds of middlings, 100 pounds of gluten meal or brewers' grain, 100 pounds of linseed meal and 100 pounds of beef scrap.

These materials are spread on the floor in layers, one above the other, and shoveled together until thoroughly mixed, then kept in stock for supplying the trough. The trough is never allowed to remain empty. The dry meal mixture is constantly within reach of all of the birds, and they help themselves at will.

Oyster shell, dry cracked bone, grit and charcoal are kept in slatted troughs and are accessible at all times. A moderate supply of mangolds and plenty of clean water are furnished. About five pounds of clover cut into inch lengths is fed dry, daily, to each one hundred birds, in winter. When the wheat, oats and cracked corn are given the birds are always ready and anxious for them, and they scratch in the litter for the very last kernel before going to the trough, where an abundance of food is in store.

It is very evident that they like the broken and whole grains better than the mixture of fine, dry materials; yet they by no means dislike the latter, for they help themselves to it, a mouthful or two at a time, whenever they seem to need it, and never go to bed with empty crops, so far as noted. They apparently do not like it well enough to forge themselves with it, and sit down, loaf, get overfat and lay soft-shelled eggs, as is so commonly the case with Plymouth Rocks when they are given warm morning mashers in troughs.

Some of the advantages of this method of feeding are that the mash is put in troughs at any convenient time, only guarding against an exhaustion of the supply, and the entire avoidance of the mobbing that always occurs at trough feeding, when that is made the meal of the day, whether it be at morning or evening. There are no tailings to be gathered up or wasted, as is common when a full meal of mash is given at night. The labor is very much less, enabling a person to care for more birds than when the regular evening meal is given.

The average amounts of the materials eaten by each hen during the last year are about as follows:

Grain and the meal mixture, 90 pounds; oyster shell, 4 pounds; dry cracked bone, 2.4 pounds; grit, 2 pounds; charcoal, 2.4 pounds, and clover, 10 pounds. These materials cost about \$1.45. The hens averaged 144 eggs each.

Succulent Foods and Clover.—Succulent foods are supplied to all birds each day throughout the year. The double yards allow the birds to gather green grass, young oats, rye or rape for themselves during the growing season, as they are turned from the worn run to the fresh ones when the supply of green plants is eaten off. If the sod is much broken, or the plants injured so they will not spring up and cover the surface with green again, the vacated yards are cultivated and reseeded heavily.

When buildings are new and the runs are fenced in from land with a good sod on it, the yards may last a year or two without the sod being used up, but unless they are large it will soon be necessary to cultivate and reseed, if they are depended upon to furnish green food. The yards, 20 by 100 feet, are large enough so that there is room for a single horse to work comfortably in them. It is questionable whether it might not be more economical to construct only single yards for exercise, and feed the hens daily on green food, which could be raised on rich land handy by. Probably less labor would be required to raise the green food in the fields than in the yards, but the labor of cutting and carrying it to the birds would be considerable.

For green food during winter and spring mangolds are used. They are liked by the birds, and when properly harvested and cared for remain crisp and sound until late spring. They are fed whole, by sticking them on to projecting nails about a foot and a half above the floor. Care must be exercised in feeding them, as they are laxative when used too freely. On the average about a peck a day to one hundred hens can be safely used. They would eat a much greater quantity if they could get it.

A four months' feeding test, extending from January 1 to April 30, 1906, in which mangold wurzels were compared with cut clover, has just been completed. Two lots of hens, each consisting of one hundred, were kept under similar conditions, both lots being fed as described above, except that one lot had about seventeen pounds of mangolds each day and no clover, while the other lot received no mangolds, but were given five pounds of clover leaves and heads, gathered from the feeding floor in the cattle barns. Both lots of birds had new beds of oat straw every week. The one hundred birds eating the mangolds averaged 63.9 eggs each during the four months. The one hundred birds eating the clover averaged 59.6 eggs during the same time. The slight difference between the yields of the two lots can hardly be regarded as indicating greater value for the mangold ration.

The vigor and apparent healthfulness of the two lots were equally good. In the general feeding both mangolds and clover are used daily. Formerly it was thought necessary to steam or wet the clover with hot water in order to get good results from it. It is now cut and fed dry, in the bottom of cement barrels, cut off about ten inches high. About five pounds are eaten daily by one hundred hens with very little waste. Apparently as good results are gotten from it as when it was scalded; the labor of preparation being very much lessened.

explain the tolerance, by the palms, of these waters, which are moreover used in great abundance.

During the dry seasons just saline waters have frequently been used, exceptionally, in order to save trees threatened with death from drought. The Station has even advised that this should be done, with the proviso that the salts so introduced must be washed into the subdrainage by heavy irrigation, whenever practicable, even if the same saline water should have to be used for the purpose. For few such waters are sufficiently strong to injure vegetation until concentrated by evaporation; as can be seen from the vegetation growing close to the margins of alkaline lakes, with its roots immersed in the water.

The irrigator can determine for himself whether or not his water is of doubtful character, by evaporating a tablespoonful, or more, in a clean silver spoon (avoiding boiling). If the dry residue should form simply a thin, powdery-looking film on the polished metal, he may be assured that the water is all right. If, on the other hand, an obvious saline crust should remain, which will redissolve in water, he should either have an analysis made, or use the water in such a manner as to remove the accumulated salts from time to time by washing them into the subdrainage, if the nature of the soil permits. A very abundant use of such waters is then preferable to a sparing one; but the user should assure himself that it really penetrates, for otherwise, especially in case much carbonate of soda is present, a dense hardpan may be formed that will allow the trees to perish from drought despite all the water running in the irrigation furrows. A pointed steel probe, three-sixteenths of an inch square, provided with a cross-handle, like a hand auger, ought to be among the tools of every farmer for such tests of his subsoil. No farmer in the arid region can afford to be ignorant of the nature of the substrata within which the bulk of the roots of his crops must vegetate.

THE BOTANIST.

A GREAT GIFT TO THE UNIVERSITY.

Mr. and Mrs. T. S. Brandegee, the well-known botanists of San Diego, have donated their entire botanical collections and library to the University of California. As a result of this munificent gift, the facilities for research work at the State University are practically doubled and it now possesses the most complete representation extant of our Pacific Coast flora.

Mr. Brandegee is a Yale graduate and a civil engineer of no mean ability. Mrs. Brandegee is a native Californian entitled to write "M. D." after her name, but both have for many years given practically their full time to the scientific study of West American plants. These studies have been carried out in Colorado, where Mr. Brandegee made his first contribution to botanical literature, namely, the botany of the Hayden Survey; later in San Francisco, where they directed the destinies of the California Academy of Sciences Herbarium and began the publication of "Zoe," a West American biological magazine; and still later in San Diego, where their residence was taken up in 1895 in order to more conveniently study the Mexican flora, in which Mr. Brandegee had become intensely interested.

During all this time the Brandegee Herbarium was steadily growing in size and importance, specimens being obtained by purchase, by exchange, and by donations from kindly disposed specialists, as well as by means of extended collecting trips undertaken by the owners themselves. For ten years a German botanist, Dr. Purpus, has been exploring the less-known portions of Mexico and sending his collections to Mr. Brandegee to be worked up. Nearly all of the more important sets of plants from the southwestern United States and Mexico have been acquired, so that the collection is now consulted by botanists the world over when desiring information concerning plants of this interesting region. Among the more important of these acquired sets may be mentioned most of the types and duplicate-types from the Orcutt and Cleveland collections, a set of Bebb's willows, nearly all of the Mexican plants distributed by Lemholtz, by Palmer and by Pringle, a majority of the Curtis sets, Parry's Manzanitas and Chorizanthes, and many others no longer obtainable. The Herbarium is very rich in original "type" specimens, that is, specimens from which the original specific descriptions were drawn, these new species being in most cases named and described by Mr. and Mrs. Brandegee themselves. Another marked feature is its richness in sole remain-

ing duplicate-types the originals of which were lost in the sad fate that so recently befell so large a portion of the California Academy of Sciences Herbarium. There are likewise numerous fragments from types preserved in other herbaria, and the collection of Asperifoliae, a group of plants to which Mrs. Brandegee has devoted much attention, probably cannot be excelled in any collection.

Every precaution will be taken to protect this invaluable gift from fire or other danger. Until such time as a permanent botanical building is provided it will be housed in the Hearst Mining Building, which is now nearing completion on the University campus and which is absolutely fireproof. Here it will be combined with the present University Herbarium, which already contains about 125,000 sheets of specimens. The united collections will comprise nearly 250,000 specimens, the majority of which are already mounted in permanent form, while the whole number will be made available for study as rapidly as possible.

The botanical library which comes with this gift comprises (aside from five hundred sets of "Zoe") more than a thousand volumes, many of them rare and no longer obtainable. Lindley's "Botanical Register," in thirty-three volumes of colored plates; Hooker's "Icones Plantarum," a complete series of "Linnaea," and many volumes concerning the Mexican botany are among those included.

The unselfish and generous spirit back of this donation is fully appreciated by the University authorities and every opportunity will be offered Mr. and Mrs. Brandegee, who will now reside in Berkeley, to continue their studies without interruption. Because of the splendid equipment for botanical research now provided at the University, several botanists from other institutions have already signified their intention of visiting the collection for this purpose, and since members of the department staff will also be enabled to carry on their work in a more satisfactory manner and to supply more positive information on botanical subjects, it is seen that this gift is not to the University alone, but to the people of the whole State and to scientists throughout the world. Its acquisition marks another forward step in the University's progress.

ANSWERS TO QUERIES.

By Mr. H. M. Wall, assistant botanist of the University Experiment Station.

The Dakota Vetch.

To the Editor: I send specimen of a plant which is spreading fast over pasture and in all places where it is not disturbed. Please give name and if it is good for anything for cows.—A. M. H., Red Bluff.

The plant is the Dakota Vetch (*Lotus Americanus*). It is of considerable importance in some districts as a forage plant, its value lying in its habit of maturing in the late summer and autumn, when other feed is scarce. It is an annual, but seeds freely when not too closely grazed. Its value as a nitrogen gatherer is less than that of many other legumes.

Water Hemlock.

To the Editor: I send a plant that may be the wild parsnip. I have not been able to find a person that can tell for certain what the plant is. They grow in the bottom of a field ditch that has water in it all the year round. At this season there is only three or four inches of water on the bottom. This plant grows among other wild plants. Will horses, cattle or sheep eat it and if so, is it poisonous to them? Please tell me the name of the thistle that I send, which seems to be taking the place of the Napa thistle so common in this valley.—FARMER, St. Helena.

The plant is Water Hemlock (*Cicuta*), the most dangerous stock-poisoning plant in California. The poisonous principle is mostly in the root-stocks, but these are readily eaten by cattle, horses and sheep. The roots are often exposed by washing of streams or by tramping of stock, especially along paths where the animals come down to drink. They should be removed if possible or stock herded away from places where it grows. The tops should be cut when in flower to prevent seeding, especially along streams, which are good disseminators of the seed.

The poison acts very rapidly, the animal soon becoming wild and unmanageable, so that it is almost impossible to administer remedies.

The plant may be known by its erect root-stocks, as large as one's thumb, horizontally grooved on the exterior and horizontally chambered when mature; the leaves are compound and the tall stems bear compound umbels of white flowers.

The thistle is Yellow Star Thistle (*Centaurea solstitialis*). It is of more recent introduction than the Napa thistle and is to be combatted in the same way,

i. e., by cutting or burning before it sets seed, or by cultivation, the plant being an annual.

Bad for Goats.

To the Editor: I send you a poisonous weed, or what I think is one. I had about four hundred goats poisoned from eating it. They vomited very freely, and after doing that they got easier. Only a few died, but all were very sick. Will you tell me if this weed is poisonous and if so let me know what is the antidote for it?—GOATHERD, Shasta County.

The plant is *Lotus crassifolius*, a leguminous plant with no English name, common in Sierras and portion of Coast Ranges. It is too coarse to be eaten except by sheep or goats and we have no record of stock having been poisoned by it. It is possible, however, that there is a poisonous principle in the seeds at certain stages of maturity, just as there is in lupine seeds. It would be well to herd goats away from places where it grows until more is known of it. While no remedy can be prescribed, a trial should be made with permanganate of potash and sulphate of aluminum, 5 to 10 grains of each for a goat completely dissolved in a pint or more of water give as soon after poisoning as possible. If it is found that poisoning is certainly due to this plant, we would appreciate account of poisoning symptoms.

A Mexican Fiber Plant.

To the Editor: I send a bundle of weeds from Mexico which are suddenly wanted in carload lots. What I want to know is what the name of the weed is and of what earthly value it is to commerce.—READER, Santa Barbara.

Mr. Brandegee rendered his first service to the station when he immediately recognized this plant as *Sphaeralcea angustifolia*. It is a member of the Malvaceae, or Mallow family, and is plentiful in Mexico. The juice is bland and mucilaginous, so we doubt if it could be used medicinally. It is more probable that the demand is due to its fast fibers. The Malvaceae in general have strong, fast fibers and two species, at least, of *Sphaeralcea* are used to a limited extent as fiber plants. One of these yields the Malvalisco fiber of Brazil. The other is a Mexican species which is said to have a silky fiber useful for cordage.

The fiber of the sample submitted seems fairly strong and perhaps by proper curing and preparation it would be useful for this and other purposes. I know of no other use for the plant.

NOT SO MUCH FRUIT SHIPPED THIS YEAR.

Although the shipments of fresh fruit from California to Eastern markets this year have been heavy, it is probable that at the end of the season this year will fall several hundred cars short of last year, which was the banner year in the California fruit industry. Alden Anderson, manager of the California Fruit Distributors, said recently: "The shipments during the past few days have fallen off in everything except grapes. Many cars of grapes are now going forward daily and heavy shipments will continue for a few weeks. This season is about 1100 cars short at the present time of the shipments of last year to a corresponding date. This is partly due to the fact that the season this year was about two weeks later than usual, and partly to the fact that last year we shipped 1900 cars of peaches and this year only 500. A few more pears were shipped this year than last, and not quite so many plums.

"The prices during the past ten days have not been as good as they were, and this is caused by the heavy supply of local fruits in Eastern markets, together with the heavy shipments from other Western States. The prices of grapes have been affected by the conditions, but it looks as though better prices will prevail in the course of a week."

Alfalfa meal has come to be recognized as one of the important foods for swine, poultry and perhaps dairy cattle, and it will be interesting to note how it is made and of what it consists. It is generally supposed to be made entirely from alfalfa hay, but such is not the case. The commercial article is made from selected alfalfa and mixed with sugar-beet molasses in the proportion of 75 per cent alfalfa and 25 per cent molasses. The product contains from 15 to 17 per cent of protein and about 50 per cent of carbohydrates and fat. There are a number of factories equipped with more or less expensive machinery which have engaged in the manufacture of alfalfa meal on a commercial scale. The hay must be kiln dried, and even then it is ground at the expense of great power. Hay, as ordinarily made, is not suitable for the manufacture of alfalfa meal, because it contains too much moisture, which renders it exceedingly difficult to grind and more liable to spoil. The meal is used by feeders in the preparation of their show animals of different breeds.

ENTOMOLOGICAL

MUST HAVE CLEAN ORANGES.

By Mr. A. E. Bennett, at the University Farmers' Institute at Tustin, Orange County.

The growing of citrus fruits in Southern California is one of the most interesting and fascinating pursuits, but it is not all a bed of roses, and he who would succeed must do something besides sit in an easy chair and rake in the shekels. Any one who rides through an orange growing district will be impressed with the great difference in the appearance of the lemon and orange orchards. The variations cannot be accounted for by the difference in soil as some of the poorest groves will be found on the best land, and some of the best orchards on apparently poor soil. Careful study will lead to one conclusion, to-wit: the reason for the difference in condition of groves can be uniformly spelled in one word—management. That is a big word and means everything in the care of an orchard; it means thoroughness of cultivation, irrigation and fertilization, and what is more timeliness of all these operations.

Why Feed the Pests?—But these may all be done thoroughly and timely and yet success not crown one's efforts. What is the use of supplying a tree with a steady and abundant flow of rich sap if it is to be used to feed a myriad of scale insects instead of building up the tree and maturing the orange? As well try to run the government through the medium of labor unions. This leads us to the first division of our subject, the why for scale eradication. The most of us who are raising oranges and lemons are in the business for one of two reasons, or perhaps a combination of both, because we like it, or for the sake of the pocketbook; happy he who finds in his occupation not simply a means of livelihood but a fascination that makes his work interesting, thus calling forth the best effort of body, mind and heart. Certainly there is not much interest or fascination in cultivating, irrigating and fertilizing land to grow big fat scale bugs.

What more interesting sight than a clean, thrifty orange grove loaded with the wealth of golden fruit. Apparently it requires more elaboration to prove to the average grower that the interests of his pocketbook are subserved by spending some money to keep the grove free of scale. Let us look into this phase of our subject a little. Two things are necessary in order to have a profitable orange grove, to-wit: quantity and quality of fruit. We do not need to argue as to the quantity, every observing man knows that a scale-ridden orchard does not produce the amount of fruit it should and would if clean. I have known orchards that were not producing one-fourth the amount of fruit they should, simply because the trees had all they could do to support the crop of scale.

Destructive of Quality.—Now as to quality, there are a number of ways in which scale affect the quality of fruit. However, I will only speak of the most obvious as that is sufficient to prove our contention for clean groves. So serious has become the loss by decay that the U. S. Department of Agriculture was appealed to for assistance and G. Harold Powell of the Bureau of Plant Industry was sent to California and began his investigations a year ago last January of the causes of decay in oranges in shipment. His report is now before us. It bears every evidence of careful, painstaking intelligent work and will undoubtedly prove of great value to the citrus fruit industry.

I have here a number of copies of that report for distribution and every orange grower should take a copy—you will find it interesting reading and doubtless will file it away for future reference. That report illustrates and proves the point I am seeking to establish and I shall use it freely. The first paragraph in this report says:

The loss from decay in oranges in 1905 amounted to \$1,000,000 or more. The decay is caused by a common mold which usually enters the fruit through an abrasion in the skin or else enters an orange that has had its resisting powers weakened in some other manner. More than half the decay in the eastern markets can be readily traced to mechanical injuries in the skin of the fruit. Moist, warm air proves ideal conditions for the growth of the decay. Cold air or dry air may prevent the germination of the mold spores and retard the growth of the disease if it has already started. It is unusual for decay to appear in a clean, sound orange even under adverse conditions.

Decay in Unbrushed, Brushed, Washed and Imperfect Fruit.—An average number of tests made in all parts of the orange district with oranges held two weeks in warm moist rooms, or under the most favorable conditions for decay, gives the following approximate results:

Unbrushed fruit apparently free from mechanical injuries, 1.5 per cent decay.

Brushed fruit apparently free from mechanical injuries; 4 per cent decay.

Washed fruit apparently free from mechanical injuries 12 per cent decay.

Mechanically injured fruit (clipper cuts, punctures, etc.), 36 per cent decay.

The unbrushed fruit from the coast to the upper San Bernardino valley has averaged from 1 to 2 per cent decay in all places; the brushed fruit from 3.5 to 4.5 per cent, and the washed fruit from 11 to 12.5 per cent. Similar treatment in handling has produced similar results in all sections.

This should be interesting to the growers in the coast region. We sometimes hear the statement that oranges from this section do not keep as well as those from the interior—here is the whole solution in a nutshell. Notice the last sentence I read from the Powell report: "Similar treatment in handling has produced similar results in all sections."

Shipping Tests.—Ventilation.—When shipped quickly after packing under ventilation to New York the decay in twenty cars of fruit forwarded from the last of February to the middle of April was as follows:

Unbrushed fruit apparently free from mechanical injuries—1.5 per cent.

Brushed fruit apparently free from mechanical injuries—1.5 per cent.

Washed fruit apparently free from mechanical injuries—4.5 per cent.

Mechanically injured—17 per cent.

Here we have a difference of three per cent against washed fruit, but that does not sound so bad until we do a little careful figuring. The market does not take account of decay up to five per cent, but above that every one per cent cuts down the price materially. Let us figure out a proposition from the Powell report. Assume we are in the height of the season for Washington navel oranges, allow a five per cent decay for unwashed fruit selling laid down in the east at \$2.75 per box, a fair price. The same fruit washed would show a decay of fifteen per cent, selling on the same market for \$2.25. The difference is a neat profit to the credit of the clean grove. Here then we have a clear cut proposition, established not upon theory, but by actual tests carefully made by trained experts.

Must Have It.—If we are to make our citrus groves the most profitable we must raise clean fruit. But some one says the cost of fumigation is so considerable that I hesitate to spend the cash, not knowing what the market conditions may be when the crop is matured. A well kept orchard in full bearing will produce an average of three hundred packed boxes of oranges per acre. On this basis it will cost five cents per box to fumigate. Our proposition on the difference in selling price showed fifty cents per box in favor of unwashed fruit. Take off the cost of producing clean fruit leaves a credit of forty-five cents per box in favor of the clean groves. I might add that my experience the past three years has been that in this district—thanks to our friend the scutillista—a fumigation every two years will produce fruit that does not require washing.

Another reason for the production of clean, bright fruit of high excellence and good keeping qualities is the competition we will have to meet from Porto Rico and the islands of the sea. We can hold our markets against all comers, but only by the excellence of the product, giving the trade a reliable pack and square deal, and there is nothing the trade appreciates more than a good keeping stock.

I think we have shown ample reasons for scale eradication, (1) satisfaction of having a clean, thrifty grove, (2) interest of the pocketbook subserved, and (3) future stability of the industry assured.

Forcible Measures.—Now just a few words on the second division of my topic, compulsory scale eradication: There are three kinds of scale that are troublesome in the citrus orchards of Southern California, the black, the red and the purple. The red are no longer troublesome to any extent in this immediate vicinity owing to natural enemies waging war upon them. The black scale are everywhere present and on a large variety of trees and shrubs, although held considerably in check by scutillista. The purple have not been found right in this neighborhood, but within three miles of here there are several orchards infested with this worst of all pests. I think the question as to whether a grower should be compelled to eradicate the scale or not depends upon whether his grove is infested with an enemy common to the community and with which all of his neighbors are troubled, as in the case of the black scale, or whether he is harboring a pest with which adjoining groves are not infested, but are liable to so become as in case of the purple scale.

My position then is this, the case of black scale eradication in this vicinity can best be left to the enlightened self-interest of the grower. The orchardist on the other hand who harbor purple scale should be compelled to eradicate them because they constitute a public menace.

AGRICULTURAL SCIENCE.

OUTLINE OF DEVELOPMENT OF UNIVERSITY FARM.

Professor E. J. Wickson, Dean of the College of Agriculture, has prepared the following outline of action and policy in the development of the University Farm at Davisville, which has been approved by President Wheeler and the Agricultural Committee of the Regents of the University:

First: We are doing our utmost to secure the speedy erection of the following indispensable buildings: a well planned modern creamery; a stock-judging pavilion to be also used as an auditorium; two cottages for residence of farm manager and foreman. Repairs to several old buildings will also be undertaken; two to answer present purposes as a bunk-house and boarding house for workmen, another as a dairy barn, another as a horse barn, shelter for machinery and hay storage. These new and repaired buildings will give us a working plant for live stock and dairy instruction and for accomplishing such farming as it seems desirable to undertake this year. Just what amount of building and repairing can be undertaken at once will be determined by the cost of labor and materials and their influence upon the bids of contractors, to whom the plans are ready for submission.

Second: The outfitting of the farm with representative live stock, suitable tools and machinery, is proceeding cautiously along lines of greatest immediate needs for good farming and in preparation for the lines of instruction which will be first undertaken.

Third: An irrigation survey and map of the farm will be made at once, as the determination of levels and contour lines is essential to the location of ditches and the best distribution of water over the tract.

Fourth: An increase of the alfalfa acreage will be secured this season and sufficient grain and grain hay will be grown to supply the farm stock.

Fifth: An area will be winter-cleaned of weeds in preparation for a large variety of irrigated summer crops for instruction and experiment, and land not immediately needed will be leased for the coming crop season.

Sixth: The first announcement of instruction will cover the various branches of animal industry and dairying and the dates will be fixed for a series of short practical courses in these subjects and special instructors therein will be announced just as soon as judgment can be formed of the readiness of the buildings and outfit for this week. Although only short courses for definite periods can be at first undertaken, the creamery will be a first-class commercial plant and will be continually in operation, using milk both from the University herd and from outside dairymen, and a high-class, distinctive product will be aimed at, which shall not only be theoretically instructive, but a constant demonstration of the practical success and profit in that line of work.

Seventh: All new buildings for the University Farm are being designed from the point of view of securing tasteful and yet plain structures, with cost so adjusted to uses that will serve as models to those contemplating buildings for similar uses. They will be practical farm buildings, and, though of pleasing aspect, they will not merely be landscape ornaments, nor pretentious edifices which have no place upon a large working farm. We shall insist upon suitability and availability as prime requisites, and fitness for sound and practical instruction in California farming as indispensable.

Eighth: Though the equipment for instruction in animal industries will lead, other branches of instruction will be provided for whenever funds are available and announcements of such courses will be made at the earliest possible moment until the farm attains the breadth and completeness in instruction which the law contemplates.

Ninth: The completion of the combined stock-judging pavilion and auditorium will fit University Farm to serve as a rallying place for all California Agricultural organizations, and they will be invited to hold their institutes, conventions, cattle sales and seasonable produce exhibits on the farm whenever they see fit to do so. It is a part of the ambition of those who are directing the development of the University Farm to make it the trysting place for all those who are striving for agricultural progress and for the extension and improvement of Agricultural education.

THE MARKETS

Wheat.

It is hard to detect any change in the local wheat market. Things stand just about as a week ago. Some little buying is being done but there is no notable improvement in the size or number of the orders. Buyers, while they are willing to pay market prices, are not at all anxious to buy. Growers, on the other hand, are not willing to let go of their holdings at the ruling figures. The market is therefore almost at a deadlock. Millers are buying conservatively in the interior, but the mills here having been burned, even this has no effect here and San Francisco hears of it only indirectly. The spot market here is steady but the December option seems inclined to ease off still more. Altogether there is but little just now to justify growers in holding unless they are prepared to hold for a long time. If California again runs short of wheat so that it becomes necessary to import, there is a chance that spot prices may go up to a greater or less degree. The Portland wheat market shows almost as little change as the San Francisco market, though some large sales are reported. These are, however, very few and, in general, not of sufficient aggregate to have any influence. About 95 per cent of the crops of Oregon and Washington have been harvested. The yield of Oregon is placed at 14,000,000 bushels and that of Washington at 5,000,000 bushels. As in California so in the Pacific Northwest, buyers for export are not very plentiful.

Flour.

Locally and throughout the State flour is receiving considerable attention notwithstanding the fact that it is on the decline. The decline seems to be entirely a matter of sympathy with wheat, and is certainly not due to any lack of interest in flour itself. Several houses have re-located in San Francisco and interest is growing. Stockton millers have the situation pretty well under their control and shipments from that place are regular. No great change in the market can be expected until the indefinite situation in wheat is overcome.

Barley.

Barley for brewing purposes is a little stronger this week than for some time past, but feed barley is dull. Only about enough to supply the constant demand here is being handled, and despite the fact that a large amount is consumed daily the market is uninteresting. More barley has, however, been bought up than in the case of wheat and the partial deadlock really does not leave a great deal of barley in the hands of the growers. Some of the latter are, nevertheless, holding for a higher price. California will be an exporter of barley this year and recently some considerable shipments have been sent to Europe.

Oats.

As quite large quantities of good quality oats are arriving on the market the situation has an element of weakness in it. There has been something of a slump in buying this week. Some buyers have taken limited quantities but as a rule the buying end of the trade has preferred to wait, taking the chance that prices will go down before the need becomes great. As a result few sales of importance have been tabulated this week. Northern markets are in much the same condition, with very little interest being taken. Speculators seem to be letting the market severely alone. An estimate places the Oregon oat yield at 6,750,000 bushels.

Corn.

There is some little interest in Egyptian corn in portions of the interior of the State. Returns in the northern part of the State show up fairly well and dealers here are showing considerable interest. Eastern corn is now coming into California in small shipments and is fairly well bought up by local dealers. The total volume of trading in this is, however, very small and quotations are usually made on individual lots.

Millstuffs.

Millstuffs are comparatively quiet, very little attention being given to most varieties. What little interest there is is confined to rolled barley which is now being fed extensively in San Francisco. However, small shipments of bran, shorts, etc., are being received and disposed of at about the usual figures.

Seeds.

Receipts of seeds are becoming larger and larger as the farmers get their crops into the market. Houses here are pretty well stocked up and, as the supply seems to be unlimited in some lines, there is a feeling of weakness though prices as a rule are pretty well held. Contrary to the general rule, onion seed is in short supply and dealers here are unable to get enough for their

needs. The harvesting weather has been good and this has contributed to the early marketing of the seed crops.

Beans.

But little change is expected in the bean crop until the new crop begins to make itself felt. Then a number of changes will naturally occur. The crop is very slow in maturing this year and in consequence the market is unusually slow in opening up. Some damage is reported in various districts but, on the whole, there is no evidence that the total output has been appreciably cut down. So far, the quality is showing up well, and if the weather continues favorable the crop will be both large and good. Shipments to this market so far are inconsiderable.

Wool.

The last clip of wool has proved to be very good and holders are very optimistic as to the future of prices. Several of the interior markets have set dates for selling and the trade here is now awaiting the results. Recent showers have added to the prospects of the sheep men and advices from the Boston market are favorable as to prices.

Hops.

Hops are still in a state of suspended animation and the market is not expected to take on much activity until later in October. The crop of the coast is practically picked and growers are pretty well aware of the size of their outputs. At present brewers are manifesting little interest. The Washington hop crop has turned out rather smaller than was anticipated and the quality is not of the best. It now looks as though the Washington output would aggregate about 22,500 bales, or about 6000 bales less than last year. Many of the growers of that State have, however, contracted their output at from 11 to 15 cents.

Bags and Bagging.

No change of any note has transpired in the bag market this week. Bean bags are still in demand, and, indeed, are taking up a great deal of the attention of dealers. Owing to the fact that only a few houses have as yet been re-established here, and to the limited facilities for handling the business, a great many bags are being handled at interior points. Cotton goods are receiving some attention at unchanged prices.

Butter.

Receipts of butter continue to be very small and as the demand is good the market is firm and prices stiff. The best butter, and particularly certain favored brands, is very firm and dealers are finding the demand hard to satisfy even at the present high prices. The poorer grades are more plentiful and the sale of these is dragging.

Cheese.

Cheese is the same as last week with receipts about equalling the demand. The price is steady and no surplus or shortage is complained of. As before it is the very best that is most wanted.

Eggs.

Eggs have gone up to 39 cents and are growing scarcer daily. The receipts of fresh ranch eggs are extremely small and the local trade is absolutely unable to supply the wants of the city.

Poultry.

Poultry buyers are still after the heavier and younger stock. The receipts of ducks are a little above the normal but prices are not altered. Turkeys are very scarce and are selling at top prices, especially young stock. Pigeons are arriving freely and are bringing good prices.

Vegetables.

In most lines of vegetables old prices are still ruling. On the whole, receipts are very satisfactory. Tomatoes are a little more plentiful this week than last, but the price does not seem to be affected. Onions are showing a sharp decline and the market is weak. Receipts have been far above the demand and the local dealers are finding it hard to get rid of the surplus.

Potatoes.

River potatoes are weaker again this week and are selling as low as 75 cents. An average quotation would be from 75 cents to \$1. On the other hand, Salinas Burbanks are scarce and the market is firm. The best Salinas are selling at \$1.75 while inferior grades are bringing from \$1.60 to \$1.70.

Fresh Fruits.

Receipts of peaches are falling off and the price for those of good quality is looking up. Apples are more plentiful and the quality shows an improvement. Some lots have come that are remarkable both for their size and for their condition. Plums are still plentiful, though the receipts are a little less than last week. Quinces are beginning to reach the market and so far the quality has been good. Berries are scarce and high.

Dried Fruit.

The recent rain has caused some anxiety among fruit

men. Large quantities of fruit, especially prunes, are still out and even the light rains of last week caused some damage. Reports from San Jose, however, indicate that there was practically no damage in that section. The fig crop is now being cured and results are said to be satisfactory. Peaches are reaching this city in limited quantities and the crop is selling rapidly as phenomenal prices are being offered. Pears and apples are also arriving slowly but no estimates as to quantity or quality of the crop has been risked.

Honey.

Honey continues to be about the same. The demand is still calling for a good grade of comb honey and, as the trade is short on this, the price is very firm. Ordinary honey is selling in a limited fashion but the demand is not brisk.

Nuts.

Very little is doing in nuts in San Francisco. Few dealers have any considerable supply and they appear to be quite generally neglected. In the south the walnut harvest is under way.

Citrus Fruits.

Fancy lemons are still ruling high and dealers are getting in supplies to a certain extent. The Los Angeles prospect is bright in spite of the fact that the yield is about 4000 cars below last year. Dealers hold that indications are good for firm prices.

Raisins.

The raisin market is now largely a matter of expectation. The Fresno packing houses have opened up and are receiving a few shipments of muscats. The price in that section has been forced up to 3 7-8 cents and indications point to a still further raise. The crop has turned out far short of the average.

Hay and Straw.

The bulk of the arrivals continues to come by water, as the railroad company is accepting hay for this point only in very limited quantities. Arrivals this week have been largely of medium and poor grades. In some districts there is still much hay in the fields and the danger of rain damage is increasing. As practically no choice hay is now coming in this grade is scarce and higher. Alfalfa hay is coming in freely and is easier though the demand is good. Straw continues scarce and firm. On the whole the hay market is in good shape from the seller's point of view.

THE FIELD.

BERMUDA GRASS.

To the Editor: I asked a man who had at one time the most beautiful field of alfalfa I ever saw what the people are going to do about Bermuda grass—fight it, or let it take the country?

He said: "Let it take it; it is coming in spots all through my alfalfa."

This might do for such as are wanting to get back to Eden and believe in looking backward for perfection. In its season, Bermuda makes lots of feed, and no expense and no work, and might suit such as are simply trying to live till they die. It is a great and serious matter, and I feel that the matter ought to be discussed and the relative value of the grass understood. Is it good for dairying, for fattening cattle, and so on? For, considering its inexpensiveness and non-requirement of work, but instead of that the pleasure of looking at it and seeing the stock enjoy it, is it not valuable? And as age comes on and strength and ambition begin to wane, a man could stand the Eden part of it.

But lest Eden would not come with Bermuda, every irrigator needs to know more about Bermuda and how hard to fight it. I bought a small stock ranch recently with about twelve acres of the grass on it, up against the levee on the Kaweah river and for months the past season it was like walking in slush snow to go through it and it grew and gained steadily, though it carried sixty head of young cattle that had about forty acres of salt grass besides. Both the salt grass and Bermuda got large and the cattle were seldom seen off the Bermuda. But the cattle, especially the smaller ones did not do well. They remained thin from last winter. I would like to know if this is a common experience, or was it because of the flies and mosquitoes, or because the grass grew in water. And is it good for dairying?

H. E. DYE.

Visalia.

[This is a very interesting question. What do experienced readers think of Bermuda grass? We have had formerly several strong endorsements of its value on lands too alkaline for other grasses.—Ed.]

THE DAIRY.

A CLEAN FAIR AND GOOD SHORT-HORNS.

To the Editor: Your "little preaching" on the subject of a clean State Fair in your issue of September 1 coincides with what has been my way of thinking for several years past, for it has been quite plain to all right-thinking observers that the ethics of the fair have become worse with each passing year. I am referring to the gambling and the encouragement given to that drinking habit which so often leads on to the making of habitual drunkards. I have been attending the State and other fairs pretty regularly, but not always as an exhibitor, since the year 1861, and I have no hesitation in saying that the worst conduct I ever saw at a public gathering was at some of the last State Fairs that I attended (previous to the one of 1896), when a drinking booth was placed in close proximity to some of the cattle stalls, which, to say the least, made it very unpleasant and disagreeable to any exhibitors that were so unfortunate as to be placed in that part of the grounds.

I was one of the unfortunates in 1904, and became so disgusted with the arrangement that I made up my mind to exhibit no more so long as the fair was conducted in such a manner. The manager of this year's fair promised us a clean fair, and I am glad to say that it was in all respects as they said it would be. I am also glad to say that I have lived to see one 'clean' State Fair in California, and, should I live long enough, I hope to see a few more conducted on the principle of making them really and truly agricultural fairs in the strictest sense of the word, that is, for the exhibition of all kinds of live stock, or anything that may be produced on the land, including also exhibits of any industry connected therewith. It would not take long for farmers and breeders of purebred live stock of any kind to find out that it would be for their mutual benefit to attend such exhibitions of agricultural products, and in the course of a very few years there is no doubt but that they would make the California State Fairs a success—a success such as has not heretofore been even thought of in this State. There might be some uphill work at first, but only till confidence became established amongst the people. Among the exponents of live stock who experienced the quiet pleasure there was in being there this year as compared with the disquietude of former years, there is not a shadow of a doubt, so far as I can learn, of the successful issue of such a course if persevered in under the guidance of an intelligent directorate—the kind of intelligence I mean is that of having a thorough knowledge of the requirements of the work in hand.

The Shorthorns—As regards the cattle show, the shorthorns at this year's fair outnumbered all other breeds put together, and this is quite likely to continue to be the case, seeing that the men interested in breeding shorthorns are yearly increasing, and no wonder, for it is the breed of cattle that fills the requirements of the farmer better than any other known breed. But in order to have the breed continue to hold such a position, breeders must cultivate the milking habit more than has been done heretofore in this State, else they may become, as the majority of the breed now are, a purely beef breed of cattle, regardless of the great dairy qualities possessed by the breed, as I remember it to have been more than half a century ago, and still is, amongst the best farmers in England, their mainstay in the dairy business. It is evidently a long way from being so in this State, as is evidenced by the few cows that com-

peted for the generous premiums offered at our last State Fair for the dual purpose type of milking shorthorns. Three were premiums to the amount of \$400 offered in two classes, but there was only one exhibitor. The other breeders said they did not know about it in time (neither did the one exhibitor), but would be sure to have some cows calve right for competition next year, if the same kind of premiums were offered again. Well, the more the merrier, and for the good name of the breed I hope there will hereafter be creditable exhibits, such as will be fair representatives of the good old sort, that produce both milk and beef, but, as is said in Youatt's history of Shorthorn cattle, not both at the same time.

ROBT. ASHBURNER.

Woodland, Yolo Co., Cal.

[This sounds like old times. Let us have more of it.—Ed.]

THE HIGHEST PRICE.

The Kings County creamery has been delayed in rebuilding their plant, which was destroyed by fire, by not being able to get cement. They have made arrangements with a large ice cream company of Los Angeles, by which the farmers of Kings county will get $3\frac{1}{4}$ cents per pound for sour cream butter fat and $33\frac{3}{4}$ cents per pound for sweet cream butter fat. Mr. Cross says that he will be able to raise the price on sweet cream butter fat to $35\frac{3}{4}$ cents per pound in the next ten days, which will be the highest price ever paid for butter fat in this county, which is indeed good news to the several dairymen of this county, and will mean quite an addition to their incomes.

WHAT BARLEY COSTS IN MINNESOTA.

Bulletin No. 48 of the Bureau of Statistics, U. S. Department of Agriculture, entitled 'Cost of Producing Farm Products,' by Willet M. Hays and Edward C. Parker, which will soon be issued, deals particularly with Minnesota field crops. It is designed to show by example how the cost of producing a farm crop may be accurately itemized and recorded. The investigations upon which the report is based are being conducted by the Minnesota Agricultural Experiment Station in co-operation with the Bureau of Statistics. A large number of farmers have also co-operated by taking note of money spent for implements, seeds, and other materials, wages of farm hands, time spent in the various kinds of farm labor, etc. Each day the farmer is visited by one of the young men engaged in the investigation and gives an account of his operations for the day before. In this way the figures obtained represent the work of practical farmers who are actually producing crops for profit.

The crops studied include corn, flax, hay of several kinds, mangels, millet, oats, potatoes, rye and wheat. Taking barley as an example, the cost of producing is itemized under the heads seed values, cleaning seed, plowing, dragging, seeding, cutting, twine, shocking, stacking, and thrashing, depreciation of machinery, and land rental. The farms in each county are grouped together, and the figures given are the average of all farms in the group. The final figure, or total, is the cost per acre of barley, being \$9.13 for Rice county, \$8.51 for Lyon county, and \$6.41 for Norman county. For one large farm in Northwestern Minnesota the figures are kept separate, showing a cost of \$5.97. Cost of production is given per acre, rather than per ton or per bushel, because of the liability of the yield to vary as a result of differences in temperature, rainfall, etc.; but usually the yield and the selling price are given in a note following the table for each crop.

THE APIARY

THE RACES OF BEES.

W. A. H. Gilstrap, of Ceres, Cal., writes to Gleanings on Bee Culture as follows:

Nothing in late issues of Gleanings has surprised me more than the proposition of Mr. Davis concerning the identity of bees of different varieties. The question of purity was raised concerning Italian bees many years ago, and A. I. Root had a cut made showing the three yellow bands of the bee, which should show when the bee was filled with honey and placed on a window. Langstroth's work as revised by the Dadants, and perhaps other authorities, accept this Root test for years to decide on the purity of bees of different races by their looks and actions on brood-combs.

Mr. Davis' scheme looks entertaining enough as a riddle; but to get any value that they did not raise Carniolans, because of the difficulty of detecting their cross with blacks from the pure stock. The only Carniolans I ever saw (pure stock) were from the Lockhart yards, and they are quite different from blacks when they have the liberty of the hive. Since I commenced breeding them, many visitors have noted the striking difference in looks and actions.

Either the editor or myself am at sea about the requirements that the department imposes. I think that the authorities want only pure stock of any race sold. How could that be done with Caucasians if all queens of that race are clipped and their drones confined by perforated metal? No, the object sought is to stock the locality with Caucasian drones, so only pure stock would be sold.

As to the great superiority of Italians, there has always been a question. Niver, Benton, Lockhart, and others have stoutly maintained that Carniolans are better. It is largely a question of locality and methods employed, perhaps.

In Central California we usually have light dashes of honey and unsettled weather so blended that bees breed up well and swarm freely. Late in May a honey-dearth sets in which lasts till the middle of June or possibly in July, when our honey season commences, and it ends in September or October. Mr. Alexander would probably feed through the dearth, and it might be the proper plan. With "millions of honey" in the hive, as Mr. Doolittle recommends, Italians will so weaken that they are in poor condition for the harvest when we get it. After Rambler had kept bees in New York and Southern, Northern and Central California, he said Central California conditions were the most difficult he had experienced. Both Holy Land and Carniolans have the reputation of keeping brood-rearing up during a dearth, which should relieve the difficulty largely; but the Holy Land bees which I bought from various breeders in the South were all too cross to be considered. I never saw a Caucasian bee, and do not know their nature; but I should not wonder if they would suit our own conditions better than Italians. I have no intention of trying them, however.

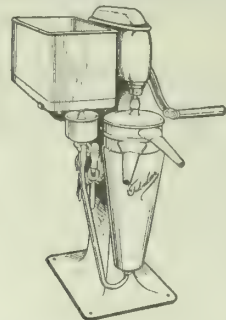
One serious drawback Italian bees have here is their persistency in crowding the brood-nest so it must be removed with the extractor. While Carniolans keep quiet on combs as do Italians, they are easily shaken off.

The editor of Gleanings says: I shall have to acknowledge that Mr. Gilstrap's point is well taken to the effect that it is very difficult to distinguish the identity of races of bees that look very much alike in a small queen-cage, where there can be only a dozen or so of bees; so that the "scheme" of Mr. Davis, after all, does not prove very much either way.

Since his article was published, I have

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It's your business and if you don't attend to it, who will? You cannot afford to keep cows for fun. That isn't business, and, furthermore, it isn't necessary. There is money in cow keeping if you go at it right, and besides there is more fun in going at it right than there is in staying wrong.



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carefully inspected the bees at the Department Apiary, Washington, D. C., and the attendant in charge, Mr. Leslie Martin, very clearly showed that there was a difference. One who is an expert, I think, could readily tell one from the other, and yet it would be hard to describe the difference on paper.

I have since seen Carniolans and Caucasians side by side elsewhere, and have noted the same difference in appearance in the bees. Mr. Martin, at the Department apiary, showed the Banets and Caucasians. These look more nearly alike than any two of the other races; and it is not to be wondered at, because the native habitats of the two strains are not far apart.

With regard to Carniolans, at the present time there is a tendency on the part of some beekeepers, especially those running for extracted honey, and who are able to control swarming, to prefer Carniolans to Italians. From some things I have seen of Caucasians, I am inclined to think they are going to be a very desirable bee for comb honey—particularly so because the cappings are reported to be white.

BRANDING OLIVE OILS.

The Department of Agriculture has received numerous complaints respecting the fraudulent use of names of localities in the branding of olive oils coming to the United States from Italy, and upon the request from the Secretary of that Department the Department of State issued the following instructions to our consular officers:

You are instructed to report concerning the use of fictitious names of firms or individuals manufacturing olive oil or other food products in your consular district and the extent to which misbranding of the oil and other food products is carried on; and you will carefully scrutinize invoices covering such merchandise, and note upon the copy of the invoice intended for the Department of Agriculture any incorrect statements which in your opinion have been made, and where the cases are sufficiently indicative you will accompany the invoices with a full report of the facts.

HOME CIRCLE

A THOUGHT FOR THE UNSUCCESSFUL.

When you, who have reached the summit,
The goal of your long sought hopes,
Look down from your crest, your glory
and rest,

To the ones on the dreary slopes.
Have you thought of the feeble efforts
Of those who are not so strong—
Of the ones who strain and strive to gain
A place in the endless throng?

When the tide of success engulfed you,
You who've attained the end,
And the songs of cheer came ringing
clear
In harmony's sweetest blend,
Have you thought of the one who blindly
Groped with an outstretched hand—
When your race was won did you see the
one
Who failed to understand?

You who have trod the pathway,
And know of its thorn and stone,
And know what lies on the road ere eyes
All weary may claim their own,
Have you, with these eyes uplifted,
Whose goal may never be won,
Once given heed to the word and the deed
That might have been said and done?

THE LOVE OF KEITH.

At the big iron gates he dismissed
the fly.

"I will stroll up to the house," he
said as he threw the man his fare.

Then he began to walk up the broad
gravel drive, his steps quick and jerky
—the movements of a man whose mental
state had lost its natural calm.

His eyes, attracted by the bright color,
rested on the rhododendrons that fringed
on the half-mile drive from the manor
gate to the door; but though his eyes be-
held the purple glory of the blossoms
they did so vacantly, as the eyes of an
infant behold a flame.

Then suddenly into the vacancy a
gleam of pain—or was it shame?—shot;
for he remembered that the rhododen-
drons had been in flower when last he
traversed that road three years ago, that
she had plucked a tiny blossom and given
it to him, bidding him keep it till the
glad hour when he should come back to
claim her for his wife.

Well, he kept it, and there in his pock-
etbook, where her hands had placed it,
the living bloom, it lay still, withered and
dead. He had kept it, and he had come
back to her to-day to fulfill his promise
and to ask for the fulfillment of hers.
Outwardly he was as unchanged as the
scene before him; a little suntanned, per-
haps, and a shade older and more serious
in his general air, but outwardly he was
still the same Keith Halliston who had
held Annice Graythorne in his arms
and vowed eternal fidelity to her and
their love.

And she would never know.

He told himself this bitterly, yet with
a feeling of self-satisfaction that amount-
ed almost to triumph. For it was no
mean thing (he argued to himself) to
have fought down that other and greater
love, to have put a woman who was
dearer to him out of his life, to have said
good-bye to all he held most precious
in the world. And this he had done—for
honor's sake.

The kiss of that other woman was still
throbbing on his lips; her voice still
echoed in his ears; the beating of her
heart remained insistently on his own.
Every word that had been spoken at their
last meeting recurred to him as he went
on toward the house.

"If you care for me as you say," she
had cried in her blind selfishness of de-
spair, "you will go to her and tell her
the truth—tell her that fate has changed

you, that to marry her now would be to
bring misery on you both."

He had tried to imagine himself doing
as she liked, and a vision of Annice had
arisen before him, her face white with
pain, stricken with disappointment and
despair.

"I cannot do it," at length he had an-
swered. "Viola, we must part. To take
our happiness at the price of hers would
mean to cast a shadow on our lives
which time would never efface. Would
to heaven we had never met and loved.
Then we should not have known the
agony of this hour, for part we must,
Viola, and forever."

"You would wreck our two lives for her
one?" Viola had said despairingly. "It is
not true, then, that you love me most!
It is she who holds your heart against
all!"

"My love is yours, and in you lie buried
all my hopes in life," he had affirmed,
passionately; "but I gave Annice Gray-
thorne my promise, and for me she has
waited patiently and faithfully for three
long years. Can I forget that? Can I
break my word?"

"Can you break your heart and mine?"
she had asked.

"Heaven help us both, I must!" he had
cried.

Then had come the last scene—the sob-
bing entreaties, the brief struggle with
temptation, the final resolve to keep faith
with Annice at all costs, that one last
look into Viola's eyes, and then—good
bye!

Mechanically he went on his way up
the drive; mechanically he rang the bell
and inquired for Miss Graythorne; me-
chanically he followed the man into the
library, where for a few moments he was
left alone.

Those moments were hours of agony
to him. His sensations were akin to
those of a criminal awaiting his execu-
tion, and he longed for that meeting with
Annice even as he dreaded it—longed for
it to come and go.

Presently the door opened, and he
stood face to face with her at last! She
came toward him with curious, halting
steps, her sweet face pale and drawn,
her beautiful eyes dimmed with weeping.

A sudden fear darted through him.
Could she have heard? Was it possible
that someone might have told her and
that she already knew what he had meant
to conceal from her all their lives? The
very thought held him dumb, and for a
minute he stood gazing at her and she
at him with a silent questioning—a host
of unuttered doubts and fears.

Keith was the first to speak.

Is this all the welcome you have for
me, Annice?" he said.

"Keith," she answered huskily, not
meeting his look, "heaven knows I meant
to give you a different welcome—but—"

"Go on," said the man as she paused;
but what, Annice?"

His harsh and grating tones seemed to
startle her.

"How can I tell you?" she forced out.

"What have you to tell me?" he de-
manded tersely.

"That I have been untrue."

The words came from her in a shame-
d whisper as she once more dropped her
gaze.

Pale with surprise and incredulity,
Keith stared at her. His pulses had be-
gun to race madly, the blood seemed to
dance in his head, a wild and unreason-
able anger swept over him. He grasped
her hand roughly.

"Annice," he said, "speak out! Do
those words mean that you regret the
promise you gave me, and that you have
ceased to love me?"

"How could I tell that the years might
bring other thoughts and other views?"
she asked him piteously. "We were so
young, three years ago, Keith; it was
not fair to bind ourselves with promises

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GUARANTEED: 65 per Cent PROTEIN

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ANIMAL FOODS for your poultry.

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SOUTH SAN FRANCISCO,

San Mateo County

Ah, Keith, have some pity! I could not
help it—I had no power to stay this
love!"

With a contemptuous laugh, he loosed
her hand, and it fell limp and lifeless
at her side.

"So much for a woman's fidelity!" he
sneered, "So much for the love that was
to last to all eternity!"

He had forgotten all save that Annice,
who had vowed to love no other man but
himself, who had sworn to be faithful
unto death, had proved untrue. He had
forgotten Viola—everything—but that he
had come there to claim his promised
wife, and that he had found instead a
woman who had betrayed their love and
given her heart to another. And for this
he had toiled three years in a foreign
land—for this he had come from the other
end of the world!

Stung by his taunt, the girl looked up,
crimson now with indignation.

"Does it count for nothing that I have
been honest with you?" she asked fier-
cely. "Does it count for nothing that I
have sent the man I care for from me—
that I have made this sacrifice in order
to keep my promise with you? Oh, I
am ready to be your wife," she continued
in a tremulous tone, "if you are willing
to take me on these terms. Now that you
know, I am willing to marry you, Keith;
but to have come to you and not tell
you—ah, I could not wrong you so—I
could not commit so unforgiveable a
sin!"

A change stole over his face as he
heard her; and now, as her voice trailed
off into a sob, a groan escaped him.

The memory of Viola came back to him
with a rush, and the pain of the blow
Annice's confession had given his vanity
fled, to give place to a feeling of re-
morse.

Those words of Annice had torn the
scales from his eyes, and he saw now
the wickedness of the thing he had been
about to do.

Her name broke from him hoarsely.
She turned to him and looked at him
through a blinding mist of tears.

"Annice," he said, extending to her a
supplicating hand, "it is I who have
sinned—not you!"

She listened while he told her all, her
fair head bowed, her pale lips quivering
with emotion. Then, when everything
had been laid bare, she placed her cold
hand in his, and her eyes, full of a pain
the depth of which he could neither
gauge nor understand, rested on his.

"There is only one thing to do,
Keith," she said steadily, "and that is to
say good-bye. You love this other wo-
man and I—I love another man. There
was a fate in it dear; you can't blame
yourself any more than I can blame my-
self. Love was stronger than both of us!

Go, Keith, and be happy—forget that we
ever met."

"And you, Annice?" he asked, as a
strange thrill ran through him, awakened
perhaps by a flash of memory in which
bygone days had returned to him—the
days when she had been all the world
to him.

She looked at him unflinching.

"I—I shall marry—the other man," she
said.

* * *

Squire Graythorne came into the li-
brary and stood for a moment watching
Keith Halliston's handsome figure mov-
ing swiftly down the drive. When it had
passed out of sight he turned to the
girl, who lay face downward on the cush-
ions of the couch.

"Well," he questioned. "Did that let-
ter speak the truth?"

"Yes," she answered, in a strangled
tone, "it was all true."

An oath escaped the old man's lips.
"I hope that you gave the scoundrel his
desserts," he said, suppressing his wrath
with an effort. "I hope you told him what
we think of a man who plays the traitor
to his promised wife."

"I have sent him away," answered An-
nice, with a sob. "We—we have parted
forever!"

"I am very glad to hear it," observed
the squire, gruffly. "I was afraid you'd
be foolish. I know what women are when
they care for a man as you cared for him.
And now, my girl, you must make up
your mind to forget all about him. I
have been thinking things over. What
do you say to a trip abroad, eh? I have
a great belief in other scenes and new
faces. Shall we go?"

As he spoke he sat down and put his
arms around his motherless child. She
sank weeping into his embrace.

"Yes," she sobbed, "help me to for-
get, daddy. Take me away and help me

Berlin, Pa., Aug. 15, 1905

The Lawrence-Williams Co., Cleveland O.:
We have been selling GOMBAULT'S CAUSTIC
BALSAM for about fifteen years and no medicine
on our shelves has given better satisfaction. My
father was a V. S. and knew a good thing when he
saw it. He sold and used dozens of bottles of it.
We push it because it gives satisfaction.

J. J. BRALLIER.

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ANTHRAX AND
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are given the preference by 80% of Cali-
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The Cutter Laboratory

TEMPORARY ADDRESS

Grayson and Sixth Streets, Berkeley, Cal
West of San Pablo Ave.

to forget. I love him so! I love him so!"

* * *

An hour later Keith Halliston, with an exultant look on his clear-cut features and a great joy within him, was holding Viola Maine to his heart.

"So you will be mine after all!" he whispered passionately, his lips on hers. "Mine through life! And we may take our happiness unshadowed even by a regret."

The woman's answer lay unuttered in her deep blue eyes. She was trying to believe that their happiness was indeed without a shadow, but a question arose between her and the sunshine of her future he depicted. Had Annice Graythorne told Keith the truth—or had she been dominated to a noble act by the anonymous letter she, Viola, had sent her the previous night?

The question lay like lead upon her mind, unanswered.

And neither Keith nor the woman he married ever knew that Annice had sacrificed herself that the love of her life might be happy without a regret.—Philadelphia Telegraph.

DOMESTIC HINTS.

Tomato Souffle.

A delicious tomato souffle is made as follows: Take half a pint of tomato pulp that has been rubbed through a sieve, an ounce of butter, two ounces of grated cheese, an ounce and a half of boiled macaroni, an ounce of stale breadcrumbs and a teaspoonful of made mustard; mix all together in a saucepan, and stir over the fire until boiling; take from the fire, let cool; add first the yolks of two eggs, and then the whites of three, with salt and pepper. Turn into a buttered dish, and set into the oven to bake quickly. Dust over with grated cheese.

Veal Short Cakes.

Try making a veal short cake for a change. Make a biscuit dough, divide it into two parts and roll out half an inch thick. Spread a little butter on one part, place other half on top and bake in a hot oven. Cut cold boiled or baked veal into small pieces, add a little water and gravy if you have it, and season to taste with salt and pepper. If too thin, it may be thickened a little with flour and water. When the biscuit is done open it and put the veal between the layers and on top. The top layer should be turned bottom side up. This is very good indeed.

Green Peppers and Rice.

Wash the green peppers and cut a slice from the top of each. Take out the seeds, leaving not even one. Cook in boiling water for ten minutes, fill with hot boiled rice, lay a rounding teaspoon of butter on each, put on the cover which was cooked with the other part. Set in a buttered baking pan for about ten minutes. Serve hot.

Cheese Pie.

Will make a nourishing hot dish for supper, and also make use of stale bread. Cut the bread into one-third inch slices, cutting each slice in half. Butter a shallow baking dish, put in a layer of bread, then a layer of soft mild cheese, cut in one-eighth inch slices, and sprinkle with salt and paprika or pepper. Beat two

eggs slightly and add one cup of milk. Pour over the bread and bake until the cheese is soft, which will take about 30 minutes.

Rice and Strawberries.

Boil half a cupful of well washed and dried rice in one quart of boiling water for twenty minutes. Drain it and put into a double boiler with a little salt, a tablespoonful of sugar and milk enough to cover it. Cook until the rice is thoroughly soft and the milk is all absorbed. Make a thick syrup of one cupful each of water and sugar and let it cool. In the center of a glass dish heap strawberries, arrange the rice around them, and over the whole pour the syrup. Serve at once.

Mocha Cake.

One cup sugar beaten with two eggs; one cup flour; one teaspoonful baking powder; one-half cupful milk; one teaspoonful butter heated to a boiling point. Filling—One cup powdered sugar creamed with one-half cup butter; two tablespoonfuls strong coffee; two tablespoonfuls cocoa; one tablespoonful vanilla.

HINTS TO HOUSEKEEPERS

Cleaning White Ribbons.

White ribbons—satin, messaline, louisine and the rest of the satiny kinds—which have become soiled may be washed in tepid water in which soap jelly has been dissolved. Stretch them out upon a board to dry—an ironing board covered with clean muslin is splendid for the purpose—pinning the ends firmly, so as to stretch the ribbon beyond the need of pressing if possible.

Hint About Old Gloves.

Old kid gloves or kid slippers may be utilized for making kettle or iron holders. Leather being a bad conductor of heat, these holders are much more effective than flannel ones. Squares of kid should be cut out, joined together and covered with felt or flannel, the edges being bound with braid or strips of thin leather. The housewife will be surprised how such holders save her hands from the heat.

To Wash Challis.

For washing challis rice water is the best. Boil one pound of rice in five quarts of water. When cool put the challis in with the rice and water and wash well, using the rice much as you would soap. If no rinsing is used the rice will have a good effect on the fabric.

Cleaning White Felt.

To clean white felt, also white beaver hats, thoroughly brush them free from dust, then with a piece of flannel or rag wet them all over with cold water and pipeclay them, and when quite dry brush the pipeclay all out with a stiff brush, and the hats will look equal to new.

Care of Bath Sponges.

When the regulation salt water sponges need cleaning the best plan to cut the dirt is to soak them in vinegar for several hours and then run clean warm water through them until the acid is all out. They should then be hung in the sunshine where they will air and dry. After each bath a sponge should be washed out with clean hot water and soap and rinsed with cold water, then put in a place where the air and sunshine sur-

round it, for unless sponges are well aired they become sour and disagreeable to use.

How to Preserve Cut Flowers.

A florist of many years' experience gives the following recipe for preserving bouquets, says the Chicago News: "When you receive a bouquet sprinkle it lightly with fresh water; then put it into a vessel containing some soapsuds, which nourish the roots and keep the flowers as bright as new. Take a bouquet out of the suds every morning and lay it sidewise in fresh water, the stock entering first into the water. Keep it there a minute or two, then take it out and sprinkle the flowers lightly with pure water. Replace the bouquet in the soapsuds, and the flowers will bloom as fresh as when first gathered. The soapsuds need to be changed every third day. By observing these rules a bouquet can be kept bright and beautiful for at least a month and will last still longer in a very passable state."

Oatmeal Bags for the Bath.

I wonder how many know how delightful and softening and nourishing to the skin oatmeal bags are in a bath. They also impart a delicate fragrance that clings to you. I make mine out of cheesecloth. Cut a yard of cheesecloth into bags about 4 inches square and sew up firmly, leaving a small opening at one seam. The bags are filled loosely with these ingredients: Take 4 lbs. of finely ground oatmeal, 1-2 lb. pure soap, pulverized and 1 lb. of Italian orris root. When the bags are filled sew up the opening and lay away for future use. They are used as a sponge in the bath and I would not be without one now, after having used it once.

How to Thread Needles.

When threading a needle in a dim light if the thread is white hold it against a dark background; if dark, hold it against a light background. When threading a sewing machine by artificial light one's eye is sometimes dazzled by the reflection from the metallic plate. This can be remedied by covering the plate temporarily with a piece of dark cloth.

Use kerosene to brighten your brass ornaments.

If you like to keep your neck and belt ribbons in good condition secure a number of different sized ribbon bolts from some department store, roll them on these and so keep them nice and smooth when not in use.

If a teaspoonful of concentrated lye with a cup of water be put in a kettle whose contents have burned on the bottom and left to stand for a few hours there will be no trouble in removing the burned substance.

To scald milk properly place the dish containing the milk in a pan of cold water and put over the fire. When the water begins to boil the milk is scalded. Wash out the sink at least once a week with a strong solution of potash and hot water. It will clean the pipes of grease and save you a plumber's bill.

To clean paint, dampen a clean cloth in hot water, dip it in whiting and rub the paint until the dirt is removed. Rinse well in clean water, dry with a soft cloth and polish with a chamois leather. Paint cleansed in this way looks like new.

Friction will cause gasoline to explode. Look out. "Souze"; don't rub. Don't expect gasoline to take out grease. It won't do it.

My lamp-chimneys sometimes get broken, but seldom or never break. There is a great difference.

My Index is useful to every one who owns a lamp, and it is free.

Address, MACBETH, Pittsburgh.

CHAFF.

Where Nature Stopped.

The single woman was protesting against increased water rates, and the town clerk was waiting his turn, but not expecting to get it.

"It's a shame, anyway," she concluded emphatically, "to have to pay for what nature supplies so bountifully."

"But nature doesn't supply the pipes, ma'am," replied the town clerk, rather happily, it seemed to him.

Insinuating Landlady.

"Do you believe that man is made of dust, Mrs. Hashley?" inquired the frivolous boarder.

"Not all of them, Mr. Slowpay," replied the landlady. "Dust settles promptly."

Not Settled Yet.

"By the way," asked the visitor, "when was Philadelphia settled?"

"Hugh!" grunted the native, "it ain't settled yet. The City party's still shakin' things up."

A Broad Hint.

They were seated in the parlor conversing on the uncertainty of life. She—The future is a vast, unfathomable mystery to us, isn't it? He—Yes; all we know is that we have got to go some time. Voice from the Library—It would suit the convenience of this household if you'd make it a little sooner than that.

Playing Safe.

"Why did you shoot this highway man?"

"In self-defense," answered the pedestrian with the big gun.

"But he was running away from you when you fired," said the officer.

"I know it," replied the other, "but I was afraid he was going to run around the block and attack me in the rear."

Not Responsible.

Workman—Mr. Brown, I should like to ask you for a small raise in my wages. I have just been married.

Employer—Very sorry, my dear man, but I can't help you. For accidents which happen to our workmen outside of the factory the company is not responsible.

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Mohall, N. D., March 6, 05.

Dr. B. J. Kendall Co.,
Gentlemen:—Please send me a copy of your "Treatise on the Horse and his Diseases." I cured a Spavin with one-half bottle of Kendall's Spavin Cure.

Very respectfully yours,
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Best Prune and Olive Dip
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AGRICULTURAL REVIEW

Butte.

NEW RATE LAW MAY INJURE FRUIT MEN.—Chico Daily Enterprise, Oct. 2: According to the new rate law as at present interpreted, shipments of California fruits to the East cannot be diverted on branch lines of railroad without excessive cost to the grower. On direct lines the old rule of returning shipments to main lines in the event of failure to sell at the smaller markets will still obtain, but on branch lines the grower will have to pay extra freight for the return of his produce to the main lines. Alden Anderson, president of the California Fruit Distributors, says this will be an advantage to commission men in small towns to hold up the growers for low prices. It will not affect the deciduous fruit shipments this year, as the season is about over, but will work a distinct harm to the shipments of citrus fruit growers this winter.

BROWN SPEAKS WELL OF THE HOP OUTLOOK.—Chico Daily Enterprise, Oct. 2: S. P. Brown, who is prominently identified with the hop industry in this section of the State, being treasurer of the American Hop & Barley Company, and who for the past few months has made his headquarters in this city, will leave Chico tomorrow for San Francisco. Mr. Brown reports that the hop season has been very good and that the outlook for next year is excellent.

PROFESSOR DORSETT ON SHADE TREES.—Chico Daily Enterprise, Oct. 2: At the meeting of the Chico Civic club last evening, Professor P. H. Dorsett of the National Plant Introduction garden, presented a very interesting paper on "Trees on City Streets and Highways." He told of the success of other cities and described the care of trees for shade and ornamental purposes and the species that are most desirable.

BIG SUGAR FACTORY STARTED OPERATIONS.—Chico Enterprise, September 21: The machinery in the big sugar factory started in earnest today, and from now on they will manufacture beet sugar in the city of Hamilton.

GRAPE HARVEST NOW ON AND OTHER CROPS RIPENING.—Gridley Herald, September 21: Dr. D. J. Turner, who bought forty acres of land in Gridley Colony No. 1, last year, and who has improved the place by planting alfalfa and fruit trees, has added to his holdings. This week he bought forty acres more directly east of his former purchase.

The Smyrna fig (Calimyrna) trees planted in Colony No. 2 last spring have produced figs this season and the fruit may be seen on the young trees now. They are not fertilized, of course, and are not commercially valuable, but the presence of the figs prove the prolific and early bearing habit of the variety.

The Egyptian corn on the various colonies will soon be ready for the harvest. It promises a very satisfactory yield. The irrigated beans also promise a fair crop.

GRIDLEY GRAPES TEST WITH THE BEST IN THE STATE.—Gridley Herald, September 21: H. B. Green of the Los

Amigos Winery and Vineyard Company, took a fresh test this week, and found the grapes to be gaining in sugar content and generally more satisfactory. The last test of the Zinfandel grapes showed the sugar content to be 27 per cent, while the Mission grapes showed 26 per cent. The Feher Zagors tested 24 1-2. The grapes from the Healdsburg and Russian river country are considered to be the finest in the State, and Gridley grapes are fully equal to these.

NEBRASKANS PURCHASE FRED KRUSICK LANDS.—Gridley Herald, September 21: One of the important real estate trades of the past week was that by which James and R. K. Craig bought the eighty-acre tract of land south of this place, belonging to Fred Krusick. They came from an irrigated section and at once saw that the possibilities for application of water and diversity of products in this region. They are practical farmers.

Colusa.

SHEEP-DIPPING APPARATUS.—Sacramento Union, September 23: A large sheep-dipping apparatus has just been completed at the H. A. Logan ranch, near Colusa. It consists of two large tanks with heating apparatus, and was designed with a view of saving time and doing the work in a manner far superior to the old method.

Fresno.

BEGINNING ON RAISINS.—Fresno Republican, Sept. 27: The raisin season is now on at the packing houses and seedling plants. While many of the packing houses are working figs and dried fruit, raisins are the dominating feature. So far the run has been very light, not at all up to that of last year, but the packers have all they can handle and have been kept on the go ever since the season began.

The fruit itself is claimed by the packers not to be up to the standard.

In an interview with the workers in several houses in regard to Rev. A. P. Brown's sermon of last Sunday, appealing for a day off for the packing house laborer, they all answered, "We're not looking for a day off. The fruit season is short as it is and we get paid by the hour, the more hours we can get in a week the better for us. When the packing houses close down many of us are without steady work for the rest of the year, and every extra penny made by working overtime or on Sundays now goes a great way in helping things along. Let good enough alone; we're not kicking."

Figs and dried fruit are still coming in, the latter in great quantities, but this can wait and a large floor space in the several houses is piled high with the fruit.

Kings.

A FINE FRUIT EXHIBIT.—Hanford Sentinel, September 27.—J. T. Baker is engaged today in overhauling the jars of fruit that he has prepared for the fair exhibit, and putting them in shape to be installed in the pavilion when the fair opens. Mr. Baker has had good success in preserving the fruit, and all of it is in good shape. The preparation of the fruit was commenced rather too late to secure the best samples of peaches, and it was impossible to secure any apricots. Aside from this the exhibit makes a good showing, and is representative of the fruit interests of the county. Some corn and tomatoes have also been placed in jars, and they as well as the fruit, are worth looking at.

Kern.

WHO RAISED THE BIGGEST WATERMELON IN KERN?—Kern County Echo, Sept. 27: The Times, of Wellington, Texas, says that one R. R. Rankin drew a prize of \$5 in a Collingsworth county fair on a watermelon weighing 81

pounds. Collingsworth county is in the Texas pan-handle.

We have indistinct memories of melons grown in this valley that weighed about 75 pounds, but we cannot recall hearing of any locally grown melon that comes up with the Texas prize winner. There must have been some 81-pound melons grown here, however, and we would like to hear from anyone who has a melon that will out-weigh the Texas exhibit.

Napa.

THE FRUIT PACKERS ARE VERY BUSY.—Napa Register, Sept. 28: The prune packing season has begun in earnest in the several large establishments about town. For several weeks large numbers of women and girls have been preparing the choice fruit for shipment at the Napa Fruit Co.'s drier in East Napa and at Wm. Fisher's packing house at Union Station. Practically all the green prunes are now in and are drying in the yards.

At the Napa Fruit Co.'s drier the packing and shipping of prunes is in full blast and some 100 employees are busily engaged in this work. The packing force alone is about fifty strong. An average of a carload per day of dried fruit is shipped out to eastern and other markets. They will be packing and shipping well on into December.

At the Fisher packing house at Union Station there are seventy-five employed in handling the fruit. Two shifts, a day shift and a night shift, are being kept busy in the packing house in getting the fruit ready for shipment. Although several carloads have already been shipped the real shipping month is October and during that month a car or more per day will be the average. The latter part of December is the time expected for the completion of handling this year's prime crop.

The prune crop this year, though sparse in some sections, has been in general very good and considerably larger than expected. In comparison with the crop of 1905 in quantity and quality it is superior; especially in the former regard.

Riverside.

FRUIT EXCHANGE ANNUAL MEETING.—Riverside Daily Press, Oct. 2: The annual meeting of the stockholders of the Riverside Fruit Exchange was held this morning in the board room of the Exchange in the Glenwood block. The meeting was called to order by George Frost, president, and the following directors were elected: W. P. Russell, C. H. Low, S. H. Herrick, George Frost, A. P. Johnson, M. J. Daniels, L. C. Waite, J. E. Cutter, H. O. Reed, C. F. Huse and D. W. McLeod.

The directors organized with the selection of W. P. Russell as president, C. H. Low, vice-president, and S. H. Herrick, secretary. It is understood that there will be no change in the manage-

is at present a resident of Los Angeles, member of the Exchange. Mr. Johnson, who will represent the Exchange on the Los Angeles Board of the California Fruit Growers' Exchange.

The report of the manager, John Jahn Jr., showed that the average orange prices per car realized this year were very materially in advance of those received last year and withal very satisfactory.

Santa Barbara.

NATIVES TAKE PLACE OF JAPS.—The Independent, Sept. 28: H. E. Owen, the walnut grower, has replaced Japanese pickers with Californians and is greatly pleased with the way his new men are handling the crop. Speaking of the difference in the work of the two nationalities Mr. Owen said this morning: "I made contracts with the Japanese to pick walnuts at \$13 a ton. They were not to hull the nuts, simply to pick them from the ground. It was not long before they asked for a raise to \$15 a ton. I refused, but offered to give them \$1.75 and they accepted it and the work went on on that basis. I soon found, however, that I was the loser, for those boys were not earning 75 cents a day. At the \$1.75 a day, they were to board themselves and I provided a huller, a machine. It would have been easy for them to have made \$2 a day if they had worked faithfully, but they soldiered and were worse than useless. The Californians are doing splendidly and I have solved the problem of walnut picking."

Santa Clara.

HEAT WITHERS GRAPES.—San Jose Mercury, Oct. 2: According to statements from authoritative sources today, the expectations of vineyardists that the present season would realize the largest wine crop in the history of Southern California have been shattered by the wave of almost unprecedented heat which struck this section of the State Saturday night and has continued with but moderate abatement until this evening. Thousands of tons of choice grapes, have been seared within the past two days and will be fit for nothing but brandy making or raisins. These fruits were in the picking, but when the hot wave struck without warning, hundreds of pickers quit the fields and refused at any price to return to work while the heat lasted. As high a temperature as 112 degrees on the shady side of the street was reached Sunday and today the mercury quivered around the 100 point. Tonight it is appreciably cooler and there are indications that the torrid spell is broken.

DRYING NEARING COMPLETION.—San Jose Herald, Oct. 3: In the course of two weeks the prune crop will be about dried and off the trays. But the packing and handling of dried fruit will engage the time of the orchardist for some time to come.

Horse Owners! Use

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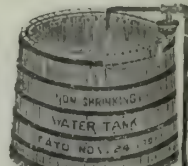
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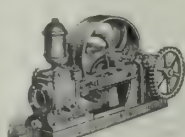
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Santa Cruz.

FIGURES CLIMBING UPWARD.—The Pajaronian, Sept. 27: Up to last night 478 full carloads of apples had been shipped from Watsonville for the season—this in face of the fact that there has been a scarcity of fruit cars ever since the season opened.

Fully 75 carloads of apples have gone forward in broken lots, or in cars partially loaded. To this large number of cars of Pajaro valley apples sold for the season to date, may be added at least 50 carloads that have been disposed of to the various driers, canneries and cider works. It will be seen that according to the above figures no less than 613 carloads of our staple fruit have been disposed of to date.

The total shipments this year of Pajaro valley apples will no doubt reach the 3000 carload mark.

Solano.

BIG RETURNS FROM PEACH ORCHARD.—Solano County Courier, Sept. 27: F. A. Chadbourne, who lives about three miles from town, must hold the record for the year for returns from a peach orchard. Mr. Chadbourne has 875 Salway trees, about 17 acres, on his place. The trees are seven years old and have just come into full bearing. This year they were well-loaded with fruit, which was dried. Last week Mr. Chadbourne sold the crop to the J. B. Inderrieden Co., represented by Hilborn Bros., for 9½ cents a pound. There were about 60,500 of the fruit and the gross returns amounted to \$5,744. That is about \$337.90 an acre, or a little more than \$6.56 for each tree. If there is anyone else can make as good a showing they should not be slow in coming forward with their figures.

Sonoma.

LARGE ACREAGE TO BE SET OUT TO HOPS.—The Healdsburg Enterprise, Sept. 29: George Davis, superintendent of the large Lienthal ranch at Pleasanton, is here spending a few days. He is looking around for hop roots, intending to replant the ranch at Pleasanton into hops again and his present plan is to set out about 300 acres next spring. He has

arranged with Walter Byington and J. C. Jack for the output from their yards and also several yards in Santa Rosa. The Lienthal yards until a few years or so ago were the largest in the State, and the present plan is to replace the old acreage and additional yards besides. Mr. Davis is an experienced hop man, and a farmer and well known resident of Healdsburg.

Yolo.

HOT WEATHER HELPS.—Sacramento Union, Oct. 3: The warm weather of the past week helped to ripen the early variety of beans, but it will hurt the late varieties. There is a large amount of hay along the river between Isleton and Clarksburg. Scarcity of schooners and men to operate them has caused the congestion. If barges or schooners do not move the hay soon, before the rains, there will be a big shortage of hay in San Francisco this winter.

SHOWS GOOD GRAPE LAND.—Polo Semi-Weekly Mail, Oct. 2: A. H. Abele sent a box of grapes to D. H. Wyckoff and they are exhibited in the Mail window. They are mostly second crop and show conclusively that the land in that section is good grape land. Especially is this true of the Tokay, which are said to take a fine color. Mr. Wyckoff predicts that this will be the center of the Tokay grape industry before many years.

Yuba.

A WHOLE SHIPLOAD OF FRUIT LEAVES FOR LONDON.—The Daily Democrat, Sept. 27:

The British ship Wanderer, which cleared Tuesday for the United Kingdom, carries 70,000 cases of canned fruit, valued at over \$250,000, of which a local cannery furnished fully sixty per cent, all canned in San Francisco, in a cannery built and equipped since the April fire, says the Chronicle.

The Wanderer is the first ship clearing from this port for the United Kingdom carrying a cargo of California fruit this season, and is proof that the many false reports circulated in other places that San Francisco's principal industries have been sadly crippled for a long time, are without foundation. It is true, as has been stated, that there will be a considerable falling off in the quantity of canned goods which will be shipped from California to England in 1906. This, however, is due to the fact that the California apricot crop this year was almost a total failure, and as this is an article that is very extensively used in England, it certainly diminishes the shipments of fruits.

NORTHERN DEMAND FOR CALIFORNIA FRUITS.

This is a matter which we have anticipated in our sketches of the future of California fruit products:

Consul R. S. Greene, of Vladivostok, thinks there is a good chance in his district for the sale of fresh fruit. He writes:

The fresh fruit and vegetable market at this port seems to offer a good opportunity for the introduction of Pacific Coast products, especially apples and oranges. Retail prices for fruits of all kinds are very high. American apples and oranges, of which small shipments have been received, have brought from \$4 to \$5 United States currency, per box, and even at these prices the supply has been very far short of the demand. Great care must be taken to ship only fruit that can stand a voyage of a month, and an additional allowance of at least two weeks should be made for delays in landing and selling. This estimate is based on the supposition that the fruit would be sent by one of the direct steamers which the Boston Towboat Company and the Barneson-Hibberd Company have been sending at least once a month to this port. If it is sent via Japan for transshipment, not only does the freight become much higher, but the fruit is liable to be seriously delayed, and consequently to deteriorate. If properly looked after at the port of transshipment—Nagasaki being the best point, as mail steamers run from there to this port at least six times a month—it should arrive at Vladivostok within forty days from the date of leaving the United States.

Another essential to success in this business is personal attention to proper stowing of the fruit. Shipments during the spring, summer and fall should be stowed well away from the boilers, and ventilated as much as possible, while shipments to arrive here from the end of December to the middle of March should be stowed at some distance from the sides of the ship and nearer the boilers, to avoid freezing. Neglect of these precautions is likely to cause great loss to the purchaser and to deter him from sending any more orders. To show what care will do I may say that a few hundred boxes of apples arrived here in June in perfect condition from one of the Pacific States.

The principal merchants here handling fruits other than Japanese are S. L. Smith, Kunst & Albers, Yadjoglon Brothers, Parigori & Leontidi, and N. G. Saridis. The leading Japanese dealers are Genzo Tani and Tsurumatsu Mukai, but they are naturally more interested in selling the products of their own country.



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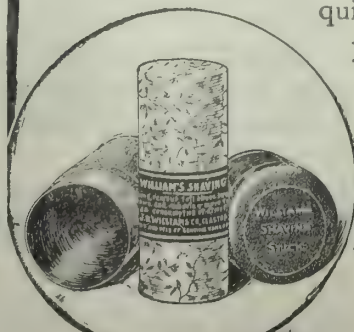
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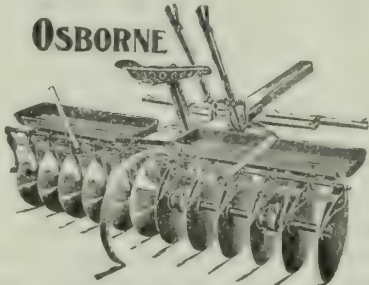
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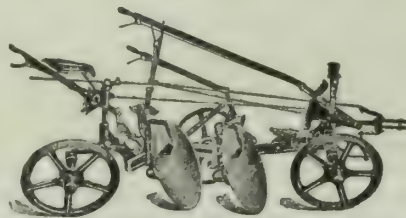
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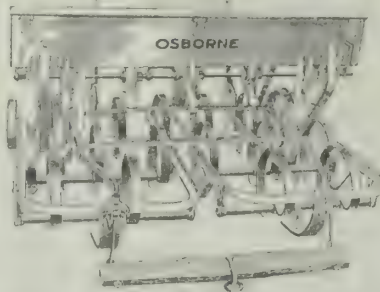
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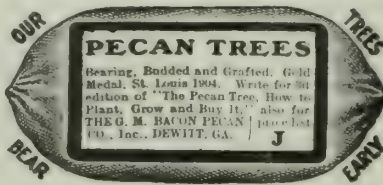
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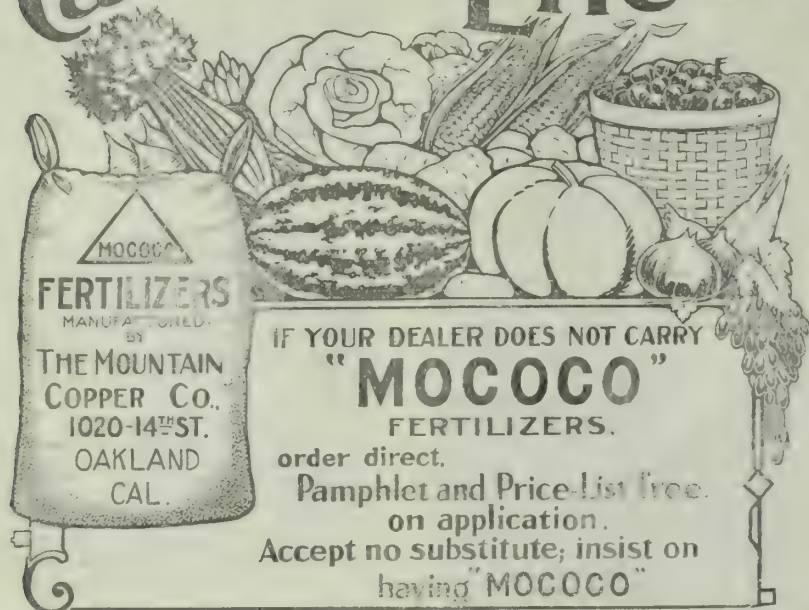
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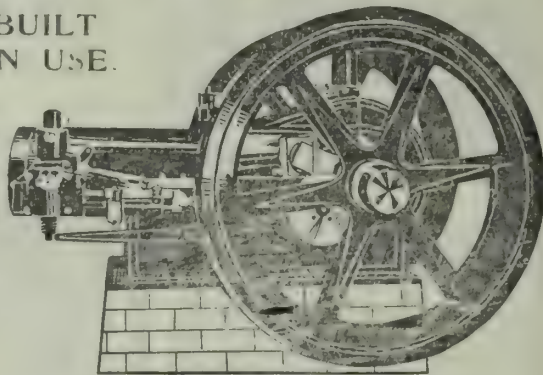
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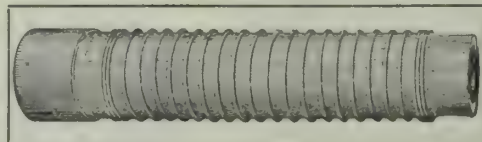
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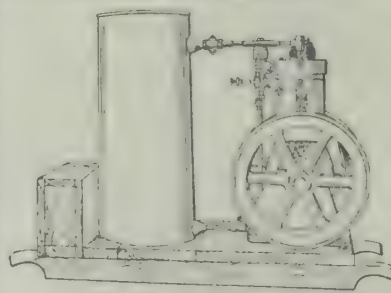
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LXXII. No. 16.

SAN FRANCISCO, SATURDAY, OCTOBER 20, 1906

THIRTY-SIXTH YEAR

ANOTHER WAY WITH MOSQUITOES

In our last issue we referred to the desirability and feasibility of escaping mosquitoes by giving them no standing water to breed in. The too prevalent opinion that mosquitoes can breed in dampness such as one finds in irrigated alfalfa, sprinkled lawns, etc., is incorrect. The larval stage is passed in actual water, and to get rid of standing water of any kind is the motive in

erable oil was used in places not amenable to drainage. Mr. Quayle states that oiling was largely resorted to on the fresh-water areas, the permanent work having been pretty largely restricted to the marsh lands. The oil used was a combination of heavy oil of 18 degrees gravity and light oil of 34 degrees gravity, in the proportion of four to one. This mixture made an oil that was just thin enough to spray well from an ordinary spray nozzle, and yet was thick enough to withstand

the nature of the pool and its exposure to winds, but in no case could it be counted as thoroughly effective after a period of four weeks.

On the fresh-water area all standing pools which are formed by the late spring rains should receive attention by either oiling or draining. It is recommended that the least amount of oil that must be used the better, and that all the work should be permanent, through drainage where it is at all possible, and this includes



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A Marsh Pond Which Needs a Coat of Oil.

draining pools or in promoting tide flow. But where water can not actually be gotten rid of the other way, that of making the water uninhabitable to the larvae is the alternative recourse. The pictures on this page are suggestive of such operations.

Covering the standing water with a film destroys the larvae. In the successful campaign against mosquitoes described in the University Experiment station Bulletin No. 178, to which allusion was made last week, consid-

very rapid evaporation. It was applied by means of a barrel pump, where this could be used, but in the creeks and other situations which could not be reached by horse and wagon the ordinary knapsack pump was used. The price of the heavy oil was 2 cents a gallon, while the lighter oil was 2½ cents a gallon. The former was obtained from the Bakersfield district, while the latter was a product of the Coalinga fields. The number of applications of oil depended somewhat upon

practically everything. The creeks should be attended to immediately after the rains cease and drained by either cleaning out the creek bed or filling in the holes, or both. Lastly, every one should look to his own immediate premises and see that such containers of water as horse-troughs, fountains, pails, or tin cans are not furnishing mosquitoes for the neighborhood. In a city, or thickly settled residence country, community effort is essential.

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THE WEEK

Townpeople who find their building and other undertakings sadly interfered with labor scarcity and cost are often inclined to think that they are suffering alone. The fact is quite different. The trouble in the country is acute. Our correspondence is bringing not only postponement and inaction, which are the chief troubles in towns, perhaps, but actual loss of products from inability to handle them seasonably. The dairymen's difficulties with milkers is a standing difficulty increased; one almost expects to hear complaint of it. It is, however, unusual to hear of almonds which should have been marketed a month ago, still under the trees for lack of help to pick them up and of various fall fruits going ungathered in many places. Many farmers and their families have been forced to forego usual autumn recreations and to miss important assemblies because they could not get help to do their work. The towns are not suffering alone in this matter. They are, in fact, robbing the country by the drawing power of the inordinately high wages which are paid, so that whatever degree of relief the town gets is at the farmers' expense. It really looks as though there were too few people in the world, as we suggested last week, unless some broader views of distribution of available labor supplies can prevail.

There are various comments published about the progress of affairs in San Francisco, and some dismal croaking being indulged in both near and distant points. Of course, one is entitled to indulge in a certain liberty of view and prophecy and some assertions of opinion can only be met by a counter-assertion of opinion. It is true also that there had to be some reaction from diate restoration has been shown to be ill-placed as any thinking person knew it would prove to be. It is true also that there had to be come reaction from the burst of enthusiasm for immediate results, and such reaction is showing up according to schedule. The city has, in considerable part, to grow again, and growth not only requires time, but it will surely produce something not like the old either in location or form. That has to be awaited and there is really no sense in drawing doleful pictures of the present condition of rehabilitation affairs. Some may be maliciously pessimistic in the dismal comments which we have seen, but most of those who make them do not stop to think about what is physically possible in restoration, and therefore are thoughtlessly unfair and unjust to those who are working hard and courageously for the newer metropolis. It seems to us that there would be less of this if others would adopt the same attitude and measure of progress which we employ for our own satisfaction. If one compares what he now sees with what he well remembers of the old city with its solidly built business streets and fine buildings for commerce, manufacturing and comfort, he will surely repine the more the longer he contemplates the city. But that is not a fair measure of progress. It is the city immediately after the fire and not before it which should be remembered as a point to measure progress from. Just try that and see how promising the city looks and how much a brave and energetic people has done so soon after an appalling disaster.

There is a week coming when all these troubles should be out of mind, if possible. It will be devoted to discussion and transaction in connection with fruit

growing and allied interests and the occasion will be the holding of the Thirty-first Fruit Growers' Convention at Hanford, under the auspices of the State Horticultural Commission, opening on December 4, 1906, at 9 o'clock a. m., and holding daily sessions to and including Friday, December 7, 1906. There will be all the well-known features of this notable series of assemblies and new ones will be added of very close interest to fruit growers. One for example is the meeting of Pacific Coast Nurserymen, of which an account is given upon another page. Another allied subject will be beekeeping, and Mr. J. M. Rankin, who is stationed at Chico by the United States Government to study the bee industry, will give an address, "The Relation of Bees to the Fruit Industry." When the convention meets all the bee inspectors of the state are expected to be in attendance and a bee inspectors' association will be formed. This is an important branch of the State police service, which can learn much and be helped greatly by association with the organization of county Horticultural Commissioners and inspectors. This latter association is always in evidence at the fruit growers' conventions and probably will be more active than ever this year owing to the necessity of arising to the peach and pear blight problems. Hanford should be crowded to overflowing even to the crushing of every turtle in the hotel waiting room. Let the week be remembered and planned for.

We are glad that the machinations and ambitions of the peanut monopolist, Mr. Damianakes, and his imported Japanese peanuts do not discourage the local growers as he apprehended they might. At one of the University Farmers' Institutes in southern California, Mr. C. E. Utt of Tustin, the largest grower in the State, announced that he proposed to put in 500 acres the coming year. He evidently does not fear the Greeks in the matter of peanuts. He holds that the chief obstacles to the expansion of the peanut industry are the price of labor and the cost of transportation. Mr. Utt believes, apparently, that the California peanut will make its own way if it has a fair chance. He probably knows more than any other man about the peanut resources of the State, for during the past six years he has had a great many experiments in peanut growing made in different parts of the State, principally in the San Joaquin and Sacramento valleys, principally sorts of results. He concludes that the very light lands, such as those around Modesto, Turlock, Atwater, and Fresno, do not seem to fill the kernel well, while the richer lands do very well indeed. The variety known as "Spanish" seem to fill wherever tried. This item of observation may be widely useful.

It is very gratifying that forest fires have so far proved smaller and fewer than usual. It is telegraphed that Dr. Gifford Pinchot, chief of the bureau of the Government forest reserves, expresses gratification over the excellent condition in which he found the forest reserves. There has been only one big fire on the reserves during the summer, he says, and the burned area did not exceed probably over 2000 acres. This is a better record than that of last year, when the total area of forest land burned over was one-tenth of one per cent. The California State service has also been active in following up the small fires which have broken out and in arresting those who lighted them. Such parties will be prosecuted according to the law.

The early oranges are coming early this year. The first shipment of new crop oranges East for the year was sent from Oroville October 10 by the California Citrus Association. The oranges were raised in the grove of J. H. Leggett, near Oroville. Mr. Leggett has become a great dredge-miner of late and has worked a good deal of fruit land through his machines, but we are glad he has enough left to lead in fruit as he usually did in the old time.

Just as those oranges were starting Eastward, the winter opened in the States east of the Mississippi river, for the report comes that on October 10 a cold wave swept over the East and South and broke all

records. In many sections the severe cold snap was accompanied by snowfall, and a storm of snow and sleet that raged in upper New York caused great damage. The damage to the rich fruit belts of Chautauqua, Niagara and Orleans counties is incalculable. Whole orchards of peach and other trees were crushed to the ground by the wet, clinging snow which fell steadily for many hours. To lose trees because the summer foliage caught so much heavy snow is a forlorn condition surely. The loss of late fruits and other ungathered crops is reported as reaching an aggregate of millions. President Jordan of the Southern Cotton Association estimates that between 40,000 and 50,000 bales of cotton were killed in Georgia alone. It is hard to do farming where the season may be frozen stiff before the middle of October.

Prof. W. T. Clarke, who recently went from the University of California to take charge of official entomological work in Alabama, has published an account of a new species of saw-fly, which he names *Dolerus Cookei*. He gracefully recognizes the pioneer work done by the late Matthew Cooke by naming the insect for him. Though the insect has long been known popularly and practically, it has just attained scientific standing. Its existence was first noted in the larval form about the year 1883 by the late Matthew Cooke, then Chief Executive Horticultural officer of the State of California. Specimens of the larvae were determined by him to belong to the family Tenthredinidae. Cooke's work with the insect in question went no further than this, no adults being examined by him. During the spring and early summer of the years 1905 and 1906 it became Mr. Clarke's duty to make a field study of this insect in the Suisun valley, California, where it was destroying many cherries as a hateful grub, establishing itself for a time in the flesh, causing a "wormy cherry." The insect places its egg in the tissue of the calyx ring or sheath of the cherry and plum blossom, just beneath the outer epidermis. Incubation is accomplished in from five to seven days, the young larvae boring into the newly forming fruit and devouring the embryo. The larvae attain their full growth in from 21 to 25 days, being then about seven millimeters in length. They then pass down to and into the ground beneath the trees, there forming small cells, in which pupation takes place later on. In the following spring the adult insect appears, and the cycle is completed.

QUERIES AND REPLIES.

FOR A FAILING OAK TREE.

To the Editor: In my front garden in Alameda I have an exceptionally handsome oak tree that I am loathe to lose, but the foliage seems to have a very dull look and the trunk in places is more or less rotten. Could you kindly give me any remedy that I could apply in the hopes of saving the tree? SUBURBAN, Alameda.

Sometimes oak trees become debilitated and die in spite of anything that can be done for them. The use of water and fertilizers will in some cases have a reviving effect. Bad places in the trunk can be excavated with a mallet and gouge and the cavities filled with cement, but if the tree seems to be falling into general decay it is doubtful if anything can be done for it.

GRASS FOR OVERFLOWED LANDS.

To the Editor: Can you inform me through the Press or otherwise as to which are the best grasses for feed to sow on swamp lands, that will not die, where the land remains flooded for several months, and what objections there may be, if any?—GROWER, Dixon.

Australian rye grass has done better on overflowed land than any other grass known to us, and is now being grown to a considerable extent in the vicinity of Stockton. It is also a grass of which you can get seed in any quantity at a reasonable price. All leading seedsmen have it, and Viera Brothers, Moss, Monterey county, have a considerable acreage of the grass from which they sell the seed.

THE RYE GRASSES.

To the Editor: We would like to get information about grass seed. We intend to plant several acres to

grass. Usually we plant Italian rye and white clover, but as a rule it only lasts one season. If you know of any seed that grows good hay and afterwards makes good cow pasture, we would be pleased to hear from it. We intend to seed about 25 acres this fall, and were told to inquire of you, as you give good, practical advice. As a rule we do not get good results from rye and clover seeding.—DAIRYMAN, Humboldt county.

Australian, or perennial, rye grass is longer lived than Italian, and if you have not tried that we would certainly do so, as it is on the whole the most satisfactory of all grasses which have been introduced into California for pasture purposes. Orchard grass and tall oat grass are also quite satisfactory in coast situations. These grasses are all rather coarse for hay, but make good pasturage, especially during the winter season, and if the land does not become too dry will maintain life in the root and start early with the first fall rains. The objection to Italian rye grass is that it is inclined to be an annual and to die after first seeding.

CURING BLACK FIGS.

To the Editor: Have you anything on the curing of figs? I wish to know whether the black Mission fig can be successfully dried near the coast in southern California.—READER, Los Angeles.

The black Mission fig is dried quite successfully, and usually finds a ready market at rather a low price as compared with the white figs resembling the Smyrna product. The handling is similar. The figs are allowed to become very ripe, the ground is cleaned under them (or sometimes some soft material is spread for the figs to drop upon), and usually the crop is taken from the ground for drying. The fruit is placed upon trays in such a way that the eye of the fig shall be up, if possible, to retain all the juice, and then is allowed to remain in the sun until sufficiently dry. Whether you can dry these figs in any particular locality depends upon how late they ripen, and whether the atmosphere after ripening is sufficiently warm and dry. There is no difficulty in the interior, but there may be at some points upon the coast.

SPOTS UNDER APPLE SKIN.

To the Editor: I send you a sample of apples grown on our place. All apples have the same disease when about half ripe there are no signs of specks; but afterwards they start in from the size of a pinhead to the size I send you. For several years I raised clover in the orchard and irrigated. Thinking that the water had something to do with it, I plowed and cultivated the orchard and irrigated but twice this year, but with the same result. The soil is red and shotty. The trees bear well. I spray for worms and keep them fairly clean. Not knowing how to cope with the disease, I apply to you.—GROWER, Shasta county.

The defects in the apple which you send are quite prevalent with certain varieties in various parts of the State, and no one has been able to explain to what cause they are due. The same trouble occurs in the East and is there without explanation. Unfortunately, it seems to be confined to certain varieties—the Baldwin apple is so subject to the trouble that the disease is sometimes called the "Baldwin spot," and the only recourse growers have at present is to graft over or replant with varieties which are proved to be locally resistant to the trouble.

CLEAN ALFA SEED.

To the Editor: Can I be surer of buying clean alfalfa seed by sending to Colorado or Utah than by buying of California dealers? If so, where shall I send an order?—PLANTER, Solano county.

There is no surety whatever of getting better seed from Colorado or Utah than you do from California, because the seed from those States is recently becoming quite full of dodder. If we were buying seed, we would be inclined to write to well-known California seedsmen and ask if they would undertake to furnish good seed free from dodder. Our dealers handle both California and Utah supplies, but if they will contract to furnish you a clean article they will really succeed in doing so, by their supervision of the fields from which their seed is taken in that district. If they will not do this now they must soon take this ground, for all clover

seed dealers who have unclean seed are likely to be blacklisted by the Secretary of Agriculture, as now provided by law.

HARDY FRUITS FOR MOUNTAIN DISTRICTS.

To the Editor: What can I plant on my place near Lake Tahoe (6200 ft. elevation) which will yield fruit not for sale, but for my own use, and when should they be planted?—LAKE SIDE, San Francisco.

You can grow apples in the location you mention, and probably you will also be successful with plums, pears, sour cherries and quinces. Of course, your problem is the shortness of the season at such an altitude, with a frosty fringe on both sides of it. Probably you will do best with the early, or short season, varieties, and these are the ones most likely to bear fruit at the time of the year when it is usual for people to visit Tahoe. We would therefore advise you to plant as follows:

Apples: Early Harvest, Red Astracan, Red June, Duchess of Oldenberg, and King of Thompkins County. If you wish to try later maturing and long-keeping apples, the Yellow Newtown Pippin, Winesap, Baldwin and Rhode Island Greening are satisfactory in most mountain valleys.

Pears: Madeleine, Souvenir du Congress, Flemish Beauty, Seckel, Bartlett and Duchess d'Angouleme.

Plums: Clyman, Tragedy, Bradshaw, Hungarian prunes, German prunes and French prunes.

Cherries: May Duke, English Morello, Ostheimer and Belle Magnifique.

Quinces: Apple and Orange.

The time to plant in your district is in the spring time as soon as the ground begins to warm up a little after the disappearance of the snow.

QUICK GROWING EVERGREENS FOR FUEL.

To the Editor: I have a steep side hill facing the north with open spaces between various kinds of oak trees, buckeye and manzanita, in which I should like to plant, if advisable, some quick growing large variety of fir tree for eventual firewood. Where can I get seed with instructions as to the best way of planting them?—FARMER, Napa County.

We do not know any fir tree which would make as rapid growth, under the conditions which you speak of as would the Monterey cypress and pine, which would produce a similar landscape effect, and would be much more rapid growers than any fir. Seed of these trees can be obtained from California seedsmen or young seedlings in boxes can be had from the nurseries at quite cheap rates and you would gain much time by the use of them. Seedlings can be readily grown in boxes of sandy loam, partial shade and frequent light watering, guarding against damping off by excessive use of water.

TO KILL BIRDS.

To the Editor: We have been very seriously bothered this summer by birds eating our berries on our mountain ranch, and want to find some way to abate the nuisance. We have seen lately in the papers an account of bird lime. Have you ever had any experience with this, and can you tell me how it is prepared and used? Will tanglefoot in bulk be of any use, and where can it be obtained? Scarecrows are no good, gunning will have to be begun every morning at 4 a. m., and the result is that the birds have taken all our cherries, blackberries and raspberries.—READER, San Bernardino county.

We cannot help you with anything very satisfactory on the bird nuisance. Bird lime is prepared from viscid juices of plants such as the berries of the mistletoe, or from the juice of holly bark, both of these juices having to be boiled to concentrate them to a sufficient tenacious form. The term "lime" does not mean our word lime at all, but is a corruption of the German "leim," which means glue. It seems to us altogether out of the question that anyone could profitably make bird lime in the way European gardeners prepare it for their small scale operations. If any one could make such a thing it would be the "tree tanglefoot" people, but then how could you spread that to catch birds without an expenditure of labor that would be completely prohibitory? You are up against a very difficult problem and so far guns and poison seem to have

been the most satisfactory resources. If any reader knows better, we shall be glad to hear it.

PRUNE RUST.

To the Editor: We are sending a few twigs and leaves of French prunes and will you kindly let us know what is the cause and the remedy for the disease or blight or whatever it may be.—A SUBSCRIBER, Hollister.

It is the fungus known as "prune rust" and the preventive is to spray earlier in the season with Bordeaux mixture. Immediately after the fruit is gathered this can be safely used, and it will keep the leaves busy to the end of the season. If the disease appears earlier another fungicide which will not mark the fruit may be necessary. What is experience on this point?

THAT WATER HEMLOCK.

To the Editor: Mr. Hall's reply to my question about the plant he identifies as Water Hemlock in your issue of October 13 is very satisfactory, for it confirms my suspicions that it is a poisonous and dangerous plant. So well was I convinced that it was a poisonous plant that before your answer came to hand I had the ditch where it had grown thoroughly searched and all the roots that could be found removed, and so thoroughly was the work done that it will be impossible to secure a plant with seed on it this fall. I have just examined the ground and find none of the larger plants, but find that many young plants have come up, probably from the seed from last year. I wish to thank you for your answer through the Rural Press, for I have long been a subscriber for that valuable farmers' paper.—FARMER, St. Helena.

We point to the above not so much for the appreciation expressed, though that is very grateful, but to emphasize the advantage of watchfulness and energy in farm work. Success depends not alone upon getting knowledge of a thing, but in resolute and persistent action based upon that knowledge. Success in farming consists not alone in knowing, but in doing.

ALMONDS ON PLUM STOCK.

To the Editor: We all know that plums and prunes grafted on almonds do very well, but when the matter is reversed, almonds grafted on plums or prunes, does the same rule hold good?—ORCHARDIST, San Jose.

Our observation is that almonds will take on plums and prunes all right, but are soon likely to overgrow, owing to the looser texture and quicker expansion of the almond wood. It is usually better to have a pushing root than a pulling one. For this reason the almond is better underneath. Still, it may be that trees grafted over in that way might be, for some time, profitable. Hardly anything has been done on a scale large enough to justify prophecy. We would like to have experience on that point.

THE TEXAS PROLIFIC ALMOND.

To the Editor: Noticing the correspondence to the Rural Press about the Texas prolific almond, I went up to Acampo the other day to see about that cross pollenization of the Texas Prolific almond upon the Nonpareil almond, which your correspondent was writing of a couple of weeks ago. I was a little late, as the Nonpareils are all gathered, but the Texas Prolific was the greatest bearer I ever saw and it seems to me it ought to be investigated. I want to make this suggestion, that you investigate it before you publish the new edition of your book.—GROWER.

The suggestion is a good one. We certainly desire all the information we can get on this variety, and we shall be grateful for all the facts.

WALNUTS FOR THE PAYNE TREE.

To the Editor: Noting the discussion last spring on the kind of walnuts grown on the big Payne tree near Santa Clara, I visited the tree recently and picked up a few nuts which I send by this mail, that you may eat them and thereby see that they are not of the inferior quality that you seemed to think the samples were which Mr. Gillet sent you some time ago. They struck me when I ate them under the tree that they were of a very nice quality.—VISITOR, Santa Clara.

We are glad to have the samples of the Payne walnuts, which are certainly of higher grade than our comments upon earlier samples would indicate, also are of very satisfactory quality.

HORTICULTURE.

APPLE CULTURE IN SOUTHERN CALIFORNIA.

(By a Southern grower in the Rural Californian.)

In view of the increasing interest and inquiry manifested in the culture of apples in Southern California, it may be said that while the number of varieties known to be adapted to local conditions are sufficient to justify the proposed extension of the industry, which remains to be done to place it upon a permanent and profitable commercial basis. This can be accomplished by the following methods:

First. By producing seedling varieties from the best sorts already proved adapted to this climate. This method of variety production does not concern the fruit-grower as a rule; the outcome is too uncertain for the general fruit-grower to attempt to produce superior kinds through seed planting. This is the province expert and it is our good fortune to have in California the greatest of all experts along these lines.

Second. The second method leading towards this end consists of the continued introduction of profitable varieties from apple growing districts having similar climatic conditions to ours. The experts of the United States government are continually carrying on this work of selection and sending to the experiment stations to be tested such varieties as are selected. If the fruit-grower desires to co-operate in this work he will do well to remember that very rarely does any variety maintain the excellence that has gained for it a reputation when removed from immediate zone in which it first attracted attention. A variety is largely an expression of the conditions in which it exists. The variety is an entity, may retain its general varietal characters under widely diverse conditions, but its form, size, color, quality, texture and time of ripening, habit of growth and root system are profoundly modified by the particular environment to which it is subjected. Recognizing this the efforts of the fruit-grower towards improvements in this direction should be limited to experimental rather than commercial planting.

Third. A third method of variety production, one that will produce immediate and also permanent results, and one within the scope of every fruit-grower is the improvement of desirable varieties already established, through the intelligent selection of buds and scions for propagation, only from such trees which show especially good qualities in fruit, foliage and bearing tendencies. This is the highest type of plant breeding, but every apple orchard presents the means for further improvement, in that the trees of the same variety show permanent differences in their fruit bearing, in the abundance and hardness of foliage and in other characters.

This in a great measure can be traced to the indiscriminate selection of propagating wood. The common custom of the past having been to obtain buds and scions from the nursery rows—from trees that had never had an opportunity to demonstrate their individual characteristics—whether good, bad or indifferent. Even in cases where selection had been made from orchard trees, the one idea seems to have been a vigorous growing upright tree, without any consideration of its regular bearing tendencies, the high color, flavor or the keeping qualities of the fruit. Every fruit grower knows that his orchard contains trees that are money-makers; full, regular bearers of superior fruit, with foliage apparently immune from fungous attacks. If the laws of heredity hold good in the apple orchard, and there is no reason to doubt but that they will, buds and scions from such trees may be confidentially expected to reproduce all the desirable characteristics of the trees from which they were taken, and every tree in the new orchard may thus be made to approximate in profit and productiveness the best ones in the old orchard.

Establishing an Ideal Orchard.—The best results in growing a perfect tree or establishing an ideal orchard is to plant sufficiently far apart so that each may possess an individuality of its own. For the first few years after a tree is planted, most of the pruning may be done with the thumb and finger, being done in the summer when the wood is young and tender. After the tree reaches the age of six or eight years, then the best results can be obtained by pruning with long-handled pruning shears, which can be worked from the ground and are capable of cutting a limb one inch in diameter. Pruning should always be done with the idea in mind of producing a symmetrical and well-balanced tree, a tree which is neither too high nor too low; in other words to avoid extremes, the lowest limbs on a full bearing tree should be low enough so that when loaded with fruit they will just touch the ground. The interior of the tree should be made sufficiently open for the sun and air to reach all the fruit. The advantages of

moderately low-headed, open-center trees are best appreciated when one is engaged in thinning and picking the fruit. This is a problem good orchardists are studying a great deal today, and it is very generally admitted that it requires the greatest good judgment to prune just enough to produce the desired effect.

How much plant food an orchardist should add to his land depends upon the amount of increase or profit he may desire. The best rule to follow in the growing of fruit trees up to the bearing age is to produce all the growth that they can mature and carry. After they begin to fruit regularly, the fertilization and treatment should be in view of producing an even balance between tree growth and fruit. It is really wonderful, in view of the great demand upon the soil by a growing and fruiting tree, that the average orchard produces as well as it does. Many old orchards have not only been making these large demands on the soil for years, but in many instances the land has been used for the production of hay or grain, or occasionally for the growing of pigs, with little or no supplementary food. So when these things are considered in all their bearings, they lead one to wonder not why old orchards are failing, but why they have not ceased to produce merchantable fruit long since.

It is estimated by good authorities that an average crop of apples removes in round numbers eleven pounds of nitrogen, one pound of phosphoric acid and sixteen pounds of potash, and that the leaves of a tree large enough to produce the fruit would contain ten pounds of nitrogen, nearly three pounds of phosphoric acid and ten pounds of potash, or a total of twenty-one pounds of nitrogen, three pounds of phosphoric acid and twenty-six pounds of potash. This plainly shows the soil exhaustion by one crop for one season, and forms a definite basis on which to compute the drain upon orchard land for a series of years.

So in studying methods of fertilization it is readily seen that the general principles of manuring farm crops apply as well to fruit. It is seen that nitrogen encourages leaf growth, and since trees grow by means of both leaves and roots, its presence is required in the soil in order to promote the growth and extend the life of the tree. It is evident, too, that potash is an essential constituent in the growth of fruits, not only because it constitutes a large percentage of the ash of the wood of the apple, and more than fifty per cent of the ash of the fruit, but because it forms the base of the well-known fruit acids. And in order to nourish a tree properly, as well as to assure proper ripening of fruit, phosphoric acid is very essential indeed.

See That Your Orchards Are in Good Shape.—It is a very self-evident fact that throughout Southern California there are many apple orchards which need renovating, and which should be cut down and removed from the land. All old orchards should be inspected carefully with the idea to diagnose the difficulty, and then go straight at the root of the evil. It must be remembered, too, that an old, neglected orchard cannot be expected to arrive at the profitable condition which trees enjoy which have received proper care from the beginning. No matter how thorough the means of recuperation may be, if the grower finds after intelligent efforts that they refuse to become profitable then they should at once be removed.

DANGER OF OVER-IRRIGATING FRUIT.

A gentleman whose opinions, says the Portland Rural Northwest, are worthy of serious consideration, has written to the editor of that paper a personal letter in which he calls attention to some things connected with the irrigation of fruit. As the letter was not intended for publication, the Rural Northwest does not use his name, but quotes as follows from his letter:

"I note in your issue of September 15 some comments and also an article upon irrigating orchards in southern Oregon. I am not writing anything for publication, but simply wish to give you my opinion on the subject. Although I differ quite radically from your opinion and from those of Mr. Helms, as expressed in the article mentioned, I may be as radically wrong. In fact I think we all have a good deal to learn on the subject of irrigation. My watchword is 'caution.' From what I know of conditions in the Rogue River valley, I should decidedly warn all orchardists to use water with caution; give the subject much thought; study the effect of irrigation on the trees as relates to productiveness and vitality and upon the flavor, color, keeping qualities, etc., of the fruit.

"The Rogue River valley has splendid unirrigated orchards full of fruit of fine flavor and of the best texture for shipping. Most of the soil in the orchard districts is of a deep, rich character, and one that naturally holds moisture. For such soils the rainfall of the valley is ample. This can be observed in the prime pear orchards which are not irrigated (and produce the

highest-priced pears grown in America). Why irrigate for apples on such soil?

"The tendency, as I have observed it, is for apple raisers who irrigate to pour water freely onto their orchards in August and even in September. This forces growth at a time when we want the wood and buds to harden. There is very great risk also in using water in this way of increasing the size of the fruit at the expense of quality.

"The Rogue River valley has acquired a great reputation on the shipping quality of its fruit. It should guard that reputation. The fact that the fruit in some orchards has been improved by irrigation does not prove that this will be the case generally in that valley. I am told that in the orchard of Mr. Helms the soil is comparatively thin and that the location of the orchard naturally makes the soil dry out quickly. Moreover his orchard is said to be so located as to be more free from frost than most other orchards. Notwithstanding its favorable location the buds suffered as much from frost as those in more exposed orchards last spring, indicating that the buds were more tender in his orchard than in those not irrigated. Prof. Wickson's studies of the irrigation problem as relates to orchards, show that in the long run irrigation later than the months of June and July is not beneficial."

[The caution is wise and timely. When the tree does not need irrigation for full development in growth and fruiting, irrigation is unnecessary. But one must be very sure that he understands the tree and what its full development is and not fall short of it. The citation of our own conclusions about the time to stop irrigation must be considered in connection with local conditions. There are cases where irrigation later than July is desirable, as discussed in our publications on the subject.—Ed.]

THE NURSERYMEN'S MEETING.

At the annual meeting of the Pacific Coast Association of Nurserymen, held at Tacoma in July of this year, it was resolved to hold a special meeting at Hanford, Cal., in conjunction with the California Fruit Growers' Convention, and the convention of Horticultural Commissioners. This meeting will be held December 4 to 7. Secretary C. A. Tonneson of Tacoma, Wash., announces the program for the Nursery Association, subject to change, as follows:

Address of response on behalf of Pacific Coast Association of Nurserymen, Hon. E. L. Smith, Hood River, Oregon.

Inspection Laws of California—George C. Roeding, Fresno, California.

Relation of Fruit Growers' Inspectors and Nurserymen—John Isaac, Secretary California Commission of Horticulture.

Fruit Varieties—Prof. E. J. Wickson, University of California, Berkeley, California.

What Fruit Growers and Inspectors Expect from Nurserymen—H. P. Stabler, Yuba City, Cal., Secretary County Horticultural Commissioners.

Nursery Business in California, Its Present Needs and Future Possibilities—Leonard Coates, Morgan Hill, California.

Plant Introduction Gardens—H. P. Dorsett, Chico, California.

Benefits to Be Derived from the Pacific Coast Association of Nurserymen—S. A. Miller, Milton, Oregon.

Need of Uniform Inspection Laws—A. Eckert, Detroit, Washington.

European Methods—J. B. Pilkington, Portland, Oregon.

Subjects to be selected by M. McDonald, A. Brownell and others.

The northern members of Association are figuring on a round trip fare from Portland for \$25. County Inspectors from Oregon, Idaho, and Washington and leading fruit growers are invited to join the party in making up a special car.

The president of the Pacific Coast Association of Nurserymen is Mr. F. W. Power, Chico, California.

TRANSPLANTING.

Use the greatest care to put in your strawberry plants with the roots spread like a fan, so as to take up as much space as possible. Some make a deep incision with a spade and then spread out the roots perpendicularly down the cleft, while others spread out horizontally. In either event try to inspire the plant to go as deeply as possible. That is the fault and failing of the Arizona, that served us so well for years, but is being superseded by a plant that is deeper rooted. The failure of the Arizona is in its constantly raising shorter roots, hence is more afflicted by drouth and heat. Encourage the plants to root as deeply as possible, and this cannot be done by twisting the roots all up in a bunch and plunging them into a little round hole in the ground.

FARTHER INQUIRY INTO CALIFORNIA FRUIT VARIETIES.

In the Pacific Rural Press of July 21 we published a paper prepared by Professor Wickson of the University of California showing which varieties of the common fruits were thought by growers to be most profitable to plant. For the coming meeting of fruitmen in this State Professor Wickson proposes to take up the same subject, but approaching it from another side. The following circular is being mailed to nurserymen in the Pacific States:

To the Nurserymen: I had the pleasure recently of preparing a paper to show the varieties of fruits which California growers believed to be best worth planting. I have been invited to prepare a paper for the coming meeting of the Pacific Coast Association of Nurserymen, which will be held at Hanford, in this State, and I desire to know how the nurserymen's records of propagation and sales agree with the preferences reported to me by growers. In this way we can get at the standing of varieties at the present time very closely.

I enclose lists of varieties arranged in the order the growers prefer them, and ask you to number them in the order you find warranted by the numbers you sell. Please do this by placing a numeral on the margin. If you handle about the same number of several varieties, use the same numeral for each of them. The point is, of course, to find out which varieties you find the best sellers and which are least called for. Please write in also any varieties which you think ought to be included in the lists.

A published report containing the results of the investigation will be mailed to all who furnish information. E. J. WICKSON.

Berkeley, Oct. 10.

Fruit Varieties Grown in California in the Order of Preference by Growers.

Apples.	
Newtown Pippin	R. Bietigheimer
Belle fleur	Arkansas Black
W. W. Pearmain	Rome Beauty
Gravenstein	Red Pearmain
R. Astracan	Whitney Crab
R. I. Greening	Nickajack
E. Spitzenberg	Ladies Sweeting
Mo. Pippin	Gloria Mundi
W. Astracan	Red Canada
Red June	Ortley
Alexander	Arkansas Beauty
Baldwin	Lawver
Early Harvest	Delicious
King	B. Ben Davis
Winesap	S. Winesap
Fall Pippin	Swaar
Jonathan	Snow
Skinner	Oldenberg
Ben Davis	Tolman
Smith's Cider	Virginia Greening
Langford Seedling	Wagner
Hoover	Winter Banana
Maiden's Blush	Black Detroit
Apricots.	
Royal	Tilton
Blenheim	Large Early
Moorpark	St. Ambroise
Hemskirk	Pringles
Peach Rout	Wiggins Seedling
Newcastle	E. Monganet
Cherries.	
Royal Ann	Imperial Morello
Black Tartarian	Advance
Black Republican	Governor Wood
Rockport Bigarreau	Burr
Bing	Early Richmond
Chapman	Empress Eugenia
Purple Guigne	Knight's Early Black
May Duke	Schmidt's Bigarreau
Centennial	Nonpareil
Black Bigarreau	Buttner's Yellow
Lambert	Cleveland
Peaches.	
Muir	Orange Cling
Phillips	Susquehanna
Salway	Nichols
Lovell	Sellers
Early Crawford	Lemon
Tuscan	St. Johns
Foster	Henrietta
Elberta	Mary's Choice
Late Crawford	Hales
Alexander	Globe
Heath	Amsden
California Cling	Wheatland
Triumph	Hulls' Late
Imperial	Arkansas Traveler

Piquet Late	McClish
Brigg's May	Early Canada
Governor Garland	Canada White
McKevitt	Wager
McDevitt	Wylie
Parker	Strawberry
Ward's Late	Bergen
Bilyeus Late	Belle of Georgia
Persian	Honey, Lukens
Jones' Seedling	Opulent
Albright	Decker
George Fourth	Pallas
Peento	
Prunes.	
French	Robe de Sargent
Imperial	German
Sugar	Silver
Giant	Splendor
Pears.	
Bartlett	Clairgeau
Winter Nelis	Keifer
Seckel	Flemish Beauty
Easter	Pitmaston
Du Comice	Howell
Doyenne D'Ete	B. Hardy
Clapp's Favorite	D'Anjou
Glout Morceau	Quince
Barry	Madeline
Comet	W. Bartlett
Souvenir du Congress	
Plums.	
Imperial Gage	Wickson
Chabot	Hungarian
Maynard	Kelsey
Shiro	Yellow Egg
Cherry	Tragedy
Peach	Washington
Mikado	Satsuma
Bradshaw	Burbank
Ogon	Jefferson
Copper	Grand Duke
Coe's Late Red	Clyman
Gold	Climax
Orient	Coe's Golden
Quacken	Black Diamond
Purple Egg	Green Gage
Uncle Ben	Blue Damson
Combination	Duane
Sultan	Simon
Eureka	Hale
Grapes.	
Muscat	Gros Colman
Tokay	Pizzutello
Cornichon	Petite Sirah
Sultanina or Thompson	Zabalkanski
Emperor	Sauvignon Vert
Malaga	Mataro
Rose of Peru	Isabella
Zinfandel	Serine
Black Morocco	G. Hungarian
Sweet Water	Palomino
Verdal	Campbell's Early
Carignane	Delaware
Black Prince	Agawam
Alicante	Olivette de Cadenet
Sultana	Almeria
Burger	Niagara
Mission	Semillon
Pierce	Columbar
Concord	Black Hamburg
Black Ferrara	
Eureka	
Lisbon	
Lemons.	
	Genoa
	Villa Franca
Oranges.	
	Malta
	Parson Brown
	Acaculpo
	Blood
	Australian Navel
Almonds.	
	Languedoc
	Texas Prolific
	Golden State.
Walnuts.	
	Parisienne
	Santa Rosa Soft Shell
	Proeparturiens
Improved Soft Shell	
Franquette	
Mayette	
Chaberte	

Circular of inquiry with blanks for reports are being sent to Pacific Coast nurserymen, but as lists are imperfect, many may be overlooked. Professor Wickson would be pleased to hear from all nurserymen who do not receive his circular, so that copies may be sent to them.

SHEEP AND WOOL.

GOOD PROSPECTS FOR WOOL AND MUTTON.

The outlook for the sheep industry is the brightest that it has been for many years, and there is no visible reason why sheep should not stay at a good figure for many years in the future, write Chandler Brothers of Iowa in the Rural New Yorker. The old law of "supply and demand" comes in play, and the supply is so limited that the demand cannot be met before a great many years have been spent in breeding along different lines than are followed at present. Sheep have been so high that a great number of the ewe lambs and old ewes have been put on the market, and the result is that the number of females has been greatly reduced, while all the time the demand has been increasing. In England the same conditions are present. A great many of the farmers there will have a patch of stubble or late clover, and will buy a flock of ewes and breed them. In the spring they will get the ewes, lambs and all fat, and will market them. In the next season they will do the same thing, and the result is quite plain to be seen. Where there used to be a number of flocks within a short drive now you have to drive a good way to see very many flocks, especially in comparison with what there used to be. In Australia, Tasmania, New Zealand and South Africa the breeders report the same scarcity and high prices, and hard to get the sheep at any price. When such conditions are prevailing all over the world, how can there possibly be a glut of the market? Of course some few are reserving their ewe lambs, and they are right in doing so, but the number of these is very small in comparison with the number of sheep that are raised on the globe. Wool is a good price everywhere, and is much higher in England than it was a year ago. The only reason is that the supply is less and the demand has increased. The world is wanting more mutton and more wool, but they are not getting it. It is the right time now for the breeders to have the best. The best will always command a higher price and make the business more profitable. It is the breeder who starts in with a low class of sheep and then does not care for them who makes a failure of the sheep, and tells his neighbors and scares them out of the notion of having a flock. Any farmer is perfectly on the right side that will start now in sheep and start along the right lines. It is always good to learn by the experience of others, but do not take the advice of a farmer that is not capable of giving it. Some men are not good enough judges to make a success of anything, but because they do not succeed do not think that there is no money in sheep.

There is no farm animal that there is more clear money in, and all the old breeders that have stayed with it through thick and thin will tell you that. The sheep is the money maker, whether on low or high-priced land. On low-priced land they get all the weeds and small shrubs, and are very hardy, and come out and do well if left almost entirely alone. On high-priced land they have no equal. They make largest amount of gain for a given quantity of food consumed, and their droppings are by far the most valuable to the soil of all manures. They eat up all little patches of weeds, etc., and will eat most anything that grows. By test it is found that out of 600 of the most common weeds sheep will eat 576 of them. In England, where the rent of land is \$15 to \$20, you ask the farmer what makes him the most money and he will say "sheep" every time, and it is so all over the island. The Tasmanians are running sheep in large numbers on their highest as well as the low-priced land because they are the most profitable.

Every farmer should have a flock of sheep, and he need not worry lest the prices will not stay up. The supply throughout the world is so short that there is no reason to make sheep come down, and the people are bound to have enough mutton to eat and wool to wear. The thing for the farmer to do is to get a small flock of ewes at the lowest price he can, and then stay with them. It takes determination and perseverance to make the greatest success of the sheep business. The beginner must be determined that he will succeed, and then stay right with it. Getting a start on right lines is half the battle. It is best to get a good quality of ewes, and then be sure to use the very best pure-bred ram that you can get hold of. Do not use a scrub sire under any circumstances. They are money-losers. They may look good at first, but their lambs do not prove to be good ones. They will be a mixed lot, while if you had used a good sire they would have been an even lot and would have commanded a higher price on the market. It is the even lot from the best sires that makes the most money in every instance, and they are also the best to have on the farm. A person always feels better if he has a high-class lot of sheep than if he has the culls of the

country. When buying a ram it is well to look to his pedigree, and the longer you can trace it to good ancestors the better the ram is likely to breed. Some men say a pedigree is "bosh," but we say not. The longer we are breeding good sheep with the purpose of making them better the more we learn about the fact that blood will tell, and it will tell every time. The old ewe with a crooked back will always raise a crooked-back lamb. The ram that has poor mutton form will always breed lambs that are the same way. The best way to do is to be careful in the selection of the ewes, and then always use a good sire. Reserve the best ewe lambs and sell out all the ewes that did not prove to be good breeders, and you will soon have a good flock. When you have a bunch of ewes, and are contemplating buying a ram to use on them, it would be well to study the ewe flock carefully, and see what their greatest faults are, and then get a ram that is as good as possible in these weak points. If your ewes are small and do not shear enough, it would be well to get a large, strong ram with a heavy fleece. We are all breeding for all the good mutton we can get, and then a good fleece that will weigh out well afterwards.

DOGS AND COYOTES.

Mrs. F. A. Pierce of Merlin, Oregon writes to the Oregon Agriculturist as follows: We have solved the coyote problem here by the use of trained dogs. Oso, our goat dog, takes all care of our goats. About a month ago the goats in some way got past his control and ran about five miles from home onto the mountains, where mountain lions, coyotes and other wild beasts are often seen, but he stayed with them for thirty-six hours without food and did not lose a goat. When I found them he was trying to get them started home, but they did not seem to want to go. With the aid of our other dog they were soon driven home.

The dog is as quick to protect the goats against man as beast, as a camper quickly learned when he started after some of the goats with a club when they were trespassing on his hay. Oso jumped on the man and knocked him down, and then drove the goats away. If a vine gets fastened to the hair of a goat the dog will take hold of the vine and pull it out. At this time of the year the goats scatter and run about a great deal, hunting acorns, but he manages to get them all in before night, sometimes bringing in part of them at one time and then going back of his own accord for the rest.

When all is done he gets his supper and then goes and lies down among the goats. We have a photograph showing him at work killing flees on one of the goats.

We find that a dog manages goats better than a man and the dog doesn't strike for higher wages or jump his job. I do not think the regular shepherd dog is enough of a fighter to take care of goats in a country as wild as this.

[We are not a dog sharp and do not know whether a "goat dog" is any particular breed of dogs or not. Probably some of our readers are no wiser than we, and it would be interesting to know more about what kind of a dog this famous "Oso" is.—Ed.]

POULTRY YARD.

POULTRY IN SOUTHERN CALIFORNIA.

(By W. M. Humphreys in The Live Stock Tribune.)

For more than twenty years I have been a close observer of poultry culture in southern California; have handled chickens by the thousands commercially; have stocked many a poultry ranch and have bought out as many more; have been a back yard fancier, and also raised them in considerable number on the ranch, both on the lowlands and on the hot, dry uplands; and am still successfully raising a comfortable sized flock. These few preliminary remarks are simply offered as a license for which is to follow. I venture the statement that no business in southern California has depleted more pocketbooks than the poultry business, and on the other hand no legitimate business offers a large reward as the same much abused poultry culture.

Wherein lies the difference? We will lay aside the facts that the percentage of the successful is small in any business, that industry, perseverance, cleanliness and a master of details are essentials of success in handling poultry, there are other potent factors in the business.

Poultry culture is a business unto itself, as much so as a profession or a trade, that demands at least two years close application of an acute student before he has mastered the rudiments of the undertaking. You may have industry and the other essentials, you may attempt to break in with a flush pocketbook, as many have done to their sorrow, the inevitable payment for the experience must be made; how often we hear the advice, "commence in a small way." That experience first

helps you to select a proper location, which in brief should be, on porous soil, good enough and sufficiently watered to grow corn and alfalfa. Get close to market, don't buy a ranch away off because it sounds cheap; freight will eat you up and help is more difficult to obtain away from the centers.

Get in the line of improvement in a location that is good throughout, not spotted, your plant will always have a more staple value; avoid alkali and heavy soils. That experience tells you the breed to select that best answers the purpose for which you are embarking in the business, whether it be for the egg, the carcass or the fancy, it tells us the kind of houses to build, the food to feed, and the care and management of the stock. Assuming you have the experience, have you money enough to properly equip your plant, to grow on your ranch a large portion of the feed to be used and a sufficient surplus to lay in the balance of supplies to an advantage, or must you erect scant make-shift buildings which you intend (but seldom do) remodel later? Must you buy all your feed and in small quantities, paying the top price. If the latter, your chance of success is small. I can show you a man who is hammering out a success just on those latter lines, and on a piece of rented ground at that, but he stands almost alone in his class. Said I to him, "Suppose you were to start over again, but with your present experience and \$500 in your pocket, with the right to rent this same piece of land and assume you could buy the same class of pullets as you now have at \$1 per head, how much net money could you make the first year?" He replied, "\$800."

Your plant must be so arranged as to be economically operated. Are you caring for 500 or 1000 birds? There is just that difference between some of the plants. Just as well loose part of your food as half your time, but you don't see it that way. How often have you been compelled to go through a string of pens in order to get to a particular pen, then back again the same way; what a relief a few extra gates would be. The arrangement for the water service, the facilities for cleaning out and keeping free from mites, the style of roosts and the position of the nests as well as a hundred other subjects, are points to be considered. The colony style house, so much used all over California and which has many advantages, cheapness being one of them is not an economically operated house where birds are confined to a small yard, but the advantages in colonizing an orchard or corn field will more than pay for the necessary extra time required by the colony house system; there is no question but that the greatest net profit is to be obtained by thus making your land do double service, affording a run for your flock and raising a crop as well, both the better for the combination. The colonization system, however, requires more land than the separate yard system. A citrus orchard is not as favorable for the colonization system as a deciduous orchard. Of the citrus orchards the lemon is probably best. The scratching pen is seldom seen with a colony house, in fact I seldom see one at all, and the few I have seen have been void of straw. In open runs the scratching pens are havens of rest as well as a place for exercise, a snug dry protection from the winter's rain as well as a shield from the summer's sun. I watch the stream of tourists pouring in, they are astonished at the high price of poultry, they find eggs are selling 10 cents per dozen higher than in the Middle West; they find eggs are being shipped in by the trainload from the East, 53,367 cases for the first six months of this year, as against 66,217 cases California eggs received during the same time.

The possibilities look attractive, they have raised poultry before, why not again, and posthaste they are in the business, but O what an awakening! The conditions are entirely different from that they have been accustomed to, but they don't seem to see it. The plant must have a different construction to meet local conditions, the extremes in temperature between night and day, shade and sun, must be overcome. The bluegrass that covered their meadows, refreshed by the summer's rain, is not here, but its place in the bill of fare must be provided for.

They sold that blue grass or clover meadow for from \$50 to \$125 per acre, the same quality of soil in proximity to Los Angeles sufficiently watered to raise alfalfa, will cost from \$150 to \$300 per acre. The oats they fed at 30 cents per bushel must be eliminated; some are still feeding it, but they are throwing away money. That 40 cents per bushel corn will cost them more than double that amount here, in fact the feed bill all along the line is higher with us. Some start with alfalfa runs, the idea looks good, but I have never seen a plant with runs sufficiently large to maintain the supply. The chickens soon ruin a small area, and we have no low growing desirable crop that will stand the wear. We must resort to the cutting box, and a pretty good refuge it

is. The more green food we can induce them to eat the better will be the fowls, and the less will be our grain bill, and all things considered, there is nothing as good as alfalfa, the fresher the better.

With all things favorable, it still takes time to establish a paying business; the same as in any other line. This is particularly true of the fancy. The novice can count almost certainly on a loss for the first two years, and as a result the majority drop out before the end of that time. There are others in the poultry fraternity who could make a success, but the wonderful prosperity of our southwest, which makes big money easily obtained in other lines, draw them away, so we have left the man who follows it in search of better health, the patient toiler, and the fancier, but the field is open and the time is opportune for a man of resources to establish a very large and remunerative business. There is no good reason why we should not drive the Eastern poultry products from our markets and also compete for the Arizona and Nevada trade.

THE FIELD.

WORLD'S HOP CROP.

Consul William Bardel, writing from Bamberg, says that after a careful study of reports in trade papers and inquiries among a number of prominent Bavarian hop-growers and hop merchants, it is safe to state at this moment that the world's hop crop for 1906 will fall considerably behind that of last year.

Hop growers in Germany during this season experienced many difficulties. The plants survived the very long but rather mild winter remarkably well, and the fresh growth up to the middle of the month of May looked strong and healthy, but after that time continuous rains favored the accumulation of insects and sicknesses of all kinds and retarded the development of the plants to a dangerous degree. Toward the end of June the weather became more favorable, but its beneficial influence was not a universal one, since only in better situated and extremely well-kept gardens a decided improvement became visible.

What Saved the Crops.—It is only during August that a change for the better is reported from nearly all the hop-growing sections in Germany. Warm, sunny weather, interrupted by plentiful showers, has reduced some of the damaging elements, and has contributed much toward the formation and improvement of the plants and fruits. Even some of the less favored gardens show fresh life, and with a continuation of the present favorable weather may still recover enough to produce a fair amount of crop. Altogether, this year's harvest will commence at least two weeks behind the usual time. In some of the important points of Bavaria the hop crop will be almost as fine and as large as last year, while in others it is hoped that the present weather will improve the prospects, which at a time were very poor; but all told, the Bavarian crops are calculated to fall about two-fifths short of last year.

Reports From World's Hop Fields.—In Wurttemberg the condition of the plants is reported to be satisfactory. Baden reports to have grown well developed, sound plants. Alsace reports improvements within the last few weeks. Posen and the other North German hop-growing states report prospects for medium crop.

While the hop crop in Germany will fall considerably behind last year's harvest, Bohemia is reported to show still more unfavorable figures as compared with last year. Bad weather and insects have hurt the Bohemian plants so much that the situation there is reported to be quite critical. Steienmark and the other Austrian hop-growing provinces, however, will probably do as well as last year.

In Belgium the plants are in poor condition. The same is reported about the hops in Russia, where probably not half a crop will be raised this year.

Also in Great Britain the hop plants have suffered much through insects, and the crop there will barely reach one-half of last year.

Although the figures quoted below are only guesswork, and changes one way or another may still occur within the next few weeks, it is quite safe to say that this year's hop crop of Europe will fall considerably behind that of last year.

With the very favorable crop reported from the United States, American hop growers this season ought to be able to export their product to Europe, particularly to England.

Some of the most important hop merchants here state that while the world's hop crop of 1906 will be small in comparison to last year's, prices are not likely to rule high, since brewers in Germany, as well as in Great Britain, carry over stock from last year into the new season, to last from eight to ten months.

THE MARKETS

Wheat.

The wheat market remains in the same unsettled condition as a week ago. Sales are few and offerings are small. Prices are about the same, but the market is, if anything, stronger. The growers are still unwilling to part with their holdover at present figures. There are no indications at present, however, that point to any great change either upward or downward, and handlers here are not expecting that the deadlock will loosen up for some little time. Local dealers are at present receiving only a limited supply and are not anxious to buy. It is said that, in all probability, no more full cargoes of wheat will be shipped from San Francisco this season, though a number of partial cargoes are to go out for Europe. With present freight rates, shippers claim that they can hardly afford to pay more than \$1.17½ for number one shipping wheat, although small quantities are being purchased at \$1.20 and even more for stiffening instead of rock ballast. The interior of the State is in much the same condition as San Francisco. Millers are the only buyers and they are buying only enough for present consumption and show no tendency toward speculating. San Francisco is becoming more and more able to handle the wheat that is sent here as storehouses are being rapidly built. This month's government crop report, the receipt of which caused a break of ½ of a cent in December wheat in the Chicago wheat pit, while considered a trifle bearish by local wheat operators, caused no fluctuation here. The Government estimate of 13.7 bu. per acre of spring wheat would mean on a probable acreage of 18,000,000 acres in the United States, a total of 246,000,000 bu. Adding to this amount the estimated 493,000,000 bu. of winter wheat would make the total production of wheat for this year 739,000,000 bu., or about 11,000,000 bu. less than the Government Crop Report estimate issued a month ago. Local dealers hold that this decrease should have no particular effect on the market as, adding the 80,000,000 bu. carryover from last year to this year's estimate would give a total of 819,000,000 bu. Deducting from this the quantity of wheat consumed in this country last year, 525,000,000 bu., leaves a surplus of 294,000,000 bu. Hence there can still be 200,000,000 bu. exported if necessary and leave a balance of 94,000,000 bu. as a carryover for next year.

Barley.

Barley has not shown any notable increase in price over last week but the market is in a much firmer condition. Buying is still of a limited sort, however, though the general tone is good. The supply is abundant and the outlook is for continued interest for some time to come. Considerable buying for export has been done from time to time and several cargoes have left for Europe recently. Several more ships are yet to sail before the export season closes. It is estimated that nearly three-fourths of the crop is now in second hands, the crop in the south being particularly well sold up.

Flour.

The flour market is on the decline this week in spite of the fact that the previous drop was supposed to have brought it to the bottom limit. Some receipts have come in from Portland this week and the usual shipments were received from Stockton. No very great quantities of flour are being produced in California just now as millers are still waiting for lower wheat prices. Practically all of the big mills are working only for immediate needs and as a rule they have only small stocks on hand. Millers are anxious to get to work and would probably be quite free buyers if the wheat market should take a turn either way.

Oats.

Oats are moving very slowly with nobody very anxious either to buy or sell. Some oats are changing hands from day to day, but the total is small. On the whole, however, the ruling prices are much better than was anticipated before harvest. The aggregate of the harvest is considerably below the expectations, the shortage being quite general all over the state. If the quality of the arrivals continues to hold out as it has so far, it is hard to see how the price can drop. Some growers are yet holding for still higher prices and there is at least a possibility that they will not be disappointed.

Corn.

Large yellow corn is now being held at from \$1.40 to \$1.42½, which does not differ very much from the prices that have prevailed for several weeks past. Owing to a variety of causes much less interest is taken in corn this year than in former seasons.

Millstuffs.

The supply of bran and shorts is not particularly plentiful and the outlook is for a scant supply throughout the milling season. Two causes are operating to

produce this result. In the first place, less wheat is being milled, and in the second place the wheat is of good quality and yields less bran and shorts to a given quantity than is ordinarily the case. Taking the coast as a whole, however, there is no shortage, as the supply in both Oregon and Washington is above the normal. It is claimed that the quantity of barley and oats now being fed in this city is, in proportion to the total, greater than in former years and that in consequence there is less demand for bran and shorts than would ordinarily be the case.

Hops.

The big hop fields of the Russian River district are now fairly well cleared of their yield and things in other sections are moving to the close. The gathering of the harvest proved a great task this year as in almost all sections it was next to impossible to get enough help to gather the crop. In some places heavy damage resulted from the delay and in others the expense of harvesting was greatly increased. Prices are good and those growers who have not already contracted their hops are receiving as high as 20 cents.

Beans.

The bean market is decidedly unsettled this week, owing to the fact that the new crop is beginning to come in. Pinks are arriving in small lots from the south, but nothing has yet come in from the river section, where the crops are far behind. In some places crops are still green and these will not reach the market until very late, even if they are not ruined by rain. Prices are firm for pinks, in which much interest will develop as soon as larger stocks are available. Bayous are on the decline. Limas are being harvested and results are satisfactory. The crop is estimated at 200,000 sacks, two-thirds of this being already threshed. Fully one half of the crop of Limas was sold by this time last year, but this year not over one-quarter has been contracted for. The price for Limas has not changed much, but it has been gradually weakening. The supply is large and the trade does not seem to think that prices have yet reached a basis for large buying. At present dealers are buying only to fill orders. Red kidneys have declined, but are still above a parity with Eastern prices.

Wool.

Wool owners are showing a strong tendency to hold their clips, as they are of the opinion that prices will go up. Some mills in Oregon have shut down because the management would not pay the prices demanded by the growers. It is understood that there is considerable unsold wool throughout the country, but it is not expected that this will be sold for some time.

Bags and Bagging.

Bean bags are occupying all the time of makers and dealers here, and they are hardly able to supply the demand, although the labor situation has eased up some. Grain bags are quoted at from 8 to 9 cents, but as none are being sold, these figures may be considered nominal. Cotton bags are unchanged under a steady demand.

Poultry.

Generally speaking, the poultry market is on the decline. The demand is still fairly good for large, fat hens, but otherwise stock is having a very slow sale. Local dealers give the following quotations: Small broilers, \$2 to \$3; large broilers, \$3.50 to \$4; friers, \$4 to \$5; young roosters, \$5 to \$7; old roosters, \$4 to \$4.50; small hens, \$4 to \$5; large hens, \$5 to \$6; extra large hens, \$6 to \$7; turkeys, 17 to 20c; old ducks, \$4 to \$5; young ducks, \$5 to \$6; geese, \$1.75 to \$2 per pair.

Hay and Straw.

Arrivals of hay have only been 2781 tons. This shows a heavy falling off from normal receipts. In fact, this is less than the consumption. The difficulty is mainly with the railroad, though the boats engaged in the hay carrying trade have also been delayed by unfavorable conditions. These conditions, together with the fact that hay is now being ordered out of country warehouses and the strong demand in the city, have caused an advance in most grades of hay. Fancy wheat hay has in several instances sold considerably above \$19 per ton. The medium grades of wheat hay have also taken better, while fancy oat hay is being eagerly sought with very little offering. If transportation does not improve materially within the next few days dealers expect to have considerable trouble in supplying the daily city demand. The shipping demand is good and the government is now taking some hay for shipment to Manila. Alfalfa hay continues to come in freely and a great deal is on the river banks awaiting shipment. The market on this article is a little easier. Straw is arriving only in moderate quantities and the market is very firm.

Butter.

The supply of butter is off and the price is up. Receipts are from 30 to 40 per cent below those of last

year at this time, and it is almost impossible for dealers to get and keep a fair supply.

Eggs.

Eggs are extremely scarce and even some of the larger houses are getting but the scantiest supply. Some well known dealers are getting as low as four and five crates per day. The price has been forced up a cent over the prices of last week and the best are now bringing 40 cents per dozen.

Cheese.

Cheese is unchanged in price, but the demand is more brisk for all cheese of fancy quality. In common with all dairy produce there is a shortage of the better grades. Ordinary grades are more plentiful, though there is no great oversupply even in these. Good cheese is now quoted here at 12½ cents.

Vegetables.

Except for a few minor fluctuations, the general run of vegetables are in about the same status as before. Shippers seem to have the market pretty well sized up and are shipping in just about enough to fill requirements and keep all lines steady. The total of arrivals is a little below that of last week, and the carryover is just a little smaller than a week ago. Green peppers are reaching the city in somewhat larger quantities. Tomatoes are falling off some in receipts, but are still plentiful. Some green tomatoes are coming in and these are selling very well.

Potatoes.

The potato market is in good shape. Receipts are normal and the demand is sufficient to keep things moving and prevent any accumulations. The shortage of Salinas is still a matter of some interest and the price is looking up. Rivers are plentiful, but, as they are reaching this port in good condition, the price is not effected.

Fresh Fruits.

The fresh fruit market is quite active, with a falling off in some lines. Peaches are getting scarce and dealers are finding it hard to supply present wants. Apples are still plentiful and the quality is holding up. Figs are still coming in, but the arrivals are less than heretofore. Pomegranates are beginning to arrive in fairly large quantities and these are selling well. Pears are only fair in quantity, but the quality is generally good.

Dried Fruits.

There does not seem to be the usual attention given to dried fruits this year, probably because so many of the large packing houses were burned. Some shipments are coming in right along, though many of these are really in the nature of samples. Prices are still rather unsettled here and dealers are as yet a little uncertain as to the fixing of prices. New York advices show a steadier tone in evaporated apples, a good, firm demand for prunes, a scarcity of choice apricots, and an unchanged market for raisins.

Raisins.

Dealers report that there is more activity in the interior in raisin buying than there is here. In Fresno the situation is favoring sellers more and more as the season progresses. The price has now been forced up to four cents and there has been a great deal of buying at from 3¼ to 3¾ cents.

Citrus Fruits.

Oranges are reaching this market at a slightly decreased rate, and are selling at fair prices. A good bit of contracting has been done by growers at prices ranging all the way from \$1.50 to \$2. Lemons are scarce and high, bringing as much as \$5 and \$6 per box at retail.

Nuts.

Locally the interest in the nut market is not very great but advices from the south show that there is considerable activity in walnuts in that section. On the whole, the walnut crop is turning out well.

Honey.

The honey market is experiencing a slight firming up and the prices are gradually advancing. As the scarcity of the yield is realized, the demand for the best comb is running wild and dealers are not able to fill all orders. The holdover was considerable, but with no new supplies coming in the outlook is for a still further advance.

"By the way, sir," asked the waiter, "how would you like to have your steak?" "Very much, indeed," replied the mild man, who had been patiently waiting for twenty minutes.

The Bride—Oh, George, mother has been c-c-cruel to me! I made some biscuits for you and she said I'd better try them on the dog first! The Groom—Very nasty of her. And I thought she was so fond of dogs, too.

FORESTRY

SUGAR PINE AND WESTERN YELLOW PINE IN CALIFORNIA.

(By A. W. Cooper, M. F., in Bulletin 69 of the U. S. Forest Service, in co-operation with the State of California.)

[First Paper.]

Since the early mining days in California, sugar pine has been one of the most valuable timber trees of the State, and the exhaustion of the Eastern white pine forests has of late brought it into even greater prominence. Unfortunately, it has a somewhat restricted range, and the supply in sight, though large, is by no means unlimited. Yellow pine in California, which is of equal importance as a timber tree, is also included in this study. The two species are so intimately associated, both in the forest and in the market, that a study of one would be incomplete without a study of the other.

It is believed that the time is ripe for the better management of the forests of the State, since the growth of lumbering on a large scale, the increased value of timber lands, and, above all, the awakening interest of the lumbermen themselves, seem to indicate the possibility of a first step, at least, in this direction.

The object of the study here presented, therefore, is to devise modifications in present lumbering methods which may lead to a more conservative treatment of the yellow and sugar pine forests and to their better protection from fire.

Range and Distribution.—Within the State of California sugar pine and western yellow pine are closely allied in range, but their commercial and botanical ranges, as a whole, present the greatest divergence. The yellow pine is the most widely distributed tree of the West, comprising in its botanical range almost the whole of the Pacific and Rocky Mountains forest regions. The sugar pine, on the contrary, is limited to the States of Oregon and California. Its merchantable range is still more limited, being confined practically to the west side of the Sierra Nevada and portions of the Coast Range.

Yellow pine is able to endure great variations in climate and to flourish under most unfavorable conditions. The sugar pine is far more fastidious, and unless the different factors of situation are favorable it is unable to exist. A brief review of the distribution of these two trees will show the difference in their adaptability.

The yellow pine ranges from the central part of British Columbia south and eastward to the Black Hills of South Dakota. It accommodates itself to the dry lava beds between the Rocky Mountains and the Pacific ranges, and sweeps in a wide path southward to the hot and dry mesas of Arizona and New Mexico. It grows on both the high, dry mountain ranges of Colorado and the high but well-watered mountains of California. Its southern range extends even into Lower California, where it forms fairly extensive forests on the San Rafael Mountains east of Todos Santos Bay, with an extreme southern boundary on the isolated peaks of San Pedro Marter.

In comparison with this broad range that of the sugar pine seems almost insignificant. It is limited to the Pacific mountains and occupies but a small portion of these. It is confined almost wholly to mountain slopes, ravines and canyons in the more moist and protected regions. The northern boundary of its range is in the valley of the Santiam River in Marion county, Oregon, whence it extends southward along the Cascade and Coast ranges, bearing eastward to the headwaters of the Deschutes River and the western shores of Upper Klamath Lake. It reappears on the bluffs east of Klamath Lake and in Drew Valley to the westward of Goose Lake. Its range in California extends southward along the Coast Range to the vicinity of Clear Lake. It reappears again in the Santa Lucia mountains in Monterey county. The main range of the tree, however, is along the west slope of the Sierra Nevada, though it occasionally crosses the main divide and is found in scattered stands on the east slope. In southern California it is confined to the higher elevations. Its southern limit is with that of the yellow pine on Mount San Pedro Marter in Lower California.

There is often a marked relationship between the extension of a species southward and the altitude at which it will exist. This relationship is clearly shown in the case of sugar pine. In Oregon the sugar pine is found in merchantable quantities at elevations of 2,500 to 3,000 ft. and descends to 1,000 ft. near the coast. In northern California the tree occurs between 2,500 and 6,000 ft.; in the central portion of the State, between 4,000 and 7,500 ft., and in the southern portion

between 5,500 and 9,000 ft. Roughly speaking the altitude of the botanical limits increases at a rate of 500 feet in every 200 miles southward.

The lower range of the yellow pine in California is approximately 1,000 ft. below that of sugar pine. In the northern part of the State the upper range of sugar pine is about 1,000 ft. above that of yellow pine. This difference between the upper limits of the two species holds throughout the greater part of the Sierras. But in southern California, in the San Jacinto mountains, the difference greatly decreases and almost disappears. This is no doubt due to the uniformly warm, dry climate, even at high altitudes, where cold nights are offset by warm days. Within the region of their joint occurrence sugar pine may be considered, therefore, a species of the higher elevations and yellow pine a species of the lower.

The merchantable range of yellow pine in California usually coincides with the botanical range of the sugar pine. Yellow pine, because of its greater ability to withstand drouth, has an extensive range on the eastern side of the Sierra Nevada, where sugar pine is almost wholly lacking. Thus the two species, especially sugar pine, are very rarely found where the annual precipitation is less than 25 inches, and the region of best development for sugar pine is almost wholly within a belt where the average annual rainfall is at least 40 inches.

The region of best development of sugar pine extends along the west slope of the Sierras from Plumas county south to Kings river, in Fresno county. This may still further be limited to Eldorado, Tuolumne, Mariposa and Madera counties, which are by far the heaviest producers of sugar-pine timber.

THE CALIFORNIA ORANGE CROP OF 1906.

B. A. Woodford, general manager of the California Fruit Growers' Exchange, with headquarters at Los Angeles, was in New York recently and gave the Fruit Trade Journal some talk about the orange crop of the now closing crop year. When asked by a Journal representative regarding the business for the season, Mr. Woodford smiled a broad, contented smile. "The season for California citrus fruits has been the best experienced," said Mr. Woodford. "The shipments have amounted to about 28,000 cars of which our exchange handled about one-half, and while I have not statistics at hand regarding the returns to the growers, they have been highly satisfactory, and orchardists are highly prosperous. The New York market has been good, but I will not designate one market as better than others, as they have been good all over the country.

"New York and other Eastern markets are asking why we do not ship more California lemons. This is because the Western markets absorb our output at higher figures than New York pays, but the past two years has had the effect of stimulating lemon culture in California, and the acreage has been greatly increased. It is my opinion that the lemon output of California will eventually grow to such proportions that it will be sufficient to supply the markets of the country just as it now supplies the orange markets. The acreage is not only being increased, but growers are putting their orchards in better condition and pursuing more scientific methods so that the yield would become larger even were the acreage not increased. I expect the citrus fruit output of California to be increased from about 30,000 to 60,000 cars per year, as all orchards are being steadily extended. It will take time, however, for this increase to be brought about. There is no danger, in my opinion, of over-production. Thirteen years ago, when the yield was only 4000 cars, it was harder to dispose of the output than it is now. Northern California is developing greatly, and in this connection I will state that this section of the state is going to eventually supply the market with Valencia Lates in quantities and at prices which will compete with other oranges offered at the same season.

"Regarding the prospect of the crop for the next season, I would estimate that southern California will produce about the same quality of fruit as last season and that northern California will show an increase of 33 1-3 per cent. In this regard, however, it should be borne in mind that an increase of 33 1-3 per cent in northern California does not mean such a large increase in the season shipments, as the entire northern district did not ship but 2000 cars the past season.

"As to the prospect of better transportation facilities for fruit, and relief from the imposition of private car lines, I am not especially optimistic at present. We have always had our troubles and I suppose we will continue having them. It does seem, however, that the large order for refrigerator cars reported to have been placed by the Union Pacific would help the situation. The freight rates are high enough without having pri-

vate concerns to come in also to take a portion of our earnings, and charge exorbitant prices for icing. My opinion is that the transportation companies should furnish the cars and the ice at cost. Some of the growers think the ice should be free, but I think that we had better get it at cost first before trying to get it free of charge. I believe that eventually the freight rates will be reduced. The volume of freight is steadily increasing and the transportation companies can afford to handle it cheaper. Just when we shall secure reductions, however, I am unable to predict.

"I am not saying anything about the amount of business which we will handle this year, but I guess the exchange is about as popular as ever, and that we still get our share. Northern California will begin shipping this year as usual about November 1, and the prospects are now excellent."

THE VETERINARIAN

TUBERCULOSIS OF FOOD-PRODUCING ANIMALS.

A comprehensive bulletin on Tuberculosis of the Food-Producing Animals, by Dr. D. E. Salmon, will soon be issued by the United States Department of Agriculture. This is a subject to which Doctor Salmon has given many years of observation and study. While tuberculosis of domestic animals is not so common in this country as in Europe, it is common enough to affect materially our great livestock industries and to be a serious menace to public health. This disease most commonly affects cattle, and especially dairy cows, but recently the Federal meat inspection has demonstrated that it is widespread as a disease of hogs.

Tuberculosis, or "consumption," is popularly looked upon as a disease of the lungs, but the examination of the carcasses of animals slaughtered has demonstrated that it is by no means confined to the lungs. Indeed the various glands found in the thorax, or chest, appear to be affected even more frequently than the lungs. The intestines are often affected and sometimes even the bones and the brain. The disease sometimes invades the udders of dairy cows, and it is believed that tuberculosis is sometimes communicated to human beings, especially children, through milk carrying the bacilli of the disease.

One of the important discoveries of recent years is that of a means for detecting tuberculosis—the so-called "tuberculin test." By this means, without injury to the animals and with but little expense and trouble, cattle may be tested and the presence or absence of tuberculosis determined with a high degree of certainty. This test is most commonly applied to dairy cattle. Very often the tuberculin test has revealed many cases of tuberculosis in herds where its existence had not been suspected.

Tuberculosis is now recognized as an infectious disease caused and spread by a microbe or bacillus, and Doctor Salmon presents the various methods of eradicating it from dairy herds. The important features of all methods are the complete separation of all affected animals from the healthy ones, the thorough disinfection of barns which have been occupied by tuberculous animals, and the establishment of better sanitary conditions. When affected animals are of no great value they should be slaughtered. In cases where costly purebred stock is affected, the animals may be isolated and kept for breeding purposes for a time at least, thus lessening the hardship of the owner.

Doctor Salmon points out that both the State and Federal governments ought to co-operate with the farmers in eradicating this disease. He believes that such co-operation will greatly reduce the prevalence of the disease, and that it might even be eradicated altogether, as was pleuro-pneumonia a few years ago.

Two phases of the tuberculosis problem which have received particular attention in recent years and are of special interest at this time—the relation between the human and bovine forms of tuberculosis and the protection of cattle against the disease by immunization—are discussed in the bulletin.

This publication, which is designated as Bulletin No. 38 of the Bureau of Animal Industry, will contain about 100 pages and 9 colored plates, and will be for sale by the Superintendent of Documents, Government Printing Office, Washington.

Hostetter—Do you believe the automobile will eventually cause the horse to become extinct? Bigger—Yes, and every other living being.

THE DAIRY.

THE ALFALFA SEED CROP.

The American Farm World makes a compilation of statements about alfalfa seed which may be interesting to some of our growers:

Coburn, of Kansas, who probably knows as much about alfalfa as any other man in the West, says farmers are often cautioned against buying old alfalfa seed, but declares that moderate age is no drawback. Seed six years old has been known to germinate 93 per cent. and a German experimenter kept alfalfa seed bottled up in nitrogen gas for seventeen years, at the end of which time it germinated 56 per cent. The statement that alfalfa seed more than one year old will not germinate has been widely published, but this statement is wholly erroneous. The quality depends upon how it is harvested and handled.

Henry Miller, of San Mateo county, California, says he considers the first crop generally preferable for seed, provided insects have not injured the bloom, as they often do. If the second crop is used for seed, it should ripen longer than the first.

The crop for seed should be wind-rowed after mowing as soon as possible, allowed to dry in that state, gathered with the hand fork, loaded on wagons and put into the stock as soon as possible. The ordinary threshing outfit can be used, and if from a thousand or two thousand pounds per day can be turned out, it will cost about five cents per pound. The best alfalfa seed sells now from seven to fourteen cents per pound.

It is asserted that a seed crop taken from an old field of alfalfa is as exhausting as three earlier cuttings of hay.

The alfalfa blossom is so constructed that it is impossible to fertilize itself. The pollen must be carried to the point of fertilization by some agency, and the agents are insects. A hundred seed-pods were gathered from a Kansas field twenty-five miles away from any known colony of bees, and another hundred pods from a field less than one-half mile from an apiary. It was found that the pods taken near by the bees averaged two-thirds greater number of seeds, which were larger, plumper and more uniform in size than those taken at a distance.

F. M. Lowden says the plant attains its best yield at three years and that it cannot be mowed from seed any time before frost comes, but he considers the second crop best for that purpose.

The seed is mowed, threshed and dried as any other clover is.

Professor A. B. Ten Eyck, of the Kansas station, who has given more attention to the care of alfalfa seed than any other investigator, says it is a difficult matter to estimate with any degree of accuracy early in the growth of the crop, what the yield of seed will be. The blossom should be large and of dark, rich color. If small and light in color, it is evidence of a light seed crop. If the blossoms fertilize properly, the flowers dry and stick to the stem a few days, while, if they are not fertilized, they drop quickly and the stem stands bare.

The pods should appear thickly set on the stems, two or more in a group, to insure a good seed crop. During damp, rainy weather the ripe seed may sprout or when the weather turns dry, the ripe pods may burst and scatter their seed.

If the weather has been too wet and the alfalfa grows too rank, cut for hay. In a favorable season, with even blooming and even maturing of the seed, the rule is to harvest the alfalfa when a large proportion of the pods have turned brown. In the average season, as the alfalfa matures, part of the seed will be ripe, while some is over-ripe and shattering and some is yet immature. It is therefore necessary to strike an average and harvest when the largest amount of plump, sound seed may be saved.

The majority of farmers prefer to harvest when most of the seed is ripe and when two-thirds or three-fourths of the pods are brown, but others say it is best to harvest when one-half of the pods are brown.

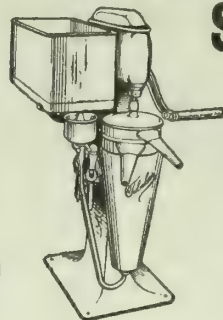
Mature alfalfa seed has a clear, light golden color. Immature seed has a greenish tinge and may be shrunken. But if the crop is not harvested until the seed is fully ripe, the pods drop off and there is great loss from shattering. The greenish colored seed, if not too shrunken, is vital and will germinate well.

If the alfalfa is mowed in the morning when the dew is on and raked immediately, there is much less shattering of seed. If cut later in the day, men should follow the machines with forks, moving the cut alfalfa out of the way of the team and the machine to prevent shattering. A machine with a buncher or windrower attachment will save more seed than an ordinary mower.

If threshing cannot be done immediately, it is best to follow the mower closely, placing the alfalfa in larger piles—about what a man can lift at one fork-full, thus avoiding pulling the

A FARMERS' COMMITTEE SAYS TUBULAR IS WORLD'S BEST CREAM SEPARATOR

Low Can
Lightest Bowl
Simplest Bowl
QUICKEST CLEANED



The Tubular

Self Oiling
Ball Bearing
Enclosed Gears
CLEANEST SKIMMER

A community of farmers and dairymen recently united and appointed a committee of six wide awake farmers to thoroughly investigate cream separators and decide which is best.

Why? Simply because they were convinced that cream separators pay, and wanted to know the best before buying. The committee requested all leading separator representatives to meet the committee and show their machines.

Why did they do that? Because the committee wanted to find out positively which separator actually is best. They didn't want to take anybody's word for it, but wanted to see all reliable separators side by side and decide for themselves.

When that committee met, many farmers were present waiting the decision. The committee carefully examined the different separators, and unanimously decided that the Sharple's Tubular Cream Separator is best, excelling all others in fifteen essential points.

The members of the committee backed up their decision by buying for themselves six No. 6 Sharple's Tubular Cream Separators right on the spot—one Tubular for each farmer on the committee.

What did that mean? That this investigation had absolutely satisfied the committee that the Sharple's Tubular is the best cream separator built—the best in every way. If you buy a Sharple's Tubular, you will get the world's best separator.

It is to your advantage to learn all about this committee—its decision—and the world's best separator. Write for our handsome, complete catalog C 131, with leaflet and the committee's sworn statement telling all about it.

THE SHARPLES SEPARATOR CO.,
WEST CHESTER, PA.

Toronto, Can.

Chicago, Ill.

bunches apart in loading which would cause the pods to break off and the seed to shatter. This also prevents bleaching.

Some farmers use a self-rake reaper with excellent results, and some cut the crop with a header, leaving the alfalfa in windrows across the field. Some farmers prefer to bind the alfalfa in bundles and shock as wheat. In this way, it may be cut a little greener and the seed does not shatter so readily. If bound in the shock, the alfalfa should stand a couple of weeks, or until dry enough to thresh.

Some farmers prefer to thresh with a huller or with a common grain separator with the huller attachment. It takes longer to thresh with a huller, yet, as a rule, enough more seed may be secured to pay for the extra time and expense required.

The seed should be cleaned with a good fanning mill. If green or damp when threshed, spread the seed twelve or eighteen inches deep on a tight floor in a dry place and shovel over until perfectly dry before it is cleaned and sacked.

SPANISH HALF RAISIN CROP.

Consul H. A. Johnson, of Valencia, makes a second report on the Valencia and Denia raisin crop for 1906 as follows:

Now that grape gathering is in full swing, raisin growers are disagreeably surprised to discover that the crop is

falling far short of all anticipations, the yield in most cases being scarcely half what was harvested last season on the same area. Indeed the most optimistic estimate at present does not exceed a total of 300,000 hundredweight against 600,000 hundredweight last year.

Prices have opened at 60 pesetas (\$10.30 approximately) per 100 kilos, which gives the following equivalents for the usual classifications in United States currency, per kilo, c. i. f. New York: Offstalk, 11 cents; fine offstalk, 11½ cents; finest offstalk, 12½ cents; selected, 14 cents; layers 4 crowns, 14½ cents.

Packers have again failed to agree among themselves on the all-important questions of prices and dates of first shipments, proving once more how very slowly the spirit of association strikes root in this country. With a continuance of fine weather during the drying period, the fruit promises excellent quality. Opening prices, already exceptionally high, are further enhanced by the recent recovery of Spanish currency, which now stands at a depreciation of only 10 per cent, against 30 per cent at same period last year—that is to say, the same 60 pesetas per 100 kilos raisins last year would have produced 20 per cent less in United States gold than the prices quoted above.

One of the most beautiful businesses in this world is that of Macheth, the lamp-chimney maker of Pittsburgh.

Beautiful, because it has grown to great proportions and profitability by satisfying the requirements of every lamp in use, whether known to its users or not.

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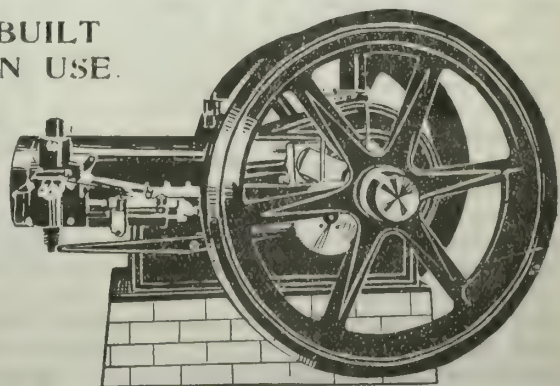
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Accept no substitute; insist on having "MOCOCO"

HOME CIRCLE

The Isle of Long Ago.

Oh, a wonderful stream is the river
Time.

As it flows through the realm of years,
With a faultless rythm and a musical
rhyme

And a broader sweep and surge sublime
As it blends with the ocean of years!

How the winters are drifting like flakes
of snow

And the summers like buds between,
And the years in the sheaf—so they come
and go

On the river's breast with its ebb and
flow

As they glide in the shadow and sheen.
There's magical isle up the river Time,
Where the softest of airs are play-
ing;

There's a cloudless sky and a tropical
clime.

And a voice as sweet as a vesper chime,
And the June with the roses are stay-
ing.

And the name of the isle is the Long Ago
And we bury our treasurers there;
There are brows of beauty and bosoms
of snow;

There are heaps of dust, but we loved
them so!

There are trinkets and tresses of hair;
There are fragments of song that nobody
sings

And a part of an infant's prayer:
There's a harp unswept and a lute with-
out strings

And the garments she used to wear.
—Benjamin Franklin Taylor.

NOT ON THE MENU.

Travers sat alone at a little table in a corner of the cafe. The continual hum and murmur of low-pitched voices, all the interminable sounds of the restaurant surrounded him, but he sat quite still, with his chin resting in his hands, staring at the empty chair opposite to him. The sight of pretty women, well-groomed men, all the bright, lively scene around him did not entice him from his reverie even for a moment. At last Travers nervously drained the cup to the last drop, and then wearily passing his hand across his forehead, he assumed his former attitude. Dreamily he fixed his eyes on the vacant chair, and then began talking in a sort of breathless whisper, as if to some one seated therein:

"Nannie, Nannie, it's so good to see you again. Let's see, it's been three years, almost, since that last time when—but we won't think of that now, we'll just be happy. Tell me, is your life happy, is he good to you? If he isn't—Oh, if I had only cared less what people might say, if I could have forgotten my miserable pride, we'd have run off some place and been married in spite of your uncle and his money, wouldn't we? Yes, I know. I saw it in your eyes, all that last evening—that you'd have gone anywhere with me, and then when I asked you if it was really true, do you remember what you answered? Yes, of course you do. But you were brave, and I—I was a poor coward—but it wasn't all my fault. No; there was your mother, always talking about what fine opportunities you had, now that you had been made heir to such a fortune. And then Saunders came along, with his yacht and his automobiles—anybody could see he was awfully in love with you, and—well, I either had to stop loving you myself or go, and so I came away. But I haven't made quite a failure out of my life. No, Nannie, little girl, not quite. You see, at first I didn't care much what happened, but then—I got to thinking how you would expect things of me, and so I took a grip of myself and pitched in, struck my gait somehow and had luck, too—

maybe you've heard of me—I wonder if you ever think of—but you must be very happy, with everything done to make you so, and every one loving you—" Travers ceased, and with a shiver buried his face in his hands. "What am I doing, what am I doing?" he moaned softly. "I must stop this, I must, or I shall go mad."

After a time, Travers knew not how long, he pulled himself together and looked up. He glanced at what had been the empty chair, rubbed his eyes and looked again. A girl in a light opera cloak smiled across at him.

"Yes, Bobbie, I'm real." Then anxiously, as he continued rigidly staring at her, "Bobbie, don't you know me?"

Travers had become very pale. He sat, tensely grasping the arms of his chair, mutely drinking in the picture before him.

"Nan, Nan," he breathed. "It's you, yes, you, my own little Nannie. I—I can hardly believe my eyes. I—"

He half rose out of his chair, and crushing both her hands in his, raised them almost to his lips, then realizing that many curious glances were being cast in their direction he released her and sank back.

"Do you know, I—" he began hesitatingly.

"Yes?" she murmured, leaning forward, her eyes never leaving his face, "you were saying?"

"Do you know, I was just thinking of you—wondering where you were, what you were doing, whether you were happy or not; tell me, you are happy with him, are you not?"

"With him! With whom?"

"Why, with your husband."

"My husband. I have no—why, Bobbie, I'm not married!"

"You're—not—married! But Saunders, what about Saunders? You know, after I left, I thought you would—"

"Yes, yes, I know you thought, you thought—oh, Bobbie, you thought too much—you had no right to think that I would marry him. You thought you would go away and let me enjoy my uncle's bounty, but you had no right to think that I wanted—"

"But, Nan, I did it for the best, don't you see?"

"No, I don't see at all. You men always do everything for the best. You never think what a woman wants, how much a woman may care—"

She stopped and drew back, crimsoning, the tears creeping into her voice and her eyes.

It was now Travers' turn to lean forward. Trembling, he reached into his breast and pulled forth a tiny lace handkerchief, crumpled and dark with pocket grime. Unfolding it, he spread it out before her.

"Do you recognize that?" he asked.

"Why, it's mine," she quavered. "It's the one you stole from me at the Martin dance and then wouldn't give back."

"Yes, that's it. And I've kept it with me ever since—always. But—" a thought striking him. "Your mother?"

At this she seemed suddenly to remember her position. Stifling a sob she caught at her cloak, and, hastily rising, looked across the room. Travers reached over and gently pushed her down.

"You're not going just yet," he said, quietly, "not for all the mothers in the world."

She looked at him searchingly, the trouble in her eyes slowly giving way to a look of happiness, of contentment, the sight of which brought a smile at exultation to his face.

"I don't know why I came over here, Bobbie," she murmured, nervously twisting the handkerchief around her finger. "Mr. Saunders took me to a table over there and then went out to look for mother, who was coming behind with

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We want you to see the kind of Poultry Foods that are manufactured from CLEAN, RAW MATERIAL. This means HEALTHY ANIMAL FOODS for your poultry.

WESTERN MEAT COMPANY

SOUTH SAN FRANCISCO,

San Mateo County

Mr. Burdick; and when I looked around and saw you I was so glad I didn't stop to think, but just—"

"Saunders!" he interrupted roughly. "I thought—"

"Yes," she said hurriedly, "he never seems to give up. It's impossible to make him understand that we can only be friends, and mother won't understand." Closing her eyes wearily. "Between them both I almost go crazy sometimes."

A look of ineffable longing came into Travers' eyes as he gazed at the drooping form of the girl before him, and this was quickly followed by an expression which no small number of men had learned to fear.

"Hang Saunders and his whole crowd," he choked out, grasping her hands and kissing them again and again, this time utterly oblivious of his surroundings. "I lost you once, three years ago, Nan Weatherby, but, by heaven, I'm not going to lose you now! Listen to me—"

"Oh, Bobbie," she gasped, "everybody's looking at us!"

"Never mind that," he smiled, still holding her. "The Rev. Charles McCracken lives just around the corner from here, and he is a good friend of mine. Shall we call on him?"

"You said once my eyes told you I would go anywhere with you," she said, looking up at him; "what do they tell you now?"

And from the size of the tip which Travers shoved into the hands of the astonished waiter, we may safely conclude that the light in Miss Nan Weatherby's eyes illumined a pretty straight road to the abode of the Rev. Charles McCracken.—Columbia Monthly.

HOUSEHOLD HINTS

SOME GOOD RECIPES FOR EGGS.

Egg Salad.—Boil six eggs twenty minutes. Cut the whites in thin slices, or chop them very fine. Arrange a bed of cresses on a dish. Make nests of the whites, and put one whole yolk in the center of each nest; or rub the yolks through a fine strainer over the whites. Sprinkle French dressing over the whole. Serve small balls of cottage cheese with the salad.

Breakfast Toast.—Cut slices of bread in large squares and toast nicely. Take the egg out of the shell, keeping the yolk whole; beat the whites to a stiff froth and lay around the edge of the toast; drop the unbroken yolk into the ring thus made, salt, and set the slices of toast on a tin, making as many slices as are wanted, then set in a hot oven and bake until the egg is "set." Take out, put on small plates and pour melted butter over the toast.

Baked Eggs.—Put in a frying pan and melt one large tablespoonful of butter;

stir into this one teaspoonful of flour until smooth and frothy, taking care not to brown. Draw the pan back and add gradually, one cupful of cold milk, half a teaspoonful of salt, and a dash of pepper. Let the sauce come to a boil and pour at once into a deep earthen pie plate; into this drop eight (or less, if so many are not wanted) eggs. Set the dish in a moderate oven and when the eggs are just "set" serve immediately on the same dish.

Potato Cake and Eggs.—For a breakfast or a supper dish, mash up cold boiled potatoes with a little warmed (not melted) butter, adding one raw egg to each pound of potatoes. Make this into cakes, flatten and put into hot baking dish with a small quantity of hot drippings; brown the cakes on both sides, poach one egg for each cake, trim off ragged edges and lay it on the cake when done. Serve hot.

WHITE FRUIT CAKE.

Cream a half cup of butter with a cup of sugar, beat in a half cup of cold water and the whites of six eggs beaten stiff. Add a pint of flour that has been well sifted with a heaping teaspoonful of baking powder, then fold in lightly a quarter cup of minced crystallized cherries, a quarter cup of blanched almonds cut into bits, being sure that all the fruit is plentifully dredged with flour. Flavor with rose water, if it is liked, and bake in a loaf tin in a steady oven. Cover with a white frosting.

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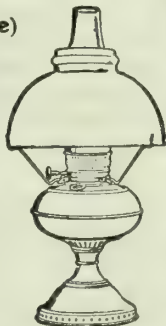
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lies in the fact that it generates intense heat without smoke or smell. The oil fount and the wick carrier are made of brass throughout, which insures durability. Gives great heat at small cost. Fount has oil indicator and handle. Heater is light and portable. Absolutely safe and simple—wick cannot be turned too high or too low. Operated as easily as a lamp. All parts easily cleaned. Two finishes—nickel and japan. Every heater warranted. If not at your dealer's write nearest agency for descriptive circular.

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can be used in any room and is the best all-round house lamp made. Gives a clear, steady light. Is the safest lamp you can buy. Brass throughout and nickel plated. Equipped with the latest improved burner. Handsome—simple—satisfactory. Every lamp warranted. Write to nearest agency if you cannot get it from your dealer.

STANDARD OIL COMPANY



USES OF DENATURED ALCOHOL.

Internal Revenue Commissioner Yerkes and Congressman E. J. Hill of Connecticut recently returned from Europe, where they made an examination of the working of regulations for free denatured alcohol in Great Britain, France and Germany, and have furnished some interesting information on the subject.

The strongest alcohol of commerce in the United States is usually 95 per cent alcohol, and the price varies from \$2.30 to \$2.50 per gallon, showing that the greater part of the cost is due to the revenue levied by the Government. The greater part of the 60,000,000 gallons of alcohol consumed in the United States is used in the manufacture of whisky and other beverages. The revenue tax prevents the use of alcohol to any great extent in the industries of the country. The bill passed at the last Congress,

designed to promote the use of untaxed alcohol in the arts and as fuel, takes effect January 1, 1907. The first effect of free alcohol will be, it is said, to supplant the 12,000,000 gallons of wood alcohol which are used in the manufacture of paints, varnishes, shellacs and other purposes. Another use that is expected of denatured alcohol is in the manufacture of certain products, such as dyestuffs and chemicals, which can not now be manufactured commercially in this country because of the high cost of alcohol, and which are imported largely from Europe. A very rapid development of the industry of manufacturing chemicals as a result of free alcohol is looked for. In the production of alcohol there is always formed as a by-product a certain amount of fusel oil, which is very useful in manufacturing lacquers which are used on metallic substances, fine hardware, gas fixtures, and similar articles. The industries manufacturing

these wares will undoubtedly receive a great stimulus as a result of cheaper fusel oil caused by the increased production of alcohol.

A Safe Fuel.—The use of denatured alcohol as a fuel has yet to be fully developed. Although alcohol has only about half the heating power of kerosene or gasoline, gallon for gallon, yet it has many valuable properties which may enable it to compete successfully in spite of its lower fuel value. In the first place it is very much safer. Alcohol has a tendency to simply heat the surrounding vapors and produce currents of hot gases which are not usually brought to high enough temperature to inflame articles at a distance. It can be easily diluted with water, and when it is diluted to more than one-half it ceases to be inflammable. Hence it may be readily extinguished; while burning gasoline, by floating on the water, simply spreads its flame when water is applied to it. Although alcohol has far less heating capacity than gasoline, the best experts believe that it will develop a much higher percentage of efficiency in motors than does gasoline. Since gasoline represents only about 2 per cent of the petroleum which is refined, its supply is limited and its price must constantly rise, in view of the enormous demand made for it for automobiles and gasoline engines in general. This will open a new opportunity for denatured alcohol. Industrial alcohol is now used in Germany in small portable lamps, which give it all the effects of a mantel burner heated by gas. The expense for alcohol is only about two-thirds as much per candlepower as is the cost of kerosene. Even at 25 or 30 cents a gallon, denatured alcohol can successfully compete with kerosene as a means of lighting.

DRUGGISTS THINK CAUSTIC BALSAM THE BEST

Dawson, Pa., May 16, 1905.

The Lawrence-Williams Co., Cleveland O.: Please send me the handsome pictures of horses. Would like same as I am something of a horse man, and have been handling *Caustic Balsam* for some years. I must say it is one of the best horse remedies I ever handled.—MODE PORTER

Any lamp—no matter how good—is handicapped if it hasn't the proper chimney.

My business is manufacturing lamp-chimneys that fit perfectly—of clean, clear glass that won't break from heat.

My name—MACBETH—goes on every one.

My Index tells of lamps and their chimneys, fully and interestingly. Let me send it to you—it's free.

Address, MACBETH, Pittsburgh.

CHAFF.

A young man strode into a doctor's office and explained his symptoms after the manner of a millionaire.

The doctor wrote two prescriptions, placed them in an envelope and handed them to him, with instructions to have them filled at once. As he turned to go out, the young man asked how much the medicine would cost. "Oh, about two dollars," replied the doctor. To his astonishment the young man asked for a loan of that amount. "Just let me have that envelope for a moment," said the doctor. Whereupon he took out one of the prescriptions and tore it into bits. "Why, what did you do that for?" inquired the young man. "That one was for your nerves," the doctor answered, "and I see you need nothing for them."

"Mamma, I've got a stomachache," said Nellie, six years old. "That's because you've been without lunch. It's because your stomach is empty. You would feel better if you had something in it." That afternoon the pastor called, and in the course of conversation remarked that he had been suffering all day with the headache. "That's because it is empty," said Nellie. "You'd feel better if you had something in it."

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A leaky roof not only damages the building, it endangers the value of the goods within, or the health and comfort of the occupants.

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PIONEER ROLL PAPER CO.
LOS ANGELES, CALIFORNIA.

AGRICULTURAL REVIEW

Butte.

FIRST SEEDLESS TOKAY GRAPES.—The Gridley Herald, Oct. 5: What is said to be the first seedless Tokay grape ever produced, has been successfully grown by the California Nursery Company at Niles. A few days ago the nurseryman sent a small express shipment of the new grape to W. T. Roberts of the Producer's Fruit Company. In every way the grapes resemble the old Tokay except that they are seedless. J. R. Hallett, of the Producers', exhibited a fine cluster of these grapes. While the seedless variety is much smaller in size than the old Tokay, which is the usual case in producing seedless varieties, the seedless grapes are in shape, color and flavor exact miniature reproductions of the seeded variety. The growers of the new grape say that they believe they can increase its size and improve it in every way.

ALL THE SUGAR MAY HAVE A YELLOW TINT.—Chico Daily Enterprise, Oct. 8: Unless the United States pure food commission changes its mind, the people of the United States will soon be using granulated and other sugars that have a distinctly yellow tinge. The commission has decreed that no mineral bluing substance be used in bleaching sugars. Sugar chemists say they use four pounds of a mineral bluing substance to every one million pounds of sugar for bleaching purposes. This, the sugar chemists say, is not adulteration; that it is merely purification by a thoroughly healthful process. The pure food commission cannot see it in that light, and insists that the whitening process be abandoned.

Contra Costa.

DENATURED ALCOHOL SHOW.—Contra Costa Gazette, Sept. 29: Farmers who visit the Jamestown exposition next year should not fail to see the government exhibit of denatured or fuel alcohol—alcofuel, as it has been suggested that it be called. The recent legislation removing the duty from this denatured alcohol was mentioned by President Roosevelt as being one of the three or four most important acts of the late Congress. The exhibit will be in charge of the department of agriculture, and will show graphically what an immense thing this new industry is or promises to be. The farmer's interest is twofold in alcofuel, first, its manufacture will be made largely from farm crops, and, second, it will furnish a very cheap fuel for use whenever any power is required on the farm for the running of


small engines, etc. The government exhibit will include showings of various kinds of internal-combustion engines using this fuel. Farmers will learn at the Jamestown exposition how to save labor in a thousand different ways. They will be shown how they can utilize machinery for sawing wood, chopping stock feed, pumping water and many other things. And the farmer's wife can employ machinery for doing her churning, washing, operating her sewing machine, light and heating the house, and in many other ways to save labor.

Fresno.

POULTRY ON THE FARM.—Luton Argus, Oct. 16: It has often been stated that ideal conditions for poultry raising exist on the farm, and yet there is no other class of stock so neglected by the average farmer. All the other stock is provided with comfortable quarters, which are kept clean and free from vermin, while the henhouse is well supplied with cracks, broken windows and lice and has not been cleaned for two years. Ask any of these men why they don't keep more hens, and you will be told that they don't pay, that they only keep a few to supply eggs for home use and have to buy eggs in the winter. Now, how can these objections be removed and poultry be made to pay on the farm? First—By replacing the mongrel birds with thoroughbred stock. This can be done at small expense by purchasing eggs and using the scrub hens as incubators. Second—By providing comfortable houses for the birds. This does not necessarily mean expensive houses. Buildings good enough for all practical purposes can be built of one-inch lumber, pine or hemlock, new or old, with inside surfaced so that they can be readily whitewashed and outside covered with building paper with battens over cracks. Third—By keeping the interior of the poultry house in a clean and sanitary condition.

CHICKEN SHOW IS PLANNED.—The Fresno Republican, Oct. 11: The members of the Fresno Poultry, Pigeon and Pet Stock association held an enthusiastic meeting at the city hall last night, and took the initiative steps toward holding the annual poultry show of the association in Fresno this fall. The dates selected for the exhibition are from December 12th to 15th, inclusive. The place of holding the show could not be settled yet, but several good locations were discussed and the committee will probably select the same show room as last year, if it is available at that time. The last show was held in the old business college room on K street, between Fresno and Merced streets. The judges have not yet been selected, but will probably be Bob Venn of Fresno and B. M. Woodhull of Stockton, who are both known all over the Pacific Coast as two of the best judges in the business. Messrs. Holland, Sheriffs, Kennedy, Stone and Forney were appointed a committee to solicit donations, which will be offered as prizes for the best specimens, pens, trios, pairs and so on. A committee was also appointed to award the contract of getting out the catalogue, which must be completed by November 7th, so that it can be mailed to all poultrymen on the Pacific Coast. The show bids fair to be very successful in point of numbers of fowls entered and individual exhibitors. Only one other show, that of Hanford, will be held in the valley, and all others in the State will be held in January. The fanciers of this valley prefer an early show, so that the birds may be returned to the breeding pens by January 1, and get the benefit of the early hatching. The Fresno association is a little later than usual in getting started out this year, but it is not too late to get up a good

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"The Rex Flintkote Roofing that we put on our sheds in 1902 and 1903 is in good condition to-day, and after a new coating of paint this summer we think they will be as good as new. We have one roof of another brand that has always leaked and given us trouble, and we are going to replace it with Rex Flintkote."

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show, and as everything looks favorable, they will undoubtedly have a very large and successful exhibition. Another meeting will be held in about two weeks to hear reports of the committees and arrange for the publishing of the catalogue.

Lake.

STOCK RAISING ADVANTAGEOUS IN FERTILE LAKE COUNTY.—Lake County Bee, Oct. 3: As a stock raising country, Lake county does not belong to the same class as the regions of great ranges. The valley lands are too valuable to use for stock ranges, though well adapted, for more reasons than one, for the propagation of fine stock. The lower hills are covered with brush, to a great extent, and when so covered, are not suited for pasturage except for goats. The higher timbered mountains furnish good range for cattle. In the higher mountains there is an abundance of moisture, and feed remains green the year round. Thousands of head of cattle and sheep are kept on these ranges, requiring virtually no care or attention, and are driven out fat enough for market. On the open hills the feed dries up during the summer, but does not lose its nutritious qualities and furnishes provender until the winter rains bring on the new grass.

As soon as the rains come, in September or October, the grass springs up and in an incredibly short space of time makes good grazing. The supply of mountain range land is, of course, limited. Great stock ranges, such as are known in other states and in other parts of California, are unknown here, but a few hundred acres of hill land, with a few valleys and glades, where a little hay and grain can be grown and a family orchard maintained, have put many a man on "easy street." The brush covered hills (all of which are clear at intervals) furnish excellent range for goats. Angora goats thrive and produce a high grade of mohair. All over the county, too, oak trees abound and their acorns supply food for thousands of hogs. Heretofore the hogs grown in Lake have been driven out to market, but raisers have come to know that just as good hams and bacon can be put up here as elsewhere, and packing houses are being counted among the enterprises of the county. The line of stock raising, however, to which the county is best adapted, is the growing of high-grade stock. The climate is suitable, the mild winters making extensive barns unnecessary and giving the animals the advantage of out-door ranges all the year. Nearly all the valley farms run

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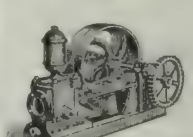
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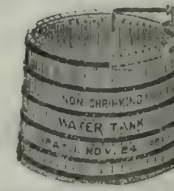
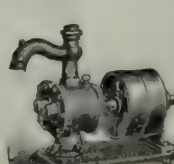
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up into the foothills, including sufficient cheap land for pasture, while the bottom land produces three and four crops of alfalfa every year, without irrigation. Because of the abundance of grass on the hill lands, very little farming ground will furnish enough hay and grain to keep many head of stock in the best condition during the hardest winters. Better animals have been brought in and the improvement in recent years is noticeable. Farmers got better service from their work horses and save time on the roads. Creameries and cheese factories find material to work with and are branching out. The stock that is driven out of the county—and the amount is not small—brings better prices than before. Though Lake county will never (only because of lack of territory) become a great stock growing country, she will be widely known, ere many years have passed, for the quality of the stock she produces, for it will rank, with her other products, at the top; and the men who own her stock farms, free from blizzards, snows and droughts, will be counted fortunate indeed among all those who are fortunate enough to call Lake county their home.

Los Angeles.

DANGEROUS CORN PEST.—Monrovia

Messenger, Sept. 28.—The cornstalk borer has infested various parts of the county for many years, but has not done great damage in most parts of the corn belt. It has begun to appear in Iowa and Kansas in the last two or three years. It is a large, white, brown-spotted caterpillar, which bores into a stalk of young corn. When fully grown it burrows down into the tap-root, and in the spring transforms to a pupa, from which the adult soon emerges and lays its eggs on the young corn near the axils. The young larvae hatching from them bore into the stalk and upward through the pith. When fully grown they bore outwards to the surface, making a hole, from which the moth escapes and forms to pupa in the burrow. This insect is two-brooded, the second brood feeding on the old stalks, generally between the second joint and the ground, and becoming full grown about harvest time, when they go into winter quarters. When corn was seriously infested last year and the stalks left standing a second infestation may be expected this year unless the farmer has raked and burned, a method which we have always suggested when the cornstalks were known to harbor any kind of insect pests. Corn is too good to be without its full supply of enemies, which attack it from the very time it is planted in the ground until it is in the full ear.

Modoc.

SURPRISE VALLEY FOR ALFALFA SEED.—Semi-Weekly Searchlight, September 27: There is a great yield of alfalfa seed in Surprise Valley this season. The little valley seems to be peculiarly well adapted to the raising of this valuable seed. The curing of it was begun only a few years ago, yet last year it was reported that 300,000 pounds were sold at prices ranging from 10 to 12½ cents per pound. The seed alfalfa is grown upon rather dry and unproductive soil, so that the plants may mature and the seed

ripen early. The yield is usually about 300 pounds to the acre, and as the work of harvesting and threshing and cleaning is done by machinery, the cost is trifling. It is said that there is but one other place—a section in Utah—where the quality of the seed equals the Surprise Valley product. The discovery of this source of profit has added tens of thousands of dollars to the already substantial bank accounts of the "Farmers' Paradise of Modoc."

Yuba.

PEAR GROWERS TO MEET IN YUBA CITY TOMORROW.—Marysville Democrat, October 8: Tomorrow afternoon the meeting of pear growers and experts of the Department of Agriculture and the State University will be held in Yuba City. This meeting was called several days ago by officers of the Pear Growers' Association for the purpose of bringing the growers and blight fighters together that they might have a heart to heart talk relative to the future work. The meeting tomorrow will be called at 2 o'clock and a number of prominent men outside of this immediate vicinity will be present. Lieutenant Governor Alden Anderson, who is President of the Pear Growers' Association, will address the meeting.

Solano.

BEAN GROWERS ALARMED.—Solano County Courier, October 8: The bean growers of Sutter county are becoming alarmed at the ravages of a worm that is doing considerable damage to crops. From present indications the crop will be reduced one-half, as the worm cuts the roots of the vines and kills them. A few days of hot weather would probably end its ravages.

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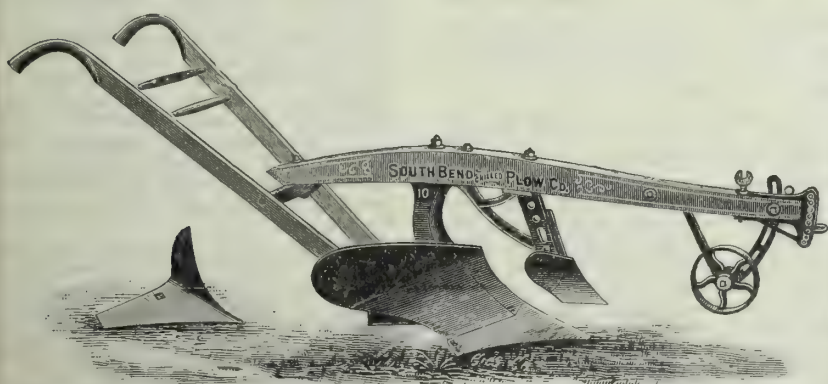
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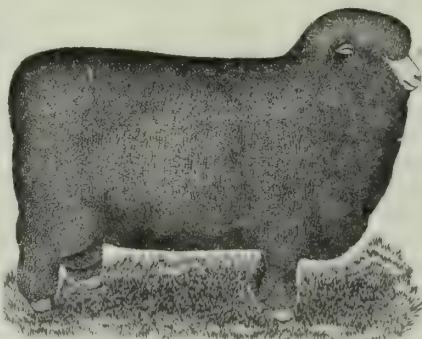
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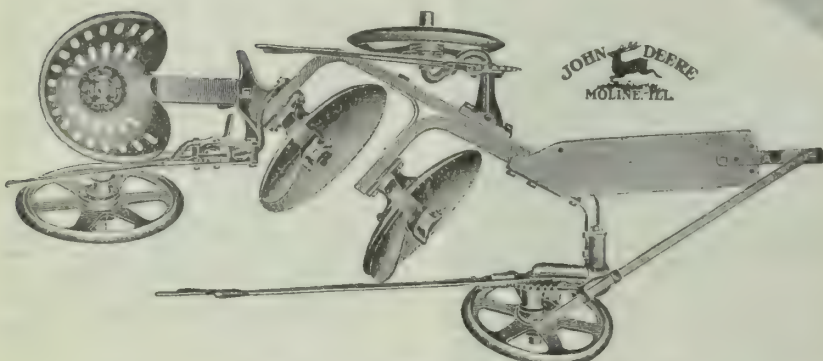
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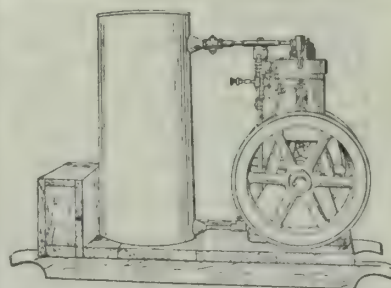
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LXXII. No. 17.

SAN FRANCISCO, SATURDAY, OCTOBER 27, 1906

THIRTY-SIXTH YEAR

THE COLORADO RIVER REGION OF CALIFORNIA.

Readers who have noted references in our columns to the Imperial Valley, comprising the eastern parts of both Riverside and San Diego counties, will be interested in the map upon this page showing the topography of the region and its geographical relations. The older race of Californians will remember the project of the late O. M. Wozencraft of San Bernardino, who proclaimed the ease with which the great area now known as the Imperial Valley could be flooded with water from the Gulf of California and transformed into a great inland sea which would change the climate of interior southern California so that its extreme heat and drouth would disappear and around the margins of the new sea there would be large districts as salubrious and well watered as the coast district of southern California, which has advanced to such attainments in population, industry and wealth. San Diego county would be, for example, bounded on the east by "bay and climate" just as it has always been upon the west. It was a great dream based upon the well-known fact that large interior areas were below sea level and would therefore welcome the inflow of the ocean if only a channel were cut for its waters.

Then there passed a quarter of a century during which Wozencraft wearied of this project and passed away. About a decade ago, however, other far-sighted people arose and projected another future for the Imperial Valley, not as a sea bottom, but as a vast agricultural region irrigated by the fresh water of the Colorado river which would run down hill from the river bed into the depression and instead of making a sea would be turned into incalculable weights of profitable produce. Thus arose a new and vigorous agricultural life in the California part of what was known as the Colorado desert. This enterprise was advancing most rapidly and satisfactorily, when a thing unforeseen occurred: the river escaped from its captors about a year and a half ago and has been ever since trying to carry out Wozencraft's plan in spite of all that can be done to check it.

The Colorado river continues to pour through the great crevasse in its bank in Mexico, ten miles below Yuma, Arizona, and is slowly filling the Salton basin, forming an inland sea. The flooding of this basin was the direct result of attempting to divert a portion

of the water of the river from its natural course for the purpose of irrigating the arid land of Imperial Valley, as already suggested. It is believed that at one time the Salton basin may have been directly connected with the Gulf of Mexico, which at that time extended much farther northward than now. The Colorado river then emptied into the Gulf at a point far north of its present mouth, which is about latitude 31 degrees 45 minutes north, longitude 114 degrees 45 minutes west of Greenwich. Like all rivers carrying a

sand which sloped gently away from the stream for many miles, it gradually widened the barrier of detritus—at first a narrow and often interrupted sand-spit—until it reached many miles into the basin, which was below the level of the sea, the successive overflows carrying the sand into the basin. These breaches in the natural levee were usually quickly filled by newly deposited sand, and the evaporation of the isolated body of water soon exceeding the inflow from the river and from other sources, the lake began to diminish in size,

eventually becoming dry. As it dried, it deposited on the lowest part of its floor the mineral salts from saturated solutions, which could no longer retain them in suspension.

This, briefly, was the condition of the basin and the river when the attempt was first made to artificially divert the river from its course for the purpose of irrigating the farms of the Imperial plains. The first canal was too small, and the large volume of sediment carried into it by the water caused the canal to quickly shallow and become useless. The canal was opened at points calculated to give a better flow and steeper grade, and head-gates were put in, but as before, the silt and sand settled about the gates and in the big ditch, rendering it useless. It was then determined to dig a larger and deeper canal, but this work was accomplished during a period of low water, without apparently having considered, or, at least, appreciated the possibility of a high river and its consequent results. For a time the canal was considered a success, for the heavy grade permitted a continuous flow of water to pass along its entire length to Imperial. The new portion was 3,300 ft. long, 50 ft. wide and 8 ft. deep. When the first spring rise of the river occurred, a tremendous current rushed through the artificial breach in the natural levee, rapidly cutting the channel deeper and wider. On June 1, 1905, the river was discharging a total of 61,500 ft. per sec., of which 5,360 sec. ft., or 11 per cent, entered the canal.

On June 30, with the same river volume, 13,960 sec. ft., or 22 per cent of the total flow, went through the canal. On July 30, the canal was taking 86 per cent of the river flow, or 15,020 out of 17,500 sec. ft. On October 25, 1905, the full river discharge, which was then 6,000 sec. ft., was going through the canal. Numerous attempts, all thus far futile, have since been made to control this stream, but the physical conditions are such as to render difficult all efforts, so long

(Continued on page 263.)



large quantity of sediment, it built a constantly advancing delta at its mouth. The sand encroached upon the upper end of the Gulf, eventually cutting the Salton basin off from its connection with the larger body of water, and in time, the great lake thus formed, became dry by evaporation. It is known that in seasons of high water the Colorado river overflowed into the basin, probably frequently in the early history of the lake, but in time, as the river became higher, running in a series of channels on the top of a broad plain of

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THE WEEK

It looks like a late autumn. It is nearly November and only a dust-marking shower has fallen. That of course does not matter, except for the comfort of people who like to see the creative wheels go round and the seasons ushered in with conventional weather displays. From an agricultural point of view it is better otherwise; better to forget the autumnal equinox and have really a two-season year: the dry season remaining dry until all the work pertaining to it is done and all the dry feed made good use of; the wet season which remains wet enough so that vegetation does not get a set-back from start to finish. Therefore it is better not to have much early rain, which starts things to be lost by following drouth and gives figures to the rainfall table which make no record in value produced. We are arguing for just the sort of an autumn as we are getting this year, although we acknowledge there was rather a faster north wind last week than there was need of. We saw people at some points in the San Joaquin who held that the wind of October 19 was the fiercest for a score of years, and this was probably true in other interior points. It was rather a trying wind and was probably our share of the great blizzard which swept over the interior plateau states, doing much architectural and agricultural damage because of its wrecking speed and low temperatures. Owing to our protecting mountain environment on the north and east, these polar blizzards are deflected from the valleys of California and sent southward to get warm and to slow up among the parallel ridges of southern Utah and Arizona. When such a north wind is looked upon as our proper share of something infinitely worse which is wallowing in the great trough between the Sierras and the Rocky mountains, we ought to be somewhat comforted.

This consolation is offered to the thousands of new Californians who have come into the interior valleys during the last few months. The report is that this summer's use of one-way cut-rates offered to intending settlers was freer than that of a year ago, showing that earthquake fright did not count for anything with home-seekers. That is as it should be, for if you manage to keep your barn off the earthquake line so that it will not be pulled apart by each end going a different way, such a movement does not hurt you agriculturally. And then even if you get on the line it may do you some good, judging by the story of the man who was thinking about enlarging his barn and found it simple enough to connect the two ends with a new central construction. But all people do not take nature so philosophically. We heard of a man who came to California from the east, arriving last week, and expressing his satisfaction at escaping from the winds of Wyoming. Fortunately for him he kept his money in his pocket because he saw so many good things to buy that he could not decide and he kept looking until the north wind of last week got tangled in his whiskers and he secured his return ticket with the remark that if he had to take such winds he had rather take them back home, where everything which had not been upset could be counted upon to stay in place. He did not wish to go through another lifetime with winds that he had not got the measure of. Of course Californians know that we have no winds with what may be called destructive power. They may rattle around loose things a little, but look almost anywhere at the shacks which

have stood for decades—too long, in fact, for the good of the landscape and local reputation for thrift. Our new citizens need not fear the fall northerers, the crops are out of their way as a rule and really a fall norther is less injurious than a June norther, which may upset crop calculations, but never upsets anything else.

The interesting story, which we give on other pages, of Imperial Valley and its experience as an irrigated region with too much water, is particularly timely because, as we go to press, there come dispatches that the Colorado river has actually been sent back into its old channel, which will carry it to the Gulf of Lower California and the valley is full of rejoicing. We trust the treatment of the river will prove effective this time. It seems as though it ought to be, for the method chosen seems to have been more powerful and rapid than indicated in our sketch printed elsewhere. Instead of a single trestle across the new bed of the stream, there were three made parallel to each other within a width of 200 feet, so that three lines of rock were thrown into the stream from side to side, one line relieving the pressure upon another, the whole three to be included in one rock dam ultimately with a breadth at the top of about 200 feet. With trains working on the three trestles a carload of rock was dropped every five minutes of the day and night. This is about the most rapid and strenuous rock-dam building ever undertaken, we presume, and if the Colorado at low flow does not respect such procedure it must surely be a most ill-behaved river, as it has some reputation of being. We shall await with interest the announcement of the completed work.

Last week we quoted Mr. C. E. Utt of Orange county as saying that the cost of labor and of transportation were the chief obstructions to profit in the California growing of peanuts. This means, we take it, that the price of labor makes the crop cost too much and the price of transportation handicaps us in reaching the great peanut-crunching centers of population east of the Sierra Nevada. As noted last week, Mr. Utt places these difficulties as greater than competition with imported peanuts or else he did not intend to include the latter phase in his remarks. The fact is that if California is to employ her peanut resources to any extent a market must be found beyond state lines and in the command of the markets west of the Rocky mountains the point at which the California product can successfully meet the product from the Southern States will be determined by two factors, viz.: the freight rate and the volume of peanuts from the Orient which comes for distribution from Pacific Coast ports. Thus both cost of transportation and volume of imports handicap our growers for the local use of peanuts is not large enough to warrant a large local product. The figures are that 3,037,679 lbs. were shipped from Japan to the United States in 1905, while the whole imports during the same period amounted to 5,339,817 lbs., Japan furnishing over half of the imports. These figures do not seem large when it is remembered that the product of peanuts in the United States in 1900 was 263,210,398 lbs., but for all that the Japan product is a standing trouble to the California grower, and when Greek genius for peddling combines with Japanese cheap production, it does really seem as though the California grower needed one or two kinds of protection.

The Sacramento Valley Development Association is proceeding with its tobacco growing experiments, which is interesting and enterprising. It ought not to be forgotten, however, that it was settled nearly half a century ago that good tobacco could be grown in California and it has been done every year since that time. But when it comes to a profitable crop of tobacco, that is a very different thing, because a crop of tobacco needs curing, and that is the sticker. What we need is not an opinion about growing tobacco in California, and we do

not need an opinion about curing either, because we have had many opinions on that subject which have cost the people who acted upon them a vast amount of money. It is published now that Mr. Miller, Secretary of the Development Association, has received a letter from Dr. B. T. Galloway, chief of the bureau of plant industry of the United States Department of Agriculture, saying that "either Mr. Shamel or his assistant, Mr. Cobey, tobacco experts, will arrive in Sacramento in a month or six weeks for the purpose of making an inspection of this valley relative to tobacco culture." "Both gentlemen," says the account which we have seen, "have had years of experience in raising tobacco, and there is every reason to believe that it will be demonstrated that tobacco can be grown successfully and profitably in the Sacramento valley." What a tobacco expert can judge about the suitability of the valley for tobacco by what he can see in November, we cannot imagine. No tobacco will be growing at that time except in some thermal spot, perhaps, and not in the valley lands which are in mind for the purpose. And what an expert can see of the problem of curing at that time, when the air is about as different as it can be from that prevailing when the crop has to be cured is also difficult of comprehension. The matter ought to be looked into by experts, of course; farmers cannot afford to do anything with it in the present state of the problem. But the expert ought to come at a time when he can be reasonably expected to expert something.

A very interesting but possibly somewhat burdensome refinement of the canning process is proposed by Prof. E. F. Pernot, of the Oregon Experiment station at Corvallis. His object is to retain the shape and flavor of the fruit and to avoid the mushy appearance which often follow heating to the high temperature necessary to kill the germs of fermentation, which cause canned goods to spoil. His method consists in what is called intermittent pasteurization. "Clean fruit and vegetables are placed in clean cans, and water that has been boiled to sterilize it is added to fill the interstices. The cap is then placed on the can and soldered, leaving the vent open. The cans are then placed in a wooden steam chest and kept there until the temperature registers 165 degrees F. in the center of the cans. This temperature is then maintained for fifteen minutes, after which the cans are allowed to stand for twenty-four to forty-eight hours, when they are again heated as before. This operation is repeated for the third time. The contents of the cans are then sterile and will keep perfectly." Undoubtedly, but how about the prodigious increase of labor involved in thrice processing instead of once? And what are you going to do with fruit put up in plain water? One of the evils of commercial canning is what is called the putting up of "water goods," in which a thin syrup is used to save the cost of sugar, a deception which gives the product an exceedingly bad name with purchasers and destroys future trade for immediate profit. It seems to us that the process is impracticable from several points of view, although it may be bacteriologically perfectly rational and correct.

QUERIES AND REPLIES.

BERMUDA GRASS.

To the Editor: I would like to know these things about Bermuda grass: Will Bermuda grass make a good sod? Will it grow without irrigation during the summer? Will it crowd out morning glory already established? Will hogs or sheep thrive upon it? When should it be planted to best advantage? Will it make a sod for next season before the morning glory gets under way in June, if planted in November? How much seed will be required to plant or sod one-half acre?—A SUBSCRIBER, Berkeley.

Bermuda grass will make a good sod if by good you mean thick; if good means handsome, it must be counted too thick and stemmy and too much rubbish after frost. It will grow without irrigation in good land and it will not die in very poor places. It would be a

battle royal between Bermuda and morning glory; who can tell which wins or whether they both live to fight forever? On good land, desired to grow other crops, we should look upon the introduction of Bermuda to kill morning glory as substituting two pests for one. Any grazing animal will eat Bermuda; cattle and sheep will do well; we do not know about hogs. Bermuda is a summer grower; it does not like frost and it resembles morning glory in its season of greatest activity, though it will start earlier. The best time to plant is after the cold weather is over and the ground begins to warm up, but it is dangerous to get it in any time unless you are sure you want to keep it. Bermuda grass seed is hard to get and generally not good. The way to start is to harrow in root-pieces made by running the strings as they are pulled out of the ground, after digging, through a hay cutter set for about inch lengths. The roots are sometimes sold for about 75c per sack. If you can find someone who has a Bermuda grass lawn you can get all the roots you want if you will dig them out and the owner will desire you to take them all, but you never can get them all. Enough will remain to run out any other grass he may try to establish in the place.

NORTHERN TREES AND SOUR SAP.

To the Editor: Will trees grown in Washington or Oregon be more hardy than local nursery stock? We lose a great many young apple and peach trees by "sour sap," and I have heard it asserted that the northern trees are more hardy and would stand the severe climatic changes in early spring.—PLANTER, Sonoma County.

If you get well-grown and not overgrown trees, the product of over-rich land and too much water, you will find very little if any difference in their subsequent growth and this difference will be first on one side of the question and again on the other. Suppose we grant a difference either way at the start, it would disappear under the new environment unless one or the other came from a stronger parentage and then the influence might be expected to endure. But no tree susceptible by its nature to the influence of standing water in the soil or to sharp frosts after growth starts, can resist sour sap in the root or the top, as the case may be. The hope in this matter is not to expect a peach tree from the north will be more resistant than one grown from as good seed in the locality where planted, but to get the best strength possible in the seedling wherever grown and then plant in a well-drained soil which every well disposed peach tree has reason to expect from the planter. Other fruits are the same, except that some, like the pear and plum roots, can stand more trying soil conditions.

SAWDUST, PINE NEEDLES AND LAVA.

To the Editor: Does pine sawdust contain turpentine in sufficient quantity to injure a vegetable crop if sawdust is applied in fall before planting at rate of ten tons per acre? Would well-rotted pine needles be injurious applied same way at rate of about 4 tons per acre? Would lava contain sufficient quantity of either potash or phosphoric acid to justify its use as a fertilizer if it could be grown cheaply?—ENQUIRER, Calaveras County.

Ten tons of sawdust per acre would not contain turpentine enough to hurt plants, and if the soil is heavy it might help the growth of vegetables by making it lighter. The same is true of pine needles. But do not put either on soils which are already light and inclined to dry out too fast. They will make this tendency worse. Lava will not pay for the grinding, because whatever it contains is largely insoluble. It takes long processes of soil formation to render the various contents of volcanic rocks available.

NO EUCALYPTUS FOR OREGON.

To the Editor: Would you kindly tell me where I could send for some eucalyptus sprouts and what time of the year is best to set them out?—PROMOTER, Oregon.

Eucalyptus trees are not grown from sprouts, but are propagated from the seed, which you can get from the seed dealers; or from small seedlings which are shipped by nurserymen in considerable quantities in

flat boxes, in which they grow. The Eucalyptus is an evergreen and has to be handled with little or no exposure to the roots, as evergreens are usually handled. There is no likelihood whatever that the eucalyptus will succeed in your district, because it is about as tender as the orange tree and a temperature of 20 degrees F. is likely to kill old trees and is almost sure to destroy young ones.

WHERE DECIDUOUS FRUITS ARE GROWN.

To the Editor: Please furnish me with such information as you may have available as to what parts of your State are especially adapted to deciduous fruit culture—apple, peach, pear, grape—also climate, nature of soil, etc., market, land values, etc.—ENQUIRER, Washington, D. C.

Deciduous fruits are grown nearly everywhere in California, but the counties in which the chief commercial products are made differ greatly. If you will consult our book on "California Fruits and How to Grow Them," which you will find in the Congressional Library, you will get the fullest statement which occurs in print on the subject. This work also discusses climate and soil from the fruit growing point of view. Unfortunately we cannot offer you the book now, as all that remained of the third edition were burned in the San Francisco fire and the fourth edition is still in preparation.

BONDEAUX FOR SHOTHOLE.

To the Editor: As I contemplate spraying my peach trees in December for the peach blight, I would like to know which proportions would be the best to use here, 10-12-50, or 8-10-50. Both were recommended in the Rural of May 12, 1906. I would like to know what proportions would be the best for the shothole fungus on my Blenheim apricots, and also the best time to spray them. They are young, vigorous six-year-old grafts and had no crop on them to speak of this year. The buds fell off similar to the peach buds. They have made a good growth and sets well with large buds for the coming crop.—ORCHARDIST, Campbell.

The formula which is given preference in the account of spraying for the peach blight referred to is the 8-10-50. It seems unnecessary to use the stronger form. This would also be satisfactory for the shothole on the apricot; the bark, however, to be carefully watched in the spring to see the first sign of injury to the fruit, and if such is noticed to spray the tree in fruit and foliage with the old 4-4-40 formula. We apprehend, however, that thorough work with the 8-10-50 during December will protect you against curf leaf, and the shothole upon both peach and apricot.

PEAR AND CHERRY SLUG ON THE PEACH.

To the Editor: In your issue of September 22, I note your answer to my query about the identity of slugs attacking peach leaves with the common cherry leaf slugs. Separately, I send you peach leaves with one of the slugs I have in mind. I wish you would let me know what it is, as to me it seems the same as the cherry slug.—READER, Niles.

The peach leaves which you send have insect remains which certainly suggest pear or cherry slug, and the manner of injury to the leaf is also similar. A demonstration of the matter, however, has to be had by close observation earlier in the season next year, so that the culprit may be caught in good condition, and, therefore, open to identification.

A WONDERFUL WALNUT.

To the Editor: Have heard an indefinite description of a walnut that will bear in four and one-half years and produce nuts similar to the English grafted variety, without grafting, that these trees can be purchased for \$1.50 each as yearlings. Can you tell me if this is so and where they can be obtained. Do you think walnut growing would be successful in Colony Center, or Dos Palos, as it is now named, Merced County?—PLANTER, Bakersfield.

We do not know of any such walnut variety as you mention, and we would be very careful in investing in any such thing. It may be all right, but walnut planting is almost a fad at the present time and fake propositions must be guarded against. Almost any seedlings grown from nuts of one of the French varieties will

do as you state, the fruit will be "similar" to the best variety without grafting, but the price seems excessive for seedlings, unless there is a corner upon the supply which we have not heard of. Walnut growing on a large scale should hardly be undertaken in a new locality where instances of the behavior of older trees cannot be secured. We should not be surprised at the success of the French varieties of walnuts on land of the right character at Dos Palos, but would want more knowledge than we now possess before making investment. Perhaps some reader can tell us about trees already planted in that section.

TO STUDY FRUIT GROWING.

To the Editor: Having a desire to learn fruit farming in detail, I have been referred to you as able to give me information on fruit farming in California. What state would be the best to go to to gain the necessary experience before starting for one's self.—INTENDING IMMIGRANT, England.

Your studies of American fruit growing should, if possible, be undertaken in the State in which you expect to locate. Fruits, and methods with them, differ somewhat in the different districts, and it would be disappointing to study fruit growing in the East for practice in California, or vice versa. California is, of course, the greatest of the United States in commercial fruit product, and in the variety of fruits which comprise it. At the same time, there may be just as much profit to be made from the same investment of time, energy and horticultural wisdom in other parts of the country. The choice of a place for the final undertaking you may have in mind should only be made after personal inspection and careful consideration. California invites such a test.

COUNTRY AGRICULTURAL STATISTICS.

To the Editor: Please give statistics of grain, fruit and other crops of Monterey and San Luis Obispo counties; also any other information you may have on hand about said counties.—ENQUIRER, Palo Alto.

We cannot furnish you with crop statistics of the California counties. According to a law passed by the last Legislature the counties were required, or at least urged, to furnish such statistics to the Secretary of the State Agricultural Society, at Sacramento. All counties did not comply, but we understand that Mr. J. A. Filcher, Secretary of the Society, is about to publish such statistics as were furnished him, and correspondence with him is, therefore, suggested.

WHAT TO DO WITH NON-BEARING OLIVES.

To the Editor: I want to get a little information in regard to the bearing of olive trees. I have a tract of land that was set to olives fourteen years ago. Last year they bore a few olives and this year considerably more, probably a quart or two to the tree. I am informed that before these years they did not bear anything. The trees have not been cared for for at least eight years. I am also told that they are "oil" olives and of a variety that does not come into bearing under 14 or 15 years, would like to know whether there is any truth in this report or not, as I have about decided to turn the trees into stovewood.—OWNER, Los Angeles county.

The olive has proved so irregular in bearing that it is impossible to form any close estimate of what may be expected from the tree. In some places they bear better than in others, and they generally bear under good treatment, with irrigation when it is needed, better than they do under neglect. Two things are open to you: first, to give the tract a fair trial by cultivation and irrigation to be followed by proper pruning if the trees respond to your more generous treatment. The other course is to make firewood of them, as you suggest, and we must say that the latter course has been adopted by most people who have had this problem confront them. You can gain some information along this line by driving through the Villa Park district, especially inquiring as to the condition of the old Hughes orchard, upon which we believe everything in the way of experiment was undertaken. We do not know of any variety of olive for which a crop has to be awaited for fourteen or fifteen years with any surety of getting it. Olives bear sooner than that, if they bear at all.

HORTICULTURE.

ALFALFA IN THE ORCHARD.

We have on several occasions indulged in comments upon some forms of desirability or having alfalfa as an orchard cover crop when the water was abundant enough for the alfalfa and the trees. A venture of this kind has to be entered upon cautiously and with due regard to a number of conditions. Records of experience and observation are valuable. We find the following in the writings of Rev. F. Walden in the Ranch, published in Yakima, Washington:

"Some fifteen years ago Mr. P. J. Flint, of North Yakima, planted something like forty acres to peaches on his Parker Bottom ranch in the Yakima valley, Mr. Flint's ranch is near mine, hence I have had a good chance to know what he has done. In putting out his peach orchard, Mr. Flint plowed up some twelve or fifteen acres of alfalfa. By dint of careful work the alfalfa was completely eradicated. That part of his peach orchard that had been in alfalfa has always been more vigorous than the other part. No one can see any difference in the soil—it is all alike to the eye. When his peach trees began to bear he had some of the largest and finest peaches I ever saw on the land where the alfalfa had grown. He had some Alexanders that packed forty-eight. The Alexander is not a large peach under ordinary conditions. I observed this marked difference and have often referred to it.

"I called on Mr. Flint quite recently and asked him if he had noticed any difference in the size of his peaches where alfalfa had formerly grown and where it had not. His answer was that the alfalfa ground had always produced more vigorous trees and larger peaches than the other ground. From this we learn that soil well filled with nitrogen is not only richer for the first year or two but that this good effect continues for years. Of course, the richness will gradually diminish from year to year. It is doubtful if any other legume will give as lasting effect as alfalfa for the reason that the roots of this plant go deeper than any of the clovers, peas, beans or vetches.

"On my own fruit ranch I have a striking illustration of the invigorating effect of alfalfa. In the spring of 1892 I set an orchard of 1200 peach trees. Along the north side of this plat—having forty trees in the rows from east to west and thirty trees in the rows from north to south—there is a head ditch made wholly of dirt that has been in use since the trees were set. Along this head ditch alfalfa got a start and while we kept it grubbed out of the main part of the orchard, we allowed it to grow here. It has gained on us considerably in the past few years and now occupies the ground for four or five rows along the north side of our orchard. We have allowed this chiefly because we intend to grub out the peach orchard in a few years. But we are surprised at the results of our neglect and have learned a valuable lesson. The trees where we have allowed the alfalfa to grow are more vigorous, bear bigger peaches, and more of them to the tree, than we get from the other part of the orchard. Last spring there was a terribly cold wind that blew for three days and much fruit was killed in various parts of the State. As a result of this cold snap in March our Crawfords in our old orchard are quite light except along the alfalfa strip referred to above. Here the trees are loaded with peaches and will yield three or four times as much to the tree as the part of the orchard out of which we have kept the alfalfa. There were more on the alfalfa strip last year. The peaches have been bigger for some years along this strip.

"When we were opening our fruit land in the Yakima valley, a neighbor came to us and offered to clean the sage brush off of some four acres of our new land if we would allow him to have the beans he could raise on the plat for one year. We granted him the privilege and he raised a heavy crop of beans. They were reddish beans and in other respects like what are called navy beans. He did not harvest his beans very early and they shattered quite badly. The following spring we plowed this ground and set it to apple trees. The beans came up and quite a few were harvested and a goodly number were again wasted. This condition of things kept up for four or five years. We were not thinking of increasing the fertility of our soil. But we have not another plat in our apple orchard where the trees are as thrifty as where our neighbor had his bean patch. A good part of this four-acre plat is planted to Jonathan and Winesap apples and is the admiration of all who pass by and see it.

"H. M. Gilbert, of North Yakima, who does such an extensive business in Toppenish, told me a few days

ago that he was sowing peas in some of his orchards. This will furnish nitrogen in the right form for plant nutrition. It behooves all the fruit growers to feel their way in such matters. It is true that these things have been tried elsewhere with success, but we do not yet know what will prove to be the best for our locality. We are up against this proposition of renovating our soils and we must by experiment settle which of the legumes we can most successfully use in the Pacific Northwest."

SEEDLESS TOMATOES.

To the Editor: Horticulturists have for years been striving to produce varieties of tomatoes as nearly seedless as possible, but why not get the cook and canner for allies by realizing the advantage which the gardener is striving to give us? It is the simplest thing to take the seeds out of tomatoes when canning them and I wonder that it is not usually practiced, for the cooked tomato without the seeds is of supreme flavor. If you doubt the rank flavor imparted by the cooked seeds, just cook a quantity of the seeds separated from the tomatoes and eat a few of them. To separate the seeds from the raw tomatoes prepared for canning in the usual way, just wrinse them with your hands a little, to free the seeds from the pulp and then lift the meats into another vessel and strain the seeds out of the juice by pouring it through a wire strainer of mesh suitably large so that the seeds will not pass through, and by washing in the juice a second time and again straining, the seeds will be entirely removed. The amount of seeds you will strain out of a gallon of tomatoes will surprise you. In my work here I took out one quart of seeds from twenty-four tomatoes.

ALBERT F. ETTER.

Ettersburg, Humboldt county.

CEREAL CROPS

THE IMPROVEMENT OF BREWING BARLEY.

We have already given sketches of the undertakings for the improvement of brewing barley projected by the Wahl-Henius Institute of Fermentology of Chicago. We have delighted in their conclusion that six-rowed barley will probably prove the basis of such improvement, rather than the two-rowed which prevail in European barley districts. California farmers know the greater strength and wider adaptations of the six-rowed varieties.

Dr. R. Wahl of the above Institute, whose writings we have quoted before, delivered an address on barley improvement at the recent Brewmasters' convention in St. Paul, from which we take the following:

You are all familiar with the efforts of the United States Department of Agriculture to improve American brewing barley by the selection and distribution of seed varieties that hold out promise of success. Two bureaus of the United States Department of Agriculture are engaged in this work, viz., the Bureau of Chemistry, Dr. Wiley, chief, and the Bureau of Plant Industry, Dr. Fairchild, explorer. The latter is now ably assisted by Dr. Mann, botanist, who is to devote himself exclusively, for the time being, to the question of barley improvement. It will be remembered that our Institute first pointed out the advisability of choosing our own six-rowed barleys as the most promising basic material for seed selection and distribution. In a series of articles the contention of the Berlin authorities was refuted, who had stood for the Haase system of valuing barley mainly by its low albumen content, and it was pointed out that our American six-rowed barleys, with a relatively high percentage of albumen or nitrogen, seemed in every way better adapted for the requirements of the American brewer than the European two-rowed varieties with relatively low albumen content.

Nilson's Mission.—In the pursuit of this plan of employing American six-rowed barley in preference to the two-rowed European types, as the most promising material for seed selection and distribution, Mr. Arvid Nilson, one of the chemists and barley specialists of the Wahl-Henius Institute proceeded to Sweden to study the methods there for years employed in the cultivation of pure races of cereals, and especially of barley, which subject was first brought to the attention of the American brewer and maltster by Dr. Fairchild. The practical results obtained by Nilson after his return to Sweden, in studying the six-rowed barleys in the fields of Wisconsin, Minnesota, and Iowa and resolving some of them into their component varieties by the aid of distinct botanical marks that characterize the different races, compared with practical malting and brewing tests, bids fair to mark a new epoch in the methods of identification of barley

varieties in America, of barley valuation and cultivation, and every brewer, maltster and progressive barley grower should follow with interest the work inaugurated by the United States Department of Agriculture, of improving the American brewing barley, and should lend their assistance in furthering this work either by active co-operation or by interchange of opinion.

What Does Pedigree Barley Culture Mean?—To produce and to maintain pedigree crops of cereals, in which every plant is the descendant of one and the same mother-plant, requires more work, more accurate methods, and more care than is bestowed upon the ordinary crops of the day. In this as in all improvements wrought by science in the different industrial branches, the higher level requires a higher standard of work.

In the cultivation of pure race cereals it becomes necessary to obtain from time to time a new supply of seed corn in order to maintain the race purity of the crop, and for that reason institutions are required where pure cereals can be obtained for seeding purposes.

In Europe it was Sweden where the importance of pedigree cereals became first generally acknowledged, and institutes are there maintained by the government all over the country for the purpose of producing such pure race varieties, and supplying the farmers with reliable seed corn.

The most important of these institutes, and, in fact, the one which may be considered as the originator of the pedigree system on a large and systematic scale, is the Seed-Breeding Institute of Svalof, in the southern part of Sweden.

The director of this institute, Professor N. Hjalmar Nilsson, had kindly supplied the Wahl-Henius Institute with information as to the methods and extent of experiments at Svalof by sending such publications as could be of interest, especially in regard to the production of pure race barley.

It was, however, considered of importance to obtain a still more intimate knowledge of this latest development of scientific agriculture, by actual observation, and for such purposes, Arvid Nilson, as a representative of the Wahl-Henius Institute, visited the above named institute at Svalof during the months of April and May of this year. From the elaborate report of Mr. Nilson I take the following data:

Nilson was most heartily received by the director, Professor Nilsson, and by Dr. H. Tiden, the barley expert, and other scientists connected with the institute, and given every opportunity to investigate the collections and working methods of Svalof.

The experimental farm of the Svalof institute covers about 2,500 acres of gently undulating land in a district where agriculture has reached a development unsurpassed in any part of the world. Situated only about nine miles from the sea-shore, it can be reached by steamer and rail in about two hours from Copenhagen, Denmark.

The climate is very temperate and even, ranging in summer between 50 and 70 degrees F., and in winter usually around 32 degrees F., zero weather being almost unknown. The arrival of spring and departure of summer take place at nearly the same time as in northern Illinois.

The Svalof Method.—The Svalof method of improving the cereals may be defined as a method of utilizing some selected few of the already existing numerous varieties, without any attempt to force upon a variety, qualities which are not inherent in that variety, in other words, to create from single plants new, pure races, and among them select such as are capable of remaining constant, and possess valuable qualities. It is, then, an improvement by selection.

The varieties thus fixed by pedigree culture are then studied and classified in groups, principally according to botanical marks, but also with due regard to similarity in practical respects.

By such investigations it was soon found that there existed a certain correlation between these external characteristics and certain internal tendencies and that such external characteristics could be used as guides in looking for mother-plants with one or another desired quality.

Any tendency to variation from the desired type of mother-plant is checked by yearly repeated pedigree culture in directly descending line, carefully weeding out all deviations.

As Sweden stretches north and south for a distance of about 1,000 miles, and agriculture is carried on to some extent above the arctic circle, the cereals used in the different parts of the country are raised at sub-stations, such as that of Ultuna for the middle part of Sweden.

In fact, the leading idea of the scientific agriculturist of Sweden is: "To produce the right kind of cereal

for each place." And such work is placed upon a strictly scientific basis by being founded upon a study of purely botanical marks, which not only serve as valuable indications when in search for certain essential and hereditary properties in a mother-plant, but also raise the new seed thus produced to the dignity of individual botanical forms, independent of changing conditions in soil and climate.

Botanical Marks.—And it is just this botanical part of the work which is characteristic of the Swedish system of pedigree culture, and which singles it out as a system complete both from a practical and theoretical standpoint. By such means the Swedish scientists have split the different cereals into a large number of distinct varieties, the best of which have been selected and are now cultivated on a large scale.

Barley, as is well known, is classified as two-rowed, four-rowed and six-rowed barley. The four-rowed is really also a six-rowed variety, and in fact the most common of the six-rowed barleys.

If a barley grain, whether two or six-rowed, is examined under a magnifying glass, a thin bristle is seen in the furrow at the lower or germ end of the grain. This bristle, called the basal bristle, will be found covered with fine hair, in some varieties comparatively long, in others short. If the grain under observation is turned around, the skin of the dorsal side of the kernel will be seen to have longitudinal veins like a blade of grass, one in the middle running straight, and one on each side of the central vein following the edge of the kernel. If the upper parts of these two side veins, where they run over into the beard, are examined under the glass, it will be found that in some varieties of barley the veins are provided with teeth like a saw blade, and that in other varieties of barley the veins are smooth.

By such and several other botanical marks, for a complete description of which reference should be had to the original publications, the different varieties of barley are distinguished from one another, and these marks also enable us to decide by a simple observation whether a collection of heads of barley or a threshed barley is a pedigree culture or not. For if, for instance, some kernels of the barley in question show longhaired, and others shorthaired basal bristles, the barley can be set down at once as a mixture of different races.

Application to American Conditions.—Although the idea of pedigree culture has been received with enthusiasm in the United States for a few years, the scientific means of controlling the outcome of such culture, at least as far as the cultivation of barley is concerned, have not received that attention which a personal visit to Sweden by one who, like Nilson, is familiar with the language, would have brought.

Shortly after Nilson's return from Sweden our Institute, considering the importance of obtaining in the shortest possible time such pure races of barley as would at once be satisfactory to the farmers and to the brewers, concluded that the best way to reach this desirable goal would be to solicit the co-operation of the agricultural colleges.

Consequently Nilson visited during July and August the agricultural colleges of Wisconsin, Minnesota and Iowa, and was most cordially received by the respective professors, who all declared themselves willing and anxious to co-operate with us. At all three colleges, especially so, perhaps, in Madison, Nilson found a great interest in barley culture, all three colleges having experimental plots and larger areas set apart for pedigree culture of barleys.

The two favored varieties were the Manchury and Oderbrucher barleys. The farmers of the three States do not willingly take to two-rowed barley, as in nearly all localities it will lodge badly and yield less per acre than the six-rowed barley.

A farm six miles from Madison was also visited where two fields of about twenty-five acres each were planted with Manchury and Oderbrucher barley, the seed having been obtained from the Madison college. Samples were taken of these two fields, as well as from a large field of Oderbrucher barley belonging to the Madison college. Samples were also taken from the smaller plots near the college of what was named ordinary Manchury and Oderbrucher, and from pedigree culture of these two varieties, and besides from two pedigree plots of six-rowed barleys called Silver King and Golden Queen.

Similar samples were later taken from the experimental plots of the Minnesota Agricultural College.

Analyzing Samples of American Barley by Swedish Method.—When applying the Swedish method of analyzing these different samples of six-rowed barley, Nilson soon found that the two ordinary barleys, the Manchury and Oderbrucher, were composed in very

much the same way, as far, at least, as indicated by the hairiness of the basal bristles and the conditions of the side veins. Both showed about 88 per cent of heads of the shorthaired basal bristles, and 12 per cent with longhaired bristles, both varieties having dentated veins. In other words, the Oderbrucher and the Manchury barleys were mixtures containing 88 per cent (about) of one type and 12 per cent of another type.

Now, as to the pure cultures of Manchury and Oderbrucher, both in Madison and St. Paul, they were, as far as observation of a limited number of heads of each goes, actually pure pedigree cultures, consisting in both places of the shorthaired type, which might be expected, seeing that the single heads from which they were raised had been taken at random from a mixture containing only a small number of the longhaired type.

So much the greater was Nilson's astonishment when he examined the two six-rowed pedigree cultures known as the Golden Queen and Silver King, to find the Golden Queen actually was a pedigree culture of the longhaired type, whereas the Silver King was made up of the shorthaired type.

The originator of these two last types is unknown. Evidently someone happened to pick from an Oderbrucher or Manchury barley one head of each of the two types.

"I am aware of the fact," says Nilson, "that doubt has been thrown upon the constancy of these botanical marks, and that consequently it might not be well to rely too much upon such characteristics. Though not a botanist, I may be allowed to say that, as far as my experience goes with these six-rowed barleys, I have not once felt any doubt to what type a kernel belonged, and that within the thousands of heads I have examined I never saw any variation in the kernels of one and the same head, except as to size of the basal bristle. As far as the hairiness goes, it is as easy to distinguish between the two types as it is to distinguish between the hair of an Indian and a Negro.

"This goes to show, that we have not so far here in the United States, with this cereal, at any rate, been working according to strictly scientific principles in pedigree culture, and that in the future an exact botanical study must go hand in hand with the practical experiments in the field, if our pedigree cultures are to be of any reliability and certainty."

Which Race of Barley?—The question now naturally arises, which race of barley should be preferred.

The first condition is that such a barley must be satisfactory to the farmer, as he is not likely to raise a barley unless it pays him to do so. That condition limits, as far as I know, the choice to six-rowed barley, at least in the three States of Wisconsin, Minnesota and Iowa.

Taking, then, this for granted, we have already two barleys, the Manchury and the Oderbrucher, of which the first has been grown successfully for a long period, and is therefore thoroughly acclimatized. The Oderbrucher seed was obtained by Professor Moore, of the Wisconsin Agricultural Experiment Station, from Germany about six years ago, and this barley seems to do equally well, which is not to be wondered at, if the two varieties really are one and the same.

That both of these barleys are excellent brewing barleys has been found by experiments carried out on a large scale at our Institute.

The question would then limit itself to a decision in favor of one or the other type represented in the two barleys. Is it the shorthaired type which is superior, or does the prize belong to the longhaired type? Incidentally, it may be mentioned that one of the best of the Swedish six-rowed varieties, the so-called six-rowed Giant barley, really is derived from Manchury barley, and is a pure race of the longhaired type.

Well, these questions must be decided by our agricultural colleges. Possibly the longhaired type may possess the stiffer straw and therefore be the most suitable for a heavy soil, and it may also be that it runs higher in nitrogen. Such would, in fact, be the case, if further experiments verify the analyses of two heads of the two types selected from the ordinary Manchury barley. Further examinations will decide whether this is a rule or not.

Again, in looking over the material to be collected in other States, we might find varieties better adapted to the climate and soil of those States, and to the requirements of both farmer and brewer, than the mixed barleys there grown at present, or better adapted than the pedigree barleys to be separated from the Manchury or Oderbrucher seeds of the Wisconsin, Minnesota and Iowa areas. We may find that for certain localities certain other varieties of barleys are best suited. We intend to take in hand the California Bay Brewing

six-rowed and Chevalier two-rowed barleys, extensively grown in the western and northwestern States, and resolve them into their component varieties.

Superiority of Six-Rowed Barley.—Not until that time will the question of systematic barley valuation find a final solution. That the six-rowed barley deserves preference at least for American conditions is indicated by a number of circumstances.

Six-rowed barley is cultivated above the arctic circle, is content with a soil where the two-rowed would prove a failure, has a thicker skin and a stiffer straw, and is enzymatically stronger, its diastatic strength being greater than that of the two-rowed European barley. The six-rowed barley is, therefore, capable of giving a beer of more stable qualities, a beer which will stand high and low temperatures better.

And it is according to this enzymatic energy that the value of a brewing barley should be estimated also, and not alone according to whether it yields a few per cent more or less of starch. The quality, not the quantity, of the beer should be of first importance.

Nilson reports that the use of six-rowed barley is increasing in the Swedish breweries, thanks to the efforts of the Svalof institute, and the Danish breweries do not seem to consider it entirely unsuitable. He says: "When in Copenhagen I visited the famous Carlsberg breweries, and in a conversation with the head inspector, Mr. Paulsen, I asked whether any six-rowed barley was used. To my great astonishment Mr. Paulsen answered: 'Yes, indeed, whenever we make a beer for export to hot countries, we always use a large percentage of six-rowed barley to make the beer more stable.'"

Now, it is just such a stable beer that the American public demands. And when the farmers of this country are able to deliver pure race, six-rowed barleys for brewing purposes, then there is hope that the question of higher or lower nitrogen content may find a satisfactory solution. Then we can take up with some hope of success the investigations of the role played by the different nitrogenous compounds in the barley grain, which investigations so far have been almost useless in a barley consisting of an unknown number of varieties with different properties.

Role of Albumen According to Structure.—For years the attention of the students of our Institute has been drawn to the fact that the albumen of barley possesses very different properties in the various parts of the grain. So, for instance, has it been shown, that the so-called aleurone layer, which is very rich in albumen, is not at all changed during the malting and brewing operations. In fact, it is only during the last stages of its growth in the soil when the barley kernel is permitted to grow as far as it can by its own resources, and after the starch body is almost entirely consumed, that the solid cells in the aleurone layer begin to show some partly empty cells. It is, therefore, clear that these cells cannot be affected by the short period of germination of the barley during the malting process, and still less by the mashing operation. Now, when it is considered that a barley grain possesses more or less of such albumen, some barleys showing two, others three rows of cells in their aleurone layer, it is evident that two barleys may differ in total amount of albumen contents, and still give the same amount of albumen to the beer, and vice versa. The way in which the nitrogenous bodies of a barley are going to influence a beer is decided not alone by the total quantity of nitrogenous substances in the barley, but also by the quality of such bodies, as is here instanced by the different behavior of the aleurone albumen, compared with the endosperm and germ albumen.

The work of the agricultural colleges for the next three or four years would, then, be to separate and cultivate as pure pedigree races the two varieties in the Oderbrucher as well as in the Manchury barley, and to test thoroughly which of these is the most promising from the farmer's standpoint, while the brewer's standpoint should be looked after by experts in that line.

But if these experiments are to be of real value, they must be carried out with the greatest care. No seeds should be used for these experiments which are not taken from heads carefully examined as to type, in order to insure a pure race barley from the start. And the experiment plots should be well separated from each other, so as to prevent one plant or head of one variety from getting in among the plants of another plot, and thus vitiating the result from the very beginning. The experiments should be carried

out in the same exact and pains-taking manner in which they are carried out at the Swedish Institute.

RUSSIA'S WHEAT SURPLUS.

Russia is the chief competitor of the United States in the wheat markets of Europe outside of Russia, and the conditions under which wheat is grown in that country, as indicating cost of production and prospective export supply, are the subject of a bulletin soon to be issued from the Division of Foreign Markets of the Bureau of Statistics, Department of Agriculture, prepared by Dr. I. M. Rubinow, economic expert.

Bread cereals have always been the mainstay of Russian agriculture. They claim over 75 per cent of all cultivated land in Russia, as against 20 per cent in the United States; but forty years ago the share of wheat in Russia was small in comparison with that of rye, the Russian staple. Since the Russian land tiller began to produce for the foreign market, the strong demand for wheat has had its effect. During the last twenty-five years the acreage under rye in European Russia has remained about 65,000,000 acres, while the acreage under wheat has increased from 29,000,000 to 46,000,000. Taking the entire Russian Empire, the acreage under rye has increased from 70,000,000 acres in 1894 to 74,000,000 acres in 1904, while that under wheat has increased from 41,600,000 to 59,200,000 acres.

Of the immense territory of Russia, the wheat belt occupies a comparatively small share. There is very little wheat grown beyond the southern and eastern parts of the famous black-soil region. Eight provinces in the south and southeast contain 70 per cent of the wheat acreage of all Russia, Caucasia has about 12½ per cent, and Siberia about 6 per cent.

In the wheat belt proper, wheat is rapidly crowding out almost everything else. In New Russia, in the Lower Volga provinces, and in Northern Caucasia, from one-half to two-thirds of all cultivated land was under wheat in 1904. Here the most rapid extension of wheat acreage has taken place, namely, 7,800,000 acres in twenty-three years in New Russia (1881-1904); and in the Lower Volga provinces, 4,800,000.

The Russian wheat crop has increased from 400,000,000 bushels in 1896-1898 to 630,000,000 bushels in 1902-1904. The wheat area is over 10,000,000 acres larger than that of the United States, and in 1903 and 1904 the Russian crop exceeded that of this country.

Nevertheless, the crop is small when the acreage is considered, the average yield of wheat per acre in Russia being the lowest of all important wheat-growing countries. In European Russia it varied within the last twenty-three years from 5 to 11 bushels per acre. Nine times out of the twenty-three years it was below 8 bushels. If the Russian peasant obtained as good a yield as the German peasant, the wheat crop of European Russia alone would amount to 1,300,000,000 instead of 400,000,000 bushels.

In the western part of Russia, in the Baltic provinces, Poland, and the southwestern region, the yield is considerably higher—between 15 and 20 bushels per acre; but New Russia and the Lower Volga region, often called the granary of Europe, show a yield normally fluctuating between 8 and 6 bushels and often dropping to 5.

There are reasons for these low yields besides the unavoidable climatic conditions. Among these is the insufficient use of fertilizers or manure in the wheat region, due to communal ownership of peasants' lands and to deficient live stock and lack of pasture on the peasants' lands. Thus the number of horses in Russia has not increased during the last twenty years, and from one-third to one-half the peasants in the various wheat provinces have no horses at all. The implements used are extremely poor and primitive. Even the plows are made mostly of wood and scarcely scratch the exhausted superficial layers of the soil. The all-iron plow is still a luxury for many peasants. Sythes and sickles are still used extensively for harvesting and flails for thrashing. Seeders are scarcely known. Conditions are somewhat more favorable on the larger holdings of the noblemen; among the peasants the kind of machinery directly depends upon the size of the peasant's lot. Importation of complex agricultural machinery has grown from \$2,600,000 in value in 1890 to \$14,200,000 in 1903, but it has affected the farming on large estates more than that of the peasants.

Even on the large estates the modern implements are not generally used, since it is often customary to hire the peasant with his live stock and his crude implements. Laborers are hired for \$30 to \$40 a year in addition to their food, the cost of which does not exceed \$25, and a female agricultural laborer receives only \$12 to \$20 a year. Even at harvest time the average wages of a man with a horse in the wheat belt are only 66 cents per day, of a man alone 34 cents without board, and of a female worker 22 cents. At other times the wages are correspondingly lower.

Nevertheless, the cost of producing wheat in Russia is not as low as one might imagine. Elaborate investigations have shown that because of the low yield the average cost per bushel of spring wheat in 1899-1903 was 36 cents in Middle Volga, 39 cents in Lower Volga and 48 cents in New Russia, not including land rent, which has been constantly rising during the last twenty years, because of the intense demand of peasants for more land.

Within twenty years the value of land in the wheat belt has risen from \$10 to \$30 per acre, and wheat land rents for \$3 to \$4 an acre, which adds a charge of from 20 to 50 cents per bushel, depending on the yield. With the rent added, the cost of production of wheat rises from 55 to 80 cents per bushel.

The future of wheat production in Russia depends largely upon economic conditions and the educational progress of the Russian peasants. Forty years ago the Russian peasantry was uniformly illiterate. According to the census of 1897, 35 per cent of the adult male peasants were literate, and in the younger generation the proportion of literacy was still higher.

The economic condition of the peasantry may be improved by increased size of holdings, which is contemplated in the Imperial manifesto of November 3, 1905. The immediate result of such extension of peasant-land ownership will be of practical importance to the American farmer. It will mean a setback in the tendency to change from rye culture to wheat culture, since rye plays a larger part in the peasant economy, and a considerable reduction in yield of wheat, which, accompanied by an increased home consumption, would considerably reduce the surplus.

FORESTRY

Continued from last issue.

The region of best development of yellow pine is much more difficult to determine. As far as stand per acre is concerned, the nearly pure yellow pine forests about the McCloud and Pitt River countries and on the Shasta Plateau might be considered the region of best development. There are many stands scattered through the Sierras that will closely approach this, notably in Plumas, Butte, Eldorado, Nevada, Sierra, and Placer counties. Some excellent stands also occur in the San Bernardino mountains.

The tree individually perhaps reaches its maximum on the basins of filled lakes on the western slopes of the central Sierras, but throughout this region it is so mixed with sugar pine, Douglas spruce, incense cedar, and fir that the stand of yellow pine per acre is comparatively light.

Associated Species.—As previously shown, the ranges of both sugar and yellow pine in California are much the same, although the actual distribution varies. The most common associate of sugar pine on the lower situations, therefore, is yellow pine. Sugar pine never grows in pure stands. Toward the lower limit of its range in the mountains it is found chiefly with yellow pine and incense cedar. This triple association is varied by the presence of Douglas spruce in the northern half of the State, especially in the cooler situations. Oaks, such as California black oak (*Quercus californica*, Torr. Coop.) and tanbark oak (*Q. densiflora*, Hook. and Arn.), also occur in mixture with sugar and yellow pine, usually forming an understory. When growing with yellow pine and cedar the sugar pine is usually scattered singly through the stand, though the trees, as a rule, tower slightly above their associates.

At high elevations sugar pine is still found with yellow pine and cedar, but white fir has become its chief associate, and its proportion in the stand has increased. This is particularly true on northern and eastern slopes, where sugar pine and fir usually form the bulk of the stand. This association seems to be an excellent one, silviculturally, since the sugar pine, which is an intolerant tree, slightly overtops the fir, while the tolerance of the fir enables it to endure the shading. Forests of this kind are often among the densest in the Sierras.

In addition to the tree already mentioned, sugar pine has sometimes other associates, such as red fir (*Abies magnifica*, Murr.), Jeffrey pine (*Pinus jeffreyi*), and rarely lodgepole pine (*Pinus murrayana*). In scattered groves throughout the central part of the State, at elevations between 5,000 and 6,500 feet, on cool, well-drained flats, the big tree (*Sequoia washingtoniana* (Winkl.) (Sudw.) occurs. Sugar pine is usually its chief associate, with cedar and fir next in importance, and often a few yellow pine.

Yellow pine has a considerable range where sugar pine does not occur. Toward the lower limits of its occurrence and on dry flats, such as the Shasta Plateau, it often grows in nearly pure stands. Usually, however, at such elevations, cedar is present in the stand,

and on the Shasta Plateau both cedar and Douglas spruce are to be found associating as scattered individuals with the yellow pine.

At the lowest limit of its occurrence yellow pine is found with digger pine (*Pinus sabiniana*) and numerous oaks, chief among them California black oak and two white oaks (*Quercus lobata* and *Q. douglassii*). Other associates of the yellow pine are big-cone spruce (*Pseudotsuga macrocarpa*), in the San Bernardino and San Jacinto mountains, knobcone pine (*Pinus attenuata*), and Coulter pine (*Pinus coulteri*).

In general, it may be said that Yellow pine associates more or less with all the trees of the Sierras, but that, despite this fact, it has no characteristic associate, such as, at the higher elevations, sugar pine has in fir.

Forest Types.—In order to facilitate the description of the sugar and yellow pine forests they have been divided into forest belts or types based chiefly upon differences in elevation.

In the Sierras four such belts or types may be distinguished: The foothill type, the yellow pine-sugar pine type, the fir type and the timber-line type.

The foothill type is the first real forest type encountered after leaving the interior valleys; it extends from the lower foothills up to an elevation of from 1,000 feet to 1,500 feet in northern California, and as high as 3,000 feet in central California. In southern California this type is usually lacking, since the change from chaparral to the yellow pine is very abrupt. The type is characterized by a very open stand, consisting mainly of various species of oak, together with digger pine, and, toward the upper limit, some yellow pine of inferior quality. Underbrush is abundant, and is made up chiefly of various species of manzanita, California buckeye (*Aesculus californica*), laurel, and scrub oaks. The type is of very little commercial importance and need not be considered further. Table No. 1 shows the character of this type toward its upper limits.

Next above the foothill type is the yellow pine-sugar pine type. This type comprises the bulk of the commercial forest; in elevation it extends from about 1,500 up to 5,000 feet in northern California, and from about 4,000 to 8,000 feet in southern California. As the name implies, yellow pine and sugar pine are the important trees of this type. Toward its lower extension sugar pine is either very scarce or lacking, while yellow pine forms the bulk of the stand and is associated with incense cedar. The forest of this part of the type is more open, as a rule, than that higher type. The characteristic stand consists of a fairly even mixture of the five chief coniferous species, about 30 to 50 per cent of the stand being yellow pine, 10 to 20 per cent sugar pine, 20 to 30 per cent cedar, 15 per cent Douglas spruce, and 5 to 10 per cent white fir. A few scattered oaks are usually present. The stand, at its best, is rather dense, but in most localities fire and other causes have made frequent openings in it. On northern and eastern slopes Douglas spruce, white fir, and sugar pine form a larger percentage of the stand. In the gulches and about the heads of canyons Douglas spruce and white fir often constitute the bulk of the stand or are mixed with sugar pine, while along streams the California yew (*Taxus brevifolia*), alder (*Alnus rhombifolia*), dogwood (*Cornus nuttallii*), and the western serviceberry (*Amelanchier alnifolia*) are found. Toward the upper limit of the type the proportion of fir largely increases, while that of yellow pine decreases.

Underbrush is seldom thick, except in openings. Where it exists it is made up of various species of manzanita and ceanothus, together with coffeeberry (*Rhamnus crocea*) and several other species.

The fir type, which is next above the sugar and yellow pine type, extends from about 5,000 feet elevation to 6,500 or 7,000 feet in northern California, while in southern California it lies mostly between 7,000 and 10,000 feet. On northern slopes, in the northern part of the State, it runs sometimes as low as 4,000 feet. The lower portion of this type is generally a fairly even mixture of sugar pine and white fir, with a few scattered yellow pines and cedars. The fir and sugar pine are at first about equally represented, though occasionally sugar pine may predominate. The sugar pine in this portion of the type attains its best development, but with increasing elevation it becomes more and more short boled, flat crowned, and limby, finally disappears altogether, and the forest becomes one of pure white fir or white and red fir mixed. Where fire has not killed the standing timber, this type is the densest of the four, and therefore very free from underbrush. In the openings occur some of the largest chaparral areas in northern California.

Within the region of this type numerous exceptions

occur. For example, on southern slopes or on warm flats, with a good depth of soil, Jeffrey pine is often the prevailing species, associated with a few firs, cedars and sugar pines. Again, where the underlying rock is close to the surface, and the soil consequently very shallow, the fir is replaced by lodgepole pine, often forming pure stands over considerable areas in the upper portion of the type.

In the timber-line type fir still forms a considerable portion of the stand, but the tree growth is stunted or scrubby, while such characteristic timber-line trees as white-bark pine (*Pinus albicaulis*) and limber pine (*Pinus flexilis*) are present. The type, however, is an unimportant one, and need not be further discussed.

It will be seen from the preceding paragraphs that elevation is the chief factor upon which the character of the stand depends. Next to this, slope and aspect have the greatest effect on its composition. Besides these, however, the character of the forest shows a certain amount of change from north to south. Perhaps the most marked is the decrease and final disappearance from the stand of Douglas spruce and the gradual increase in the amount of incense cedar.

The forests of the Sierras are approximately even aged, although, in common with all virgin stands, they include a wide range of diameter classes. Probably not more than 1,000,000 acres have been entirely cut over, and another million more or less culled. Good virgin timber will usually average about 25,000 ft. to the acre, while individual acres sometimes yield as much as 100,000 ft. board measure.

THE COLORADO RIVER REGION OF CALIFORNIA.

(Continued from page 1.)

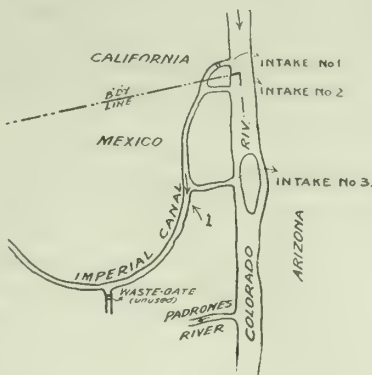
as rock foundation for restraining works is inobtainable.

With the hope of diverting some of the flow back to the gulf, a short channel was dug from the Alamo canal or river to the Padrones river not far from the Colorado and nine miles down the Alamo canal. This cut was designed to turn water into Volcano lake. A dam was built, or proposed, across the New river outlet of the lake, so the lake would discharge to the south and east, into the gulf, through an old channel called Hardy's Colorado, instead of to the northwest, through New river, into Salton sea. The result was different from that anticipated. The Padrones cut for itself a new channel north of Volcano lake, into New river, and the water found its lowest level in the Salton sink. The accompanying sketches illustrate the relative positions of the several canals connecting with the river, and show the river has enlarged one of these into a new channel, forsaking the two it formerly utilized. The relief map on the first page exhibits the topography of the entire region.

At one time a rough calculation was made on the probable length of time that would be necessary for the river to fill the basin to a level with the river. This was estimated at 15 years, taking into consideration the evaporation. The following figures are from a

basin to sea level as 29 years.

The more recent efforts of the Southern Pacific Railroad Company and of the company owning land in the Salton basin, to direct the river from the basin to its natural channel are said to promise greater success than heretofore.



Diversions of Colorado River to Imperial Canal.

All schemes of arresting the river by piling, etc., have been abandoned. A railroad trestle has been built across the new channel and the dumping of rock into the stream is now going on. The company has three steam-shovels at work at the quarries and will transport the rock to the river on eighty cars, each of 100,000 pounds capacity. The company officials have no doubt as to the success of the scheme and say it will be worth all the money spent on it, a sum now totaling close to a million dollars. Reports from the valley show that confidence of the officials as to the success of the work is shared by the public, as the real estate market there is said to have gained courage, and that fairly good prices have been made for current sales.

THE VINEYARD.

NEW LIGHT ON THE ANAHEIM DISEASE.

To the Editor: In two works of recent date by Professor Ravaz of Montpellier, France, a most interesting and encouraging theory has been developed regarding the cause of the Californian or Anaheim Disease, and some closely related troubles of the grape vine.

In the first work, entitled, "The Brunissure of the Vine," published in 1904, he shows that all the symptoms of the vine disease known as Brunissure can be produced artificially simply by causing the vine to over-bear. In the other, entitled "The Effects of Over-Production on the Vine," he attempts to show, and with great plausibility, that the mysterious death of large numbers of vines in southern France and in northern Africa was due to nothing but over-bearing. He further claims that the death of these vines differed in nothing from that of the vines in the Anaheim region and the Santa Clara valley of California. He takes up practically the same line of argument used in bulletin 134 of the University of California Experiment Station, published soon after the first appearance of the disease in Santa Clara and supports it by copious quotation of facts detailed in the writings of all who have studied this mysterious vine disease in California.

Morse, Pierce and others all agree in noting the occurrence of unusually heavy crops immediately preceding the appearance of the disease. Pierce explains this by considering the heavy crop as a symptom of the disease similar to what is often observed in the case of phylloxera, root rot, etc. In bulletin 134 of the University of California it was first suggested that the heavy crop was in all probability the cause or one of the causes of the trouble instead of a symptom. This is the view taken by Professor Ravaz.

Professor Ravaz points out that no disease takes from the vine so much food material as a large crop of grapes and if the amount of material thus taken equals that produced by the vine, there is nothing left to support the plant and the vine must suffer and in extreme cases die. This theory accounts very satisfactorily for the peculiar distribution of the injured vines in cases of Anaheim. Such vines appear sometimes sporadically throughout the vineyard, sometimes confined to certain rows, sometimes to certain varieties, the susceptible varieties differing in different districts, but always being the heavier bearers. The distribution of the injured vines corresponds exactly, in fact, with that of variations in bearing and not at all with that of vines attacked by any known disease.

The position of Mr. Ravaz would be much stronger, it appears to me, if, instead of considering over-production as the only and sufficient cause of the Anaheim disease, he looked upon it simply as the main or determining cause. While it seems to be true that death

from Anaheim disease is always preceded by heavy crops, it is equally true that heavy crops are not always followed by Anaheim disease. In the Santa Clara valley the heavy crops were accompanied by phylloxera, vine hoppers and spring frosts and followed by several seasons of sufficient rainfall. No one of these causes alone could have killed the vines so quickly, or, in fact, at all, with the exception of the phylloxera, and it is probable that death of the vines was due to the simultaneous presence of several of these causes.

While Mr. Ravaz has not yet developed his theory sufficiently to explain all the peculiarities of this dread vine trouble, it is the most plausible theory yet advanced.

It accounts in a very satisfactory manner for a great many of the mysterious deaths among vines, which have been noted throughout California, especially during the last ten years. These deaths have occurred in every section of the state, Sonoma, Napa, Yuba, Marin, Santa Cruz, Alameda, Sacramento, San Joaquin, Fresno, Kings counties have all shown numerous cases which only differ from those of Anaheim and Santa Clara in the greater severity of the latter. Other cases which differ slightly in the symptoms, such as the "Red Leaf" disease of Sonoma, may be accounted for in the same way by supposing that the contributing causes accompanying over-production are somewhat different. The dying of young vines which have never borne is, at least in part, explained by the weakness due to the use of cuttings taken from vines impoverished by over-production. This emphasizes the necessity of careful choice of cuttings recommended in Circular 26 of this Station.

It should be well understood that the word "over-production" is a relative term. A vine over-bears when the grapes take from it so much that insufficient is left to store up as reserve food for the use of the trunk and roots. The more vigorous a vine the more grapes it can produce without over-bearing. We have then two opposite means of preventing over-bearing. First, reduction of the crop by close pruning, or thinning the fruit, and, second, stimulating the vigor of the vine by good cultivation, complete control of diseases, and the proper use of fertilizers.

FREDERIC T. BIOLETTI.

Berkeley, October 19.

POULTRY YARD.

AN EASTERN GROWER IN CALIFORNIA.

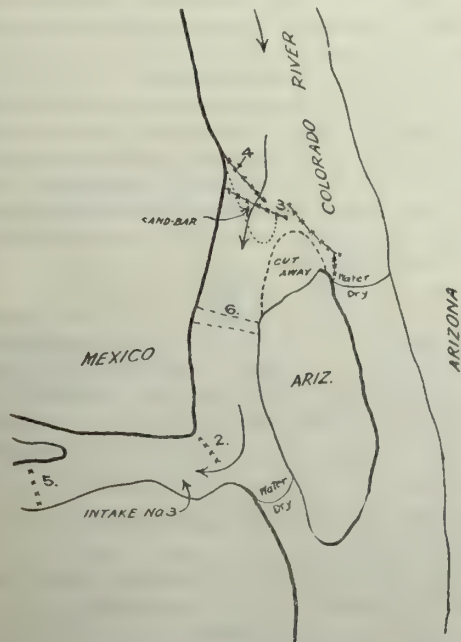
Mr. F. W. Wilson gives the Petaluma Poultry Journal a little of his experience at the East and West. He says:

I am from the East myself and I find the industry here on a much different footing than in my home State, Pennsylvania. I can honestly state that if the same methods, houses, etc., used here were tried back East it would mean absolute failure, and that very quickly. As to Eastern men coming here and making failures in the poultry industry, did you ever stop to think what would happen if our California poultrymen went back East and tried the business?

The houses here that I put 200 hens into would not accommodate more than sixty in Western Pennsylvania. Back there I have had the snow over four feet deep in my yards, drifted in, of course. A few miles from my place here two men conduct a poultry ranch. They have one boy to help. They keep 4,000 hens and raised 6,000 chicks this year. Now Mr. Shackleton would not expect these 4,000 hens to average 200 eggs for a year apiece. At least I don't think he would. Out here we as a rule do not try to get the maximum amount of eggs from a hen, but rather the greatest amount of dollars net per year. If we had smaller flocks we would have to increase their efficiency, but the fact is our poultry flocks are large in comparison to Eastern flocks. It is common for one man only to keep from 800 to 1800 birds, handle several acres of fruit and raise enough new stock to keep up the flock and do all the work himself, except a little extra help during the fruit harvest. Two hundred egg birds are here all right, but as a rule we don't make the necessary effort to their laying that many.

I think Mr. James is right in saying that the average man here is satisfied with ten dozen per year per hen. That means about \$2.50 gross per year, or from one to one and a half dollars per hen net each year.

If Mr. E. E. Carter of Bradley, Cal., sees this paper, and he is rightly quoted by Mr. James as offering \$250 to any man showing him how to clear \$1.50 per hen per year, I will say I will undertake to corral that \$250. While many claims for poultry are exaggerated, I think that \$1.50 profit a year per hen is well within bounds,



How the Colorado River Made a New Channel.

report made by W. C. Hall of the United States Geological Survey. Mr. Hall surveyed the Salton basin and constructed a topographic map of it with 50 ft. contours, and with that information as a basis, he calculated the time that will probably be required to fill the

especially in California. I sold eggs in Pennsylvania the year 1902 at an average price of 13 2-3 cents per dozen and made a nice profit. In 1903 they sold at nearly 16 cents per dozen. The three years I have been here my eggs brought an average price of 24, 26 and this year I figure or estimate it at 24 or 25. Eggs yesterday were sold in Santa Rosa for 39c. Last year the best price I received was on November 20, when I got 52c. Is it any wonder rash claims are sometimes made as to the possible profit to be made in poultry?

For the benefit of those outside of the State, I herewith hand report of my expenses and receipts as taken from poultry account in ledger up to September 1, commencing January 1. Will state I have common Leghorn stock. No fruit to bother with. Ten acres to handle; 520 hens first January; 590 now; bought enough to make up the 600 and lost 10 since. All work was done by myself and twelve-year-old son.

Sold some eight or nine thousand chicks one day old, raised 700 head stock, 290 on hand now, hatched this week, another hatch intended for myself in October. The idea is to handle 1200 hens next year. I make these statements to show the average income from ten acres in this locality. Many have done better, some not so good. I sold 5,002 dozen eggs from January 1 to September 1.

Total cash receipts from poultry from January 1 to September 1.....\$1779.63
Total expenses 992.95

Cash profit\$ 786.68
Invoice poultry now\$785.00
Invoice poultry January 1..... 624.50

Amount to be added to cash profit\$160.50

Making a total profit on poultry from January to September of \$947.18. I am not giving this as a big doing in poultry but am satisfied with my third year as a California poultry raiser. When I get 1200 hens agoing then I probably can show something. Actual figures best theories all to pieces. I have raised chicks for fifteen years but never looked into an incubator and brooder until three years ago this coming November. The first year on this place I cleared only \$225 on my poultry; last year only \$485; this year as above. My profits in poultry on paper have always been away ahead of the actual outcome. I think Mr. James will admit the foregoing is not unusual, especially the first two years. I had all kinds of trouble and found chickens here were not chickens in Pennsylvania. At the same time I can now say a profit of one and a half dollars per year per hen is no outrageous claim.

THE MARKETS

Wheat.

Wheat, although there has been no noticeable change in prices, is being held firmly owing to the fact that farmers have nearly all stored now and they evidently do not intend to sell until the market is settled. This is allowing only a portion of the crop to circulate, and it is having a tendency to hold up the market. It is thought that the market will loosen up within a few weeks and that activities will begin. San Francisco merchants quote wheat from \$1.20 to \$1.70. Sales have increased slightly and buyers are showing a little stronger tendency to speculate. Millers are still buying only enough for immediate use, as they are yet a little dubious as to the market. The crop in Mexico has proved to be far below all anticipations, and it is reported that Mexico will have to count on imported materials for her mills after this month. The duty heretofore levied upon wheat shipped to Mexico from America, will be removed, as a vast amount is to be shipped from the United States to that country. The export of American wheat to Mexico for the last few years, has been enormous. The total export of the fiscal year ending July 30, last, amounted to over \$2,000,000 gold. Shipments reaching this city are still limited, although the amount is somewhat above that of last week. Port Costa is getting an enormous amount of wheat, and it is indeed taxing her capacity to the last degree. Stockton is also getting a little more than her usual store this year, owing to the fact that the bulk of the crop is being handled in the interior as San Francisco is utterly unable to handle any such volume as she has hitherto controlled.

Barley.

Farmers have sold the larger part of their barley crop already this season and the shortage that is influencing wheat is not being felt in the barley market. The interest is a trifle more keen in this line, however, as buyers as a rule have been a little more inclined to

buy. The price holds up well and is not showing any tendency to go up or down. Barley on hand now is sufficient for present needs and no change is looked forward to until growers begin to sell their oldover. The double demand for brewing and feed barley is having a tendency to give the market a substantial platform. California barley is good in quality this year and the yield has proved to be all that was anticipated. A considerable amount is being stored, however, in the South and later on, when this comes in, it is expected that the market will be altered. Barley runs from \$0.95 to \$1.07½ per 100 lbs.

Oats.

Oats are plentiful in the market, and despite the fact that the crop has turned out somewhat smaller than expectations and that a good deal is being held north, there is no shortage reported in this locality or in the interior. The price varies greatly here in the city, as the crop is of a very mixed character. Merchants quote from \$1.30 to \$1.55 per 100 lbs. Shipments are reaching this port pretty regularly since harvest and no shortage is expected. The next year's crop bids fair to be a record-breaker as to acreage, and if the season is satisfactory, a tremendous volume will flood the market.

Flour.

Flour is showing the same unsettled state that has been noticeable in the wheat market for the past couple of months. Dealers cannot estimate the amount coming to this city, and things are so scattered that it is almost impossible to get any idea of the import trade. At any rate, flour men, especially Port Costa and Stockton millers, are finding that they are having all they can do to supply the trade. Interior millers are waiting for a change in the wheat market before they will buy in any great quantity, and some flour mills are running on half capacity, because millers will not pay what the seller wants.

Corn.

The corn crop has proved to be phenomenal throughout the United States, and a big surplus of this cereal is expected to be on hand. As a result of careful figuring, the corn yield for the United States this year has been placed at 2,730,000,000 bushels, amounting to 80,000,000 tons. At present market prices, the crop is worth \$1,310,400,000.

Hops.

Very few hops are now being traded in at this place. The price is barely holding its own as the yield has been good in most places. The Russian River district is well cleared up now and farmers have pretty well sold out. Washington hops are bringing a little below ordinary quotations, as they are somewhat inferior in quality. Hops were fairly well contracted for in many districts before the harvest was gathered, and that is now having its effect in leaving the market rather lifeless.

Millstuffs.

Dealers are not accumulating large quantities of millstuffs just now nor are they giving these much attention as they are busy with more important produce. However, some little bran and shorts are being unloaded at the wharfs here, but it is so well distributed among dealers and large users that no great quantity goes to any one house and no very large sales have been made. Some big imports are expected from the north later on as the outlook here is for a shortage and up north for a very large surplus. Interest locally is almost absent, though in the interior a little more activity is manifest.

Beans.

Beans are a little more quiet in the local market than they usually are this far along in the season, owing to the lateness of the harvest. Buying is not very brisk, but shipping is assuming a fair volume. Limas are firm. The old crop is just about cleaned out and the new crop getting in just in time to prevent a shortage. The crop is estimated to be the largest in the history of the state, and the price is unsettled and may be expected to continue so for some time. Large whites and bayous are easier, but cranberries are firm, as some early shipments are to be made and the crop is late. Light arrivals of garabanzos are reaching the market. Small whites are weaker and have suffered a slight decline.

Seeds.

The seed harvest is about over now and the returns show a plentiful supply of everything except onion seed. The crop will all be delivered by the first of the month. The shortage in onion seed is greater than has been known for some years, as the crop proved to be almost nothing. The price has been forced up to \$2 per pound at retail and \$1.50 and \$1.75 at wholesale. Alfalfa seed is also a little short of the usual. A large shortage of radish seed is reported from Europe and a heavy export trade is expected in California seed.

Wool.

This is a quiet time in the wool market, and, as very few of the wool factories are located here, the local situation is quiet indeed. The fall clip is estimated to be large and the outlook for prices continues favorable.

Bags and Bagging.

The bag demand, though considerably less than for some time, is nevertheless keeping the stocks very low and the local factories are busy. Grain bags are now selling at 8¼ cents. Bean bags are still the most active, but here, too, the demand has fallen off, indicating that the bean growers have about satisfied their needs for this season. Bean bags are now quoted at 7¼ cents. Cotton bags are firm at fair prices. Wool bags are quoted at from 42 to 44 cents with practically no demand.

Butter.

Butter is still selling for 32 cents, but has fallen off still further in supply. A comparative statement shows that the arrivals at this time last year were 50 per cent more than at present. A large part of San Francisco's butter is coming from Humboldt county.

Eggs.

Eggs have suffered still further in quantity, and as a result the price is higher, having gone up to 43 cents. Dealers report that there are practically no eggs on the market and that they can come nowhere near supplying the demand.

Cheese.

Like all dairy produce, cheese is in short supply and the market is very firm. After a long, steady period the price has now been forced up to 14 cents for the best. The poorer grades remain about as before.

Poultry.

Poultry has quieted down again and the market is extremely dull. There is really no demand for anything except large, fat hens. Poultry men quote about the same prices as before.

Vegetables.

The vegetable market is just about in average shape. The supply is ample for requirements, but not enough to cause any great slump in prices. Tomatoes are holding out well and are selling at a brisk pace. The quality of these continues good, notwithstanding the lateness of the season. Some green tomatoes are still coming in and are meeting with a fair sale.

Potatoes.

The potato market is attracting considerable interest. The predicted price of \$1.60 for Salinas has been more than realized, as this variety took a sudden jump and went to \$1.90, at which they are still held. The crop is now estimated at about one-half of that of last year. Rivers are plentiful, but are selling at good prices. The range runs from 75 cents to \$1.15, according to quality.

Onions.

Onions are plentiful, but the price is fairly well settled and no great changes are expected. The general run of prices is from 60 to 75 cents.

Fresh Fruits.

Receipts are now falling off and the prices have a general upward tendency. Already the peach supply is practically exhausted and pears are falling off noticeably. Apples are taking the leading place and these are plentiful. Figs are getting scarce and are picking up in price.

Dried Fruit.

Dried fruits are being shipped to this market only in small quantities and prices are still unsettled on most varieties. The market is firm, however, on everything. There is a good deal of talk of shortage in peaches, and as the quantity is good, prices are advancing. The fig outlook is still attracting much attention from those who handle this fruit.

Raisins.

The short crop of raisins is still being figured on. Prices are firm and the feeling is growing that the entire crop will be sold out at least as good as present prices. The crop is entering upon practically a clear market and from the rapidity with which it is leaving the state there can be little question that Eastern buyers are not expecting to get it any cheaper.

Nuts.

There is practically no interest taken in nuts here. The market is little more than a retail one. Much trouble is being had in harvesting the walnut crop, although the quality is above the average.

Honey.

Comb honey is scarce and firm, selling at 15½ and 16½ cents. The supply of ordinary honey is better and the demand not so active.

Citrus Fruits.

Good oranges are in demand here and dealers are finding a ready sale for all receipts. Shipments from the Oroville district have begun.

THE DAIRY.

THE VETCHES FOR WINTER FEEDING.

The following sketch of the two vetches, Vicia Sativa and Vicia Villosa, in the Southern States, will interest many who are growing them in California. It was written by Mr. James T. Gardiner, of Augusta, Georgia:

The Moore farm (Augusta, Ga.), of which I am manager, was the pioneer in introducing vetch 25 years or more ago, and ever since then has continued to grow them, making a specialty of vetch hay, buying every year thousands of bales. This industry with a modest beginning of a few acres has grown now to several thousand acres on the grass farms around Augusta, both in Georgia and South Carolina. Our farmers are now recognizing the great improvement in the soil after a few crops of vetch, to say nothing of the profit over other grasses in the crop when made into first-class hay, since usually the price paid for vetch hay is from \$2.00 to \$4.00 per ton more than the Johnson grass, and other native hays.

There are 42 known and classified varieties of vetch, but for our purpose only two need be considered, namely, vicia sativa, known sometimes as English—and sometimes as winter vetch, and vicia villosa, known as hairy or sand vetch.

Vicia sativa is imported (as is also vicia villosa) by the United States seed trade from Russia, from which country we obtain our best seed. The States of Oregon and Washington, in the United States, are extensive growers of sativa for both hay and seed purposes, but the high trans-continental freight rates keep this northwestern seed wholly out of the southern and eastern market.

This northwestern-state vetch, too, is largely mixed with wheat, which cannot be separated from the vetch by the fan mills. The hay produced from the vetches in these two northwestern states ranks high as a forage for all animals. While most of our legumes are summer legumes, vetches on the contrary are winter legumes. This gives them special value. Vetch legumes adding nitrogen to the soil in proportion to the crop grown and as per congenial location, add immensely to its permanent fertility, and being harvested easily enough in the spring to follow with cow peas, two crops

taus of legumes can be grown on the same land in twelve months. The vetch and peas, I know, will be of more benefit to one soil than is a crop of clover grown on the ground for the same length of time in the north. In fact, if all conditions are favorable the tonnage of hay from the vetch and pea vine crops will greatly exceed the clover; besides the feeding value is greater—indeed the net amount in dollars and cents will total more by half or two-thirds than the two clover crops. It is a common saying with us that if you make your land rich enough for a maximum crop of vetch, the vetch will keep it permanently rich enough for everything else.

The soil best suited to its growth is one well drained. A loamy one is, of course, best though. Soil with some clay is preferred to an excess of sand. Land that will make the best pea crops will also make the vetch, though the first crop with on inoculation will not be nearly so much as the second crop. As a fertilizer we use 300 pounds per acre of 10 by 4 phosphate and potash as top dresser in March.

On the Moore farm we plant 45 pounds of vicia sativa with two quarts of re-cleaned oats per acre—the latter to help hold the former up; putting both in with disc grain drill after first going over the land two ways with disc harrow—and more if on hard sod fields, getting in the seed about one inch deep. For the vicia villosa we use 25 pounds of seed per acre and two quarts of oats. After the seeding is all over, a careful man on horseback sows two quarts of late crimson clover (put cotton in the horse's ears to keep seed out.) If the seasons are favorable this crop in April and early May will be the most beautiful one ever seen, with its wealth of purple, pink and crimson blooms, and its many shades of green. It is truly a delight to the eye, standing up from three to four feet high—many of the stalks of the villosa I have found by measure to be nine feet long. The average of our fields is one ton per acre, though may well make twice that amount. The hay of the vicia sativa as a rule is preferred to villosa, for the reason that it does not grow in such tangled masses, and it is therefore easier for this reason to cure. The average farmer therefore from sativa will make a better grade of hay. The sativa seed, too, is about half as costly. Some growers here plant 75 to 100 bushels sativa and no

villosa. I would advise, however, planting both varieties if grown for hay, as the villosa ripens two weeks later than sativa, giving time to save one crop before the other is ripe. Both the vetches tiller or stool, the villosa running from 5 to 12 perhaps from 3 or 4 to 6.

Our Augusta vetch fields are, however, by no means all planted with oat and clover mixture, the majority of the growers, in fact, sowing alone in about the same quantities as above, depending on the native grasses, such as canary, Johnson and Bermuda, to fill up all the vacant spaces.

The villosa I regard as slightly harder, withstanding cold perhaps year in and year out in all latitudes, somewhat better than the Sativa. It is a much slower grower to start with, but after the warm days of March, it makes rapid strides and soon overtakes the more steady and progressive sativa.

The time of planting in this latitude is from September to December for the sativa-villosa seeding may continue two weeks longer. We try, however, to finish our planting by November 1.

Great care should be used in buying seed in these days of universal adulteration. Old seed that have lost their power of germination can be bought for a song and when washed and cleaned and mixed with the fresh seed, none but the foxy manipulator could tell it by looking at them. Buy of some one who is alert and onto these tricks of the trade, who is reliable morally and financially, and you will get the best that can be had.

As a soiling of freshly green cut crop, both the sativa and villosa are used about Augusta by the dairy men. My observation is that as regards dairy cows, nothing changes milk and butter on farms in this vicinity more quickly, both as regards quality and quantity of milk, than the combination crops as used here by our dairy men; from a poor flow of washed-out watery milk, the vetch will give it a rich yellow cream and solid good tasting milk. For sows with spring pigs it is equally good; you can see the little fellows actually grow.

Some dairy men plant per acre 1 bushel of beardless barley, and ½ bushel of one of the vetches, and 1 bushel of rye; some decrease these amounts. If planted quite early in the fall, the beardless barley part of the crop can be cut within 60 or 80 days from planting. Then in early spring, the rye and vetch are cut together and this cutting can be followed by two or three similar cuttings later in the season. If this combination, however, is sown late in the winter the three forage crops can be cut all at the same time. Vetches, too, will do well sown either with beardless barley alone or with rye. The vetches and especially the villosa furnish a wealth of blooms in the spring. During the vetch season bees will deposit about Augusta two or three times the amount of honey that they will at other seasons. The honey is white and of especially good flavor.

As to vetch hays feeding value, we all know the value of wheat bran as a feed; now, the analysis of vetch is practically the same, as it is very rich in protein.

Referring to an earlier part of this letter, let me add that late crimson clover should always be sown on hard ground; unlike any other plant of my acquaintance, it prefers to make its own bed and likes that bed hard.

In the northwest sativa is pastured in large amounts by cattle from midwinter till spring; and then it is allowed to grow out for hay cutting. It is also cut green when a foot high, and thereafter successively cut till ripening time.

Sativa and villosa do not reseed themselves here when cut for hay—the pods not being sufficiently ripe to shatter the

MILK CANS ROB YOU

Look through a microscope at milk set to cream in pans or cans and you'll see how they rob you. You'll see the caseine—the cheese part—forming a spidery web all through the milk. You'll see this web growing thicker and thicker until it forms solid curd. How can you expect all the cream to rise through that? It can't. This



caseine web catches a third to half the cream. You stand that loss just as long as you use pans or cans for they haven't enough skimming force to take out all the cream. But, just the minute you commence using Sharples Dairy Tubular Cream Separator, you stop that loss.

Sharples Dairy Tubular Cream Separators have 10,000 times more skimming force than pans or cans, and twice as much as any other separator. They get all the cream—get it quick—get it free from dirt and in the best condition for making Gilt Edge Butter. Caseine don't bother the Tubular. The Tubular is positively certain to greatly increase your dairy profits, so write at once for catalog I-131 and our valuable free book, "Business Dairying."

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seed to the ground in the hay cutting. Seeds, however, when ripening on the plants and falling to the ground will reseed the ground for another year. In all of Augusta territory there is now growing wild, and increasing in amount each year (by reseeding) just as is Japan clover, some half dozen or more varieties of vetches.

I feel that it would be in a measure ungrateful in me not to publicly thank Mr. N. L. Willet, of the N. L. Willet Seed Co. (vetch importers) of Augusta, for his able and successful efforts in forcing in spring of 1905 the United States treasury department to recognize their mistake, and thus reverse all their former decisions as to the classification of vetches, thus allowing them to come in now duty free. This is a saving of 30 per cent (75c to \$1.20 a bushel) to all the growers of this country and which places the vetch seed on a reasonable basis of price and within the reach of everybody.

PAID FOR ITSELF IN 30 DAYS

"COHOES, N. Y., Sept. 14, 1906

"About three years ago I was selling my milk at 2 1-2 cents per quart to a creamery, but I thought that I could do better by selling the cream and keeping the skim milk on the farm for feeding pigs and calves. I set the milk in coolers and skimmed with dippers. The best I could do was about 20 quarts of cream per day from 20 cows. I sold the cream for 12 1-2 cents per quart.

I made up my mind to get a No. 6 U. S. Separator and try it.

By keeping an accurate record I found that with the U. S. I was getting about 40 quarts of cream per day from 20 cows, a difference of \$2.50 in favor of the

U. S. CREAM SEPARATOR

making a gain of \$75.00 in 30 days. Then I value the skim milk at 33 1-3 cents per hundred quarts for feeding purposes on the farm, amounting to \$15.00 for 30 days at 150 quarts per day. As the total amount gained by the U. S. paid for it in 30 days, I will say that it is the best investment I ever made.

If those who may read my experience with the U. S. Separator have any questions to ask or want any information other than what I have given, if they will write me, I will answer and do it with pleasure.

R. A. SHUFELT, R. F. D. No. 1."

If you are keeping cows for profit, a United States Separator will help you "do better",—as it has Mr. Shufelt and many thousands of others. He has told you how. Let us tell you why. Mr. Shufelt's experience proves it is at least worth your investigation. A letter, or just a postal card with your address on it, and "Send new illustrated catalogue No. G 148," is sufficient. Will you write us?

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ise on the Horse,"

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Dr. B. J. Kendall Co.,

Enosburg Falls, Vt.

HOME CIRCLE

THE BATTLE OF LIFE.

Life is a battle we all can win,
Don't grumble, boys, but pitch right in.
Be up and away with the light of dawn,
Never pause or stop, boys,—push right on.

Don't backbite, boys, nor knock nor roar,
But go ahead, you'll gain the more;
By doing right, by doing your best,
Trust in God, He'll do the rest.

Don't envy or blame your successful
friend,
Just go ahead and gain your end;
Be sure you're right, then dig right in,
Never fear, boys, to dig is no sin.

Put your shoulders back, your head in
the air,
Carry yourself, boys, like a millionaire.
Be proud of home, mother and friends,
To mistrust or doubt these never descend.

To your fellows, boys, be kind, cour-
ageous and true,
Don't wear a long face, don't look blue,
Don't be so downcast—the victim of sor-
row,
For the boys of today will be the men
of tomorrow.

Let your life be as straight as the course
of the bee,
As he journeys well laden to the old hol-
low tree;
Let your heart be as pure as the lilies
which grow
Down with the willows where swift wa-
ters flow.

Let your acts be open and as light as the
day,
So at the end all can safely say,
Yes, life is a battle we all have won,
Because we fought and fought on and on.
—Frank M. Reed.

IN DEFENSE OF FLIRTING.

"There," remarked the bachelor laying
his pipe tenderly on the piazza railing
and indicating with a nod of the head
a ruffled young person proceeding across
the lawn "goes a flirt."

The widow leaned forward in the ham-
mock to gaze interestingly after the bit
of pink and blue femininity.

"Did she tell you so?" she inquired.

The bachelor looked embarrassed.

"Well," he replied reluctantly, as he
picked up his pipe and carefully measured
his favorite mixture into the bowl, "she
insinuated it. Why?"

"Because," said the widow, gently start-
ing the hammock swaying by touching
the piazza railing with the tip of her toe,
"if she did, she is not a flirt. A real
flirt don't go around with a label
tacked to her. The girl who is danger-
ous never hangs out a danger signal."

"Humph!" remarked the bachelor. "She
doesn't have to. An eighteen-inch waist
and French heels and a curl over one
ear are danger sign enough."

"They aren't any sign at all!" replied
the widow. "You can't detect a real flirt
by her waist or her front hair any more
than you can detect a real artist by his
soft tie and his back hair. Genius is
born, not made, Mr. Travers—and so
is a flirt. The Lorelei didn't wear a cor-
set, did she—and Cleopatra was certainly
past the marrying age when she met
Marc Antony and turned the Roman em-
pire topsy-turvy—just for fun."

"Do you mean to tell me," demanded
the bachelor, sitting up straight in his
steamer chair and confronting the widow
with an accusing glance "that the mo-
ment a girl finds out that she can mes-
merize a man that she wants to put on
bloomers and a health waist and blacken
her teeth?"

The widow laughed and flung a pink
bonbon to the dog on the lawn.

"Oh, dear, no!" she murmured. "What

an idea! I only meant that the flirt
may be born for starched shirt waists or
for accordian plaited ruffles. She may be
born with a tapering waist line and a
straight-front figure, or tendency toward
enbon-point, with weak eyes, and a weak
chin, or with dimples and naturally curly
hair. It isn't her ability to wear her
frocks and Marcel her pompadour that
makes a woman dangerous or attractive
or popular, but a quality within—the
quaint that enables her at 6 years old
to wheedle lollipops out of her uncles
and cousins and grandfathers and at sixty
to hold a salon where everybody wants to
go."

"Will you kindly," said the bachelor
as he pulled at his pipe and lovingly
caressed the brown bowl, "define a flirt?"
"How can I," protested the widow,
plaintively, "define anything so indefinite?
A flirt is any woman who possesses the
secret power of fascination and exercises
it upon every man with whom she comes
in contact, regardless of consequences.
She is not the woman who considers her
acts as means toward an end. If all wo-
men looked at men merely as the short
cut to a home and a weekly income, half
the spice would be lost in life. The flirt
flirts for the pure love of flirting. It is
entirely owing to her that men now seek
their wives, figuratively, on bended knee,
instead of with a club, as they did in the
days of the cave-dwellers. She has turned
courtship into a pastime instead of a
business, and transformed matrimony
from a duty into a privilege. She may
do a great harm once in a while, but
she does a greater good. She is a real
benefactor to the world, for she teaches
men how to make love—"

and makes them cynical," interrupted
the bachelor.

"And amuses them."

"And spoils them for some other wo-
man."

"And gives them something to think
about."

"And destroys their faith."

"And their conceit! Why," and the
widow sat up and waved her fan dra-
matically, "it's the flirts who have trans-
formed all the prigs into men, all the
green and salad youth into responsible
human beings, all the conceited young
puppies into enduring escorts. Suppose
the first girl you ever made love to had
taken you seriously. What would you
have been?" she finished, challengingly.

"Married!" cried the bachelor in a de-
cisive tone.

The widow looked at him reflectively
for a moment.

"Who was the first woman you ever
made love to, Mr. Travers?" she asked
suddenly.

The bachelor winced.

"Oh," he replied evasively, "she's not
half so important as the last woman—"

"Tell me about her," demanded the
widow.

"Well, she wore a pink gingham apron
and she was just 13, and the way she
tied her sun bonnet under her chin and
shook back her curls—"

"That will do," interrupted the widow;
"I might have known you began early.
Those who begin early never marry till
late—"

"It isn't too late yet," declared the
bachelor, leaning forward and looking into
the widow's eyes as he started the ham-
mock swaying.

"You've had a beautiful training," re-
flected the widow, ignoring his last re-
mark, "you ought to be very grateful to
all the girls who have wasted time on
you in the endeavor to—to—"

"Get a husband?" suggested the bache-
lor innocently.

The widow looked at him with wither-
ing scorn.

"To amuse themselves then?" he cor-
rected hastily.

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ufactured from CLEAN, RAW MATERIAL. This means HEALTHY
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you enduring company. Mr. Travers,"
announced the widow severely. "The poor
flirt," she went on meditatively, leaning
her cheek on her hand. "They afford
the world its greatest joy, its favorite pas-
time, its spice, its impetus. They intro-
duce the comedy role into the tragedy of
life, the romance into the story of every-
day existence. They spend their youth
in training men to be good husbands—
for other women. They put the ruffles
on life, the frills on society, the oil on
the wheels of love—and all they get is—"
"Everything they want," broke in the
bachelor.

"Calumny," corrected the widow, "cal-
umny and ingratitude—and nine times
out of ten a worthless husband or none
at all."

"It's their own fault," declared the
bachelor. "They become too interested
in the game and put off marrying too
long. Popular women get so accustomed
to variety that they can't settle down to
any one man. When they see their
charms beginning to wane they turn
about in a panic to search for a husband
—and find there isn't any choice left.
That's why you so often see the prettiest
girls left hanging longest on the family
tree, I suppose, and why the most fas-
cinating women always make the worst
matches."

"Oh, well," protested the widow, "flirt-
ing is like any other art, it absorbs you
to the exclusion of all everyday, common-
place matters like getting married and
providing for the future and things of
that sort."

"It's more like gambling," argued the
bachelor. "You get the fever and you
can't stop. You keep saying to yourself,
'Just one more fling of the dice, and
then I'll quit and take my winnings and
depart.' But you never do quit until your
winnings are all gone and the lights are
out and the game is up."

"Pooh," said the widow, "the game is
never up—unless you marry. And even
then—"

"There are widows," suggested the
bachelor(insinuatingly. "Why is it," he
added, "that they are such perfect artists
at it?"

"Well," the widow studied the pattern
of the piazza floor with deep concern.
"perhaps it's because in any art or
any game practice makes perfect. Flirt-
ing is the art of making a man feel
pleased with himself; and a widow has
usually learned how to avoid masculine
corns and to rub masculine self-compla-
cency the right way."

"Then flirting is flattery?"

"And tact."

"And deceit?"

"And sympathy—all rolled into one
and poured like oil over a man's vanity."

"And to think," remarked the bache-
lor dramatically, as he laid down his pipe

with one hand and motioned to the
waiter with the other, that I once imag-
ined that pink and blue thing was a real
—flirt."

"Do you absolutely need a—refresh-
ment?" inquired the widow as the waiter
set the glass down.

"Wouldn't you," he asked, "if you had
had half your ideas on women turned
topsy-turvy? Besides," he added, lift-
ing the glass, "I want to drink to the
subtlety, most experienced, most tact-
ful—"

"Are you pointing that glass at ME,
Mr. Travers?" interrupted the widow, sud-
denly sitting up straight, so that her
toes barely touched the floor.

"Of flirts," finished the bachelor, drain-
ing his glass.

"Because if you are, you are the first
man who ever dared to intimate—"

"Naturally," interrupted the bachelor.
"The others didn't know. Being the real
thing, you don't go about with a label
tacked on you, or a danger signal in your
hand."

"But I never in all my life even
tried—"

"You don't have to. You were born
that way. Geniuses are born, not made."

"Anyhow," declared the widow, re-
proachfully. "YOU have no right to
complain."

The bachelor set down his glass and
looked at her.

"Then," he said solemnly, "you are
NOT flirting? You are serious, after
all?"

"Not at all, Mr. Travers."

"But if you are not serious—you must
be flirting."

"Not at all," repeated the widow. "I
am—" she hesitated while she traced a
small circle with the toe of her slipper
on the piazza floor.

"Well," said the bachelor, leaning a
little nearer in the twilight.

The widow carefully traced a cross in
the middle of the circle.

"Are you going to tell me?" asked the
bachelor, softly, as he placed his hand
over one of hers on the hammock.

"Oh, if you must know—" began the
widow.

"Yes?"

"I'm completing your education."

And the sparks flew out of the bache-
lor's pipe as he knocked it resentfully
on the piazza railing.—Helen Rowland
in Los Angeles Times.

Buntingville, Cal. Jan. 21, 05.
DR. B. J. KENDALL CO.,
Gentlemen—Enclosed find a two cent stamp for
which please send me your valuable "Treatise on
the Horse and his Diseases." I used your Spavin
Cure with the greatest success on a horse with a
running sore on his leg.
Yours truly,
Edd Gerdes.

HINTS TO HOUSEKEEPERS

NECESSITIES OF THE SICK ROOM

A set of dishes should be selected for the sick room, and these should be washed by the nurse and never mixed with the dishes used by the family. The nurse should disinfect all bed and body linen used by the patient and also keep the sick room and all belongings to it free from infection. Nothing contaminates the atmosphere more than dust, and nothing creates worse air dust contamination than the spilling of foul discharges on floors, rugs and bed and body linen and allowing them to dry. All such foul matter should be wiped up at once with a moist disinfected cloth which should be burned. A broom is out of place in a sick room. It only scatters the dust into the air. The only safe disposal of the refuse from a quarantined room is cremation. The nurse in charge of a case of contagious disease should avoid direct contact with other members of the family, especially children. If needs be, she must mingle with others, she should have a special gown for the sick which should be discarded with her cap in coming out and always worn in the room, and she should disinfect her hands before touching anything outside of the room. All these simple, commonplace quarantine regulations faithfully carried out would save thousands of lives yearly among the children of the land and also greatly lessen the cost to common people for illness and funeral expenses. Nothing would pay better than for the heads of all American households to be their own health officers.

CLEANSING SILK.

In washing silk there are four things to be avoided—rubbing, wringing, heat and soap. Use lukewarm water, and if the silk is much soiled make a lather with a good white soap, but never rub the soap directly on the cloth. If only slightly soiled, bran water is preferable to soap. Swish the article round and round, but do not rub. When clean, rinse in water to which one tablespoonful of vinegar has been added for each quart of water. Place between dry cloths and squeeze out as much moisture as possible, but do not wring. Iron at once, between paper, with a mediumly heated iron.

Sponging with coffee will remove the greasy appearance that especially affects gros grain silks.

A good renovating fluid for black silk is a little rock of ammonia and a lump of common soda dissolved in one-half pint boiling water. Sponge and iron between paper or under black cloth.

PEACH PARING MADE EASY.

This way of paring peaches does not injure the quality of the fruit in the least. I let my peaches get thoroughly ripe, then pour boiling water over them and let stand a minute, then drain. Then the skin will slip off the same as a tomato treated in like manner. Peaches pared in this manner are of superior quality, because all the flavor of a new peach is retained in the fruit.—Mrs. S. D. L.

GRAPE LEAVES AS MEDICINE.

Grape leaves are the sovereign remedy in Switzerland for cuts and fresh wounds. Decoctions of the juice of the leaves are used in poultices. An agreeable tea is also made from the leaves which is said greatly to strengthen the nerves. The leaves are also excellent food for cows, hogs and sheep. The tears of the vine, used medicinally, are a limpid exudation of the sap at the time the plant begins budding and are found on the vine where the slightest wound occurs to the plant. The liquid is collected by cutting off the ends of the canes, bending them down and sticking the ends into the neck of the bottle, which will be filled in a few days. The wood and

branches are used in the manufacture of baskets, furniture, rustic work, bark for tying material, etc., and, when burned, potash and salts.

KITCHEN DONT'S.

Don't litter up a kitchen any more than you can help while getting a meal. It will take hours to straighten up after the meal is over.

Don't lay a greasy spoon down on the table. It leaves a stain that will take hard work to remove.

Don't crumple up your dish towels. Rinse and hang them in the sun, says the Chicago Daily News.

Don't pour boiling water over china that is piled in the dish pan. It is apt to crack from sudden contraction and expansion.

Don't try to black a stove while it is hot. It takes more blacking and less polish.

HOW TO KNOW A GOOD CHEESE.

A cheese with an indication of goodness will have an even colored, not a mottled, rind. The moment you press your finger tips on the rind you can begin to judge of the inferior makeup of a cheese, says the St. Louis Post-Dispatch. If it yields readily to the pressure of the fingers and the rind breaks or does not spring back readily when the pressure is withdrawn, you have got a soft article, caused by the slack cooling of the curd, a want of acid, or both. At best it will have an insipid flavor and will "go off" as it ages. A good cheese will be mellow to the touch, yet firm. Its rind will be of an even tint, elastic and free from puffs, and the sample will reveal firm, close grained, buttery cheese of a nutty flavor.

CUP OMELET.

An odd dish that will be found very appetizing for breakfast is a cup omelet. Butter six custard cups, and fill lightly with soft breadcrumbs and any nice cold meat, chopped fine, with plenty of savory seasonings, such as the family like. Beat three eggs; add one cupful milk, pour gradually into the cups, using more milk if required; set the cups in a pan of water and bake (or steam) until firm in the center. Serve in the cups, or turn out on a platter. These savory custards are delicious made entirely out of bread crumbs and seasoning, omitting the meat.

BAKED WHITE FISH.

One cup stale bread crumbs, one tablespoon melted butter, one-half teaspoon salt, few grains pepper, few drops onion juice, one tablespoonful chopped parsley. Mix in the order given, fill cavity, sew up with strong thread. Bake 45 minutes, basting often with one cup boiling water and one tablespoon butter.

STEWED VEAL WITH BARLEY.

Put a knuckle of veal in a saucepan with a bit of butter the size of a walnut, and fry the meat a nice brown all over. Just cover the meat with quite boiling water, put in a teacupful of barley, two heads of celery, cleaned and cut in inch lengths, two carrots, two turnips, two large onions, a sprig of lemon thyme, marjoram and two sage leaves. Let this simmer for two hours—put the meat on a hot dish, season the vegetables with pepper and salt, pour over the meat, and serve with a tablespoonful of finely chopped parsley sprinkled over.

A NOURISHING BROTH.

A broth rich in strength-yielding properties will be found in the following formula: Wash well two tablespoonfuls of sago, boil in a pint of water until soft and tender. Add a pint of rich milk or cream, which has been brought to the boiling point and then the yolks of two well-beaten eggs. Stir into this a quart of clear, properly diluted beef extract or consomme.

GREEN APPLE PIE.

One heaping cupful of pastry flour, one saltspoonful of baking powder, one saltspoonful of salt and from one-third to one-half of a cupful of butter and lard mixed. Mix the baking powder and salt with the flour and rub in the lard. Mix quite stiff with cold water. Roll out, put the butter on the paste in little pieces, and sprinkle with flour. Fold over and roll out. Roll up like a jelly roll. Divide in two parts and roll to fit the plate.

Hot weather is generally productive of discomfort as regards the feet. Here is an aromatic bath especially to aid them, from The Designer: Dried mint leaves, two pounds; sage leaves, one pound; angelica, three ounces; juniper berries, one ounce, rosemary leaves, one ounce. Cover with half gallon cold water and bring to the boiling point. Allow to cool and bottle. Put a cupful of this in a basin of warm water and bathe the feet for half an hour before going to bed. Rubbing the soles of the feet with lemon will soften them and rid them of callous flesh. Crushed elder leaves placed in the stockings under the feet are most efficacious in driving away fatigue. Bathing the feet daily in salt water will cure their undue sensitiveness.

Except for soup stock, meat should be cooked in a way to preserve its juices. In the first few minutes of boiling it should be subjected to a temperature higher than boiling point, so that a crust will form and keep in the juices. Then the temperature should be lowered, and the meat merely simmered till done. In roasting and broiling the same principle is followed. The meat is put directly into an extremely hot oven or over the flames, and allowed to become seared over the surface, after which the temperature is lowered.

Salts of lemon will remove rust and ink stains. Wet when applying and hang in the sun.

French chalk applied to remove stains should be rubbed in dry and the garment hung in a dark place for at least twelve hours.

When sheets have been in use for some time, do not wait for them to begin to split, but cut through the center and turn the outer side to the center, neatly hem the edges and the sheet will last nearly as long as a new sheet. Bolster cases should be cut in two and made into pillow cases for ordinary wear.

Instead of using forty and fifty thread when sewing calicoes, domestics and goods of like texture on the machine, use sixty and seventy, and it will both look better and wear better. The two threads give sufficient strength and the finer thread imbeds itself in the material and becomes almost like a part of it, while the coarse thread being raised above the surface is subjected to more wear.

Put a basin of fresh water in a room where men have been smoking. It will absorb much of the unpleasant odor by morning.

For Better Lighted Homes

The question of light for the home is one of interest to every member of the family. Proper food and light are the two essentials in the category of health, for without them the mind and the body cannot develop to the fullest extent.

There have been various experiments along the line of the greatest amount of light with the smallest amount of expense. The oil lamp gave way to the tallow candle, the tallow candle was replaced by the lamp, the lamp was replaced by coal gas and coal gas has given way to the most perfect of all lights—acetylene gas. It is the best because it nearer approaches sunlight than any other form of illumination.

With the means at hand for making the gas on the farm, every home can be made cheerful at small cost. A gas generator is now made at Los Angeles by the Superior Light and Heat Company which will be found a perfect lighting and heating plant. Those who want the best light for the smallest cost should get this company's catalogue No. 4. It tells all about the generator and gives valuable information on the gas question. Catalogue is free.

I put MACBETH—my name—on every lamp-chimney I make.

If I did not make as good chimneys as I do—and did not have the confidence in them that I have—I would send them out as most other makers do—unmarked.

My Index tells of lamps and their chimneys, fully and interestingly. Let me send it to you—it's free.

Address, MACBETH, Pittsburgh.

CEREAL CROPS.

The London Economist, in a long review of the wheat harvest this year, asserts that "the world's cereal harvest of 1906 cannot fail to prove one of the greatest ever produced." It remarks that "oats alone, among the cereals in England, seem likely to turn out below the average in productiveness."

In most of the countries of Continental Europe the harvest is a good one. The wheat crop is above the average in the great producing provinces in the north of France, but it has suffered from drought in the south and west. It is thought that France will need to import very little, if any, wheat. Spain has reaped a good harvest generally, while Germany has good crops of barley and oats, as well as of wheat and rye. According to the latest official estimate, Austria-Hungary will produce a much larger wheat crop this year than last. From Russia reports vary greatly. The winter wheat crop has been officially reported to be a good one, while the more important spring wheat crop is a poor one in all but a few provinces. Owing to the wet weather and other causes, one of the smallest crops of recent years was generally expected. Roumania is now expected to produce a record wheat crop, and Serbia and Bulgaria have good crops of wheat. The Canadian wheat harvest on the whole will not prove a very abundant one. Even allowing for increase of area in the comparatively new Canadian provinces, it is doubtful whether the production will make up for Ontario's deficiency as compared with last year's good crop, and possibly the total will be less than that of 1905. In Australasia the crops, sown under favorable conditions generally, have yet to undergo the hazards of the spring and summer seasons. India's wheat crop harvested last spring was the greatest but one ever known.

Dr. S. A. Tuttle,

Dear Sir:—

I want to add my testimonial to your list recommending Tuttle's Lixir for curbs, broken tendons, thrush, and nails in the feet. I have used it on all of these cases many times and never failed to make a cure.

J. H. NAY.

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AGRICULTURAL REVIEW

Butte.

BUGS VERSUS BUGS IN GREAT DEMAND.—Oroville Weekly Register, Oct. 18: In answer to the great demand for the treatise on "Bug vs. Bug," Secretary John Isaac, of the State Horticultural Commission, has had the paper printed and it will be distributed in the East. "Bug vs. Bug" is a treatise on the relations of bugs of the fruit-growing industry, and gives in studied detail how the insects can be made the servants of man. The bugs that destroy fruit and impair its market value have natural enemies in the bug kingdom, and by employing these bugs scientifically the so-called pests can be exterminated. The programme of the fruit-growers' convention at Hanford is being prepared, and the convention promises to be the most successful in the history of the State. All the prominent fruit growers of the State are expected to be present and take an active part in the deliberations.

Kern.

ANOTHER BIG TEXAS MELON.—Kern County Echo, Oct. 18: The Wellington, Texas, Times says: Mr. A. G. Lane brought us a watermelon this week that weighs eighty-eight pounds; it will be sent to the Dallas state fair.

Kings.

LIPPIA GRASS.—Hanford Sentinel, Oct. 18: Lippia grass may be seen in several private lawns and in the library lawn in Hanford. In reply to an inquiry the Fruit World says: "Lippia ripens is a plant of the verbena family, and extends its area by rooting down as it creeps over the ground. It is an excellent substitute for grass, and while not requiring so much water as blue or meadow grass for the lawn, still will not endure the drought that Bermuda will. It wants a modicum of water, and under reasonable conditions will grow well. It is sold by nurserymen rooted, and generally they charge about \$3 per 100 roots. After the ground is prepared as you would for a garden, the roots are planted about 8 inches apart each way—the farther apart they are the longer it will take to cover the surface of the ground, though it thickens up quite quickly and seems to be able to take care of itself and crowd out all intruders when well started. You will have to keep the weeds out till it is established. You can see it growing to perfection at Del Coronado, and the public library grounds, and it often happens that when the gardeners are trimming straggling ends that

will creep over the walk, you can get them, and if put in wet soil and kept wet they will start from these cuttings and root, and make good plants. I know of lawns of Lippia and grass planted side by side, and both neglected after they had been well rooted, and the grass is dry and dead, while the Lippia is green and growing. It is best to keep mown to prevent blooming, though the profusion of delicate white blossoms are highly prized by some who let it bloom, as it never gets high or rank looking. It is a very serviceable plant for lawns, banks and even for covering rockeries.

RAISIN RUSH CONTINUES.—Hanford Sentinel, Oct. 18: The raisins are still coming in to the packing houses faster than they can be handled, and a man at the North Ontario house Saturday said he came there with his load at 7:30 in the morning, and at 1 o'clock he was still waiting. The price is now \$80 per ton, and it looks as though the crop would all be disposed of, and leave a clear market for next year. It will be a great pleasure to the vineyardists to hear that there is no hold-over, such as caused so much trouble in the past.

Nevada.

GRAPE GROWERS HAVE A PROSPEROUS YEAR.—The Evening Bee, Oct. 19: The wineries have made such a strong bid for the grape crop in this county that practically everything will be sold to them, including the finest Tokays, which are usually sacked and shipped East for table purposes. In the fruit section of Chicago Park it is announced that fancy prices are being offered by the winemakers, and that no less than \$18 per ton is expected for table grapes, while the regular wine varieties will bring \$20. The fruit men in that section have enjoyed a prosperous year, and the saving they can make by omitting the cost of packing, boxes, etc., by disposing of their vine product as mentioned means a still larger profit. Much land is being cleared in that district, which will be set out next spring to fruit trees and vines.

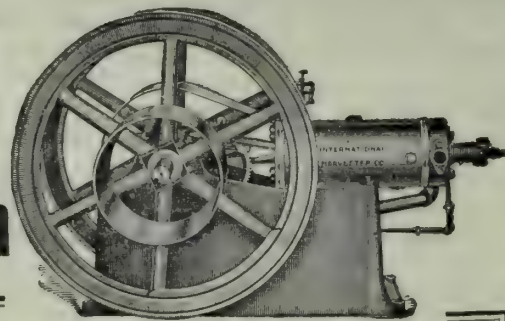
FRUIT SHIPMENTS.—The Evening Bee, Oct. 19: The California Fruit Distributors report having forwarded 45 cars of fresh fruit east today, as follows: Plums, ¼; grapes, 23¼; apples, 21. For the same day last year 43 cars were shipped as follows: Pears, 2; grapes, 16¼; apples, 24; quinces, ¼.

Oranges.

ORANGES.—The Tri-Weekly Colusa Sun, Oct. 18: Interest is now beginning to center in the north. What amount of oranges will be shipped when shipping will commence, and the condition of the crop is of moment at this time. It can be safely said that the orange crop of the northern counties will be the largest ever produced. Orchards are constantly coming in and old orchards are increasing their production. Last year the output was about 1700 cars and it is estimated that 2000 cars will be about the crop for 1906. The fruit is looking fine, sizes are all that could be asked for and shipments will commence about the same time as last year, five cars being shipped on the 30th of October. If October nights are cold and snappy a good colored orange may be expected by that time.

CODLING MOTH PARASITE.—Anaheim Gazette, Oct. 18: Farmers' institutes have been held during the past two weeks at Santa Ynez, Santa Maria and Lompoc in Santa Barbara county, and at Paso Robles in San Luis Obispo county. The varied industries of these places were represented in lectures by experts, some of whom were from the University of California and from various other

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Call on the local agent and examine these engines, or write nearest general agency for illustrated catalogue.

places. Representatives of the State Horticultural Commission were at the Lompoc institute and exhibited a colony of the codling moth parasite. This parasite is of recent introduction, but promises to control the codling moth so that apples free from worms will be the rule and not the exception. It was found that there are but few codling moths in the Lompoc orchards, particularly those nearest the ocean. That district is frequented by heavy fogs during the summer afternoons and evenings, and as that is the time in which the codling moth works on the apples it is unable to fly on account of the dampness and the apples escape damage. The next series of farmers' institutes will be held in the Imperial valley about the middle of November.

Sacramento.

HOP CROP SHORT IN EUROPE.—Sacramento Union, Oct. 18: M. H. Durst, the well-known Wheatland hop man, writes from Alameda that he has cable advices from London that the English hop market is excited and that an active demand has sprung up. Mr. Durst thinks the information true, as many hops are held in Sacramento and Yolo counties. He says: "The condition of things is unprecedented. England has 45,000 hundredweight less than last year and must import 150,000 bales. The continent has grown 125,000 bales less than its usual consumption. We are the only country having crops to export. Prices should be 25 and 30 cents, yet dealers don't want to pay 15 cents. They hold

heavy contracts and are smothering the demand."

San Bernardino.

COACHELLA MAY GROW ORANGES.—The Pomona Progress, Oct. 17: Experiments in orange growing in the Coachella Valley on the Colorado desert are now pronounced a success by those connected with the enterprise. The oranges grown there are ripening already and even at this time are in an edible condition. The trees planted for experiment are growing rapidly and this year contain many oranges of fine quality. It is estimated that if fruit grows there every year as it has this, and ripens

Columbia, Pa., Dec. 25, 1905.

The Lawrence-Williams Co., Cleveland, O.: I have been using GOMBAULT'S CAUSTIC BAL-SAM with success and I want your price on one dozen. I handle a number of horses in my business and have various opportunities to demonstrate its usefulness, and if my testimonial is of any service to you will gladly send same.

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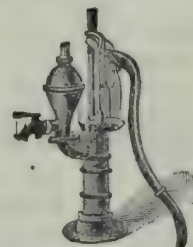
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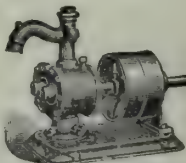
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as early, oranges can be sent from this state to the eastern market in time to compete with the Florida fruit and will arrive in better condition.

Sutter.

FALL WOOL SALE—Sutter County Farmer, Oct. 17: The fall wool sale which took place at the J. R. Garratt Co's warehouse in Marysville last Monday resulted in only a portion of the stock on hand being sold. The highest price paid was 13½c per pound, as the market has dropped and the buyers claim that the wool is much dirtier than the spring clip.

HARVESTING BURR CLOVER—Sutter County Farmer, Oct. 19: On the farm of Mrs. E. J. Wilbur in West Butte quite a yield of burr clover seed is being secured, besides the barley which was mowed at the same time. The clover grew up so fast in the barley that late in the season when it has ripened the crop was cut and run through a threshing machine. Clover seed brings a good price in the market.

Stanislaus.

MILKING MACHINES IN STANISLAUS—The Modesto Herald, Oct. 18: A treadle milking machine, a milking machine, if you please, that affords you a comfortable seat while you exert the power of a six-year-old child with your feet to milk two cows at one and the same time, is being introduced here. It comes from New York state, where, the claim is made, it has been in successful operation for five years. L. L. McCumber, east of Ceres, has been using one this week and he thinks it will revolutionize the dairy industry in this quarter. In fact, after two days' trial, he is so well satisfied with it that with D. E. McIntyre he has taken the agency for it in Stanislaus county east of the San Joaquin river. The machine is sold for \$110 and is very simple in construction and operation. It milks by the vacuum process, the operation of the treadle affording the vacuum. A cup-like attachment fits over each teat and draws the milk very much after the manner of the human hand. A valve just below each cup draws air when the flow of milk is exhausted and the operator slips off the teat attachment and puts a kink in that particular feeder with a little "dingus," one of a number he carries in his vest pocket. This operation is the work of

only a moment and is accomplished by the operator without requiring him to move from his seat. As we have said, he may milk two cows at one and the same time. Mr. McCumber tells us that his cows took as kindly to the milking machine as to hand milking and that the second day he himself milked twelve cows, with the aid of the machine in an hour and fifteen minutes. He is convinced that in a month or six weeks he will be milking twenty cows an hour. The work is so light and the apparatus so simple that a six-year-old child might operate the machine if his judgment corresponded with his strength. A boy or girl of twelve may readily operate it. Mr. McCumber adds that he went over nine cows with his hands after milking them with the machine and that he got less than a quart of milk in the aggregate. The machine will milk closer, he says,

but as he is a mere novice in its use he did not press it. In a few weeks he will invite dairymen to call and see the machine in operation and to operate it themselves, if they will.

Santa Clara.

FEATHERED ARISTOCRACY TO VIE FOR PREMIUMS—Oct. 18: As the time set for the Turn Verein poultry show grows nigh, a livelier interest is being manifested by the owners of pedigreed and handsome feathered aristocracy, and the affair promises to be a great success. The show will be held under the auspices of the Santa Clara Valley Poultry and Pet Stock Association from November 12 to 17, inclusive. San Francisco being unable to hold its regular exhibit will send its proudest birds and the California Poultry Association contemplates offering a handsome trophy. The premium list for the coming show exhibit has been placed into the hands of the printer and will be ready for distribution shortly. The secretary reports many applications for the list and entry blanks, by prospective exhibitors, and the demand has only begun as the advertisements in the poultry papers have only just appeared. The list of special prizes secured from the merchants is certainly a tempting one and will be placed on display in the hall, where it can be viewed by all. The premium list contains a complete list of these prizes with the names of the donors. One new feature that is being proposed and which will help to make attendance more pleasant for visitors, will be an orchestra to furnish music. The hall and the coops will be kept scrupulously clean and neat, and a visit to the show will be a treat long to be remembered.

Yuba.

CROPS LIGHT BUT OF GOOD QUALITY—The Semi-Weekly Democrat, Oct. 18: Reports from Colusa say that the bean and Egyptian corn harvesting commenced a few days ago, and the work will be hurried so as to finish before the rainy season begins. The acreage planted to beans will not exceed previous years, and the crop will be light, but of good quality. The acreage planted to Egyptian corn has been greatly increased. Though some damage was sustained from north wind, the yield will be enormous.

FRUIT PRESERVATION

CANNED GRAPE JUICE.

To the Editor: I want to make a suggestion. While canned muscat grapes are not the best thing in the world; the juice on them is something delicious. A machine to take out the seeds and skins so as to can only the juice and pulp would be needed. The grapes could be crushed without mashing the seeds by running the grapes through soft rollers of rubber or rollers covered with cloth. The seed could then be thrown out by centrifugal force, or settling to the bottom. And the skins dipped off with a coarse seine, leaving the pulp to be crushed as little as possible. Then the skins could be cut up and subjected to a good scouring and violent washing with some of the thinner juice after the pulp had somewhat settled to the bottom. The skins could then be pressed.

This would not be a drink, as where the juice is raked off from the pulp and boiled to prevent fermentation. But enriched with sugar in the canning process as for grapes, it would be of a creamy thickness to be eaten with a spoon.

H. S. DYE.

Visalia.

[We imagine this suggestion, like many others, needs to be reduced to practice to determine whether all its parts will work as anticipated. We do not understand the writer to say that he has actually done these things. It occurs to us that the use of soft rollers to bring the seeds to the surface is the method employed in seeding raisins, and may be covered by patents.—Ed.]

Milk Can Be Made To Yield Larger Profits

But the volume of the profits depends largely on the way your milk is handled. Everybody knows it is the cream that makes milk "rich," as we say, yet a large number of milk producers are letting dollars slip through their fingers by continuing the use of old-fashioned methods of skimming cream when a modern cream-saving machine like the United States Separator would make their profits very much larger. The United States has proved to many a dairyman that it is the most profitable machine ever put on a farm. This is strikingly shown in the experiences related by Mr. R. A. Shufelt, on page 264, which may give some "pointers" to dairymen who still persist in using the old gravity methods of skimming. The United States is a thoroughly standard, reliable cream separator and made by a concern who have been successfully manufacturing dairy machinery for more than thirty-three years. Their new catalogue is very interesting reading, and contains many illustrations from photographs of the different parts of the machine, so that its construction and operation is made perfectly plain. They will be very glad to send one if you will just write to them. "Send new catalogue, No. 148."

The Right Way to Grow Hogs

Pigs have sometimes been called "mortgage lifters," and really it seems they deserve the title. What other animal from a beginning of only two pounds can grow to 1,000 pounds weight? And bear in mind statistics prove that it costs less food to grow a pound of pork than either beef or mutton. Do you know why? It is because of the large digestive capacity of the hog.

It is certain that all growth and milk production is in proportion to the amount of food digested and assimilated. The right way to grow hogs, therefore, is to take proper account not only of the feed, but the digestive system.

DR HESS STOCK FOOD

the prescription of Dr. Hess (M.D., D.V.S.) was intended for this purpose in particular. It takes charge of the digestive organs, compelling them to do their proper work.

Horses, cattle, cows, hogs and sheep are all dependent upon the digestion for every pound of growth and every ounce of milk. The cost of Dr. Hess Stock Food is paid back many times over, therefore, no stockman or dairyman can afford to be without it. Besides hastening maturity, Dr. Hess Stock Food cures and prevents disease.

Dr. Hess Stock Food owes its origin to the medical and veterinary colleges from which Dr. Hess graduated. Such medical authorities as Professor Winslow, Professor Finlay Dun, Professor Quimman and all the leading scientists recommend bitter tonics for improving digestion, iron for blood and tissue building, nitrates of soda and potassium for assisting nature in expelling poisonous material from the system. These ingredients and many others make up Dr. Hess Stock Food, and it is sold on a written guarantee.

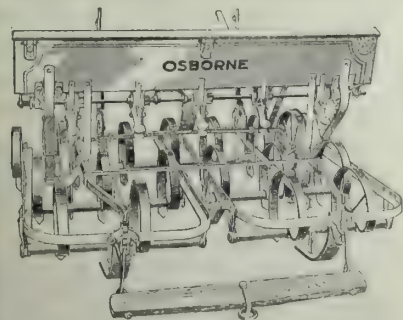
100 lbs. \$7.00 25 lb. pail \$2.00
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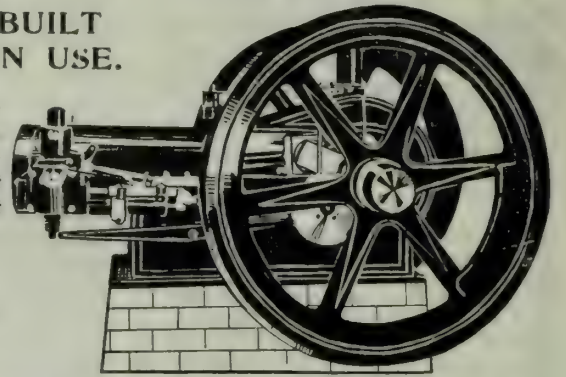
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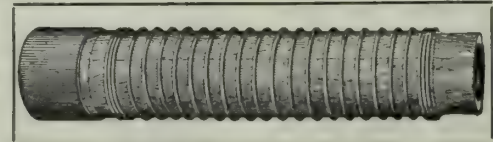
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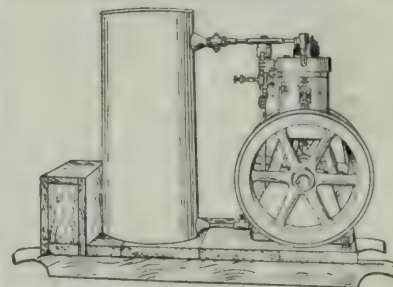
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THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

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SAN FRANCISCO, SATURDAY, NOVEMBER 3, 1906

THIRTY-SIXTH YEAR

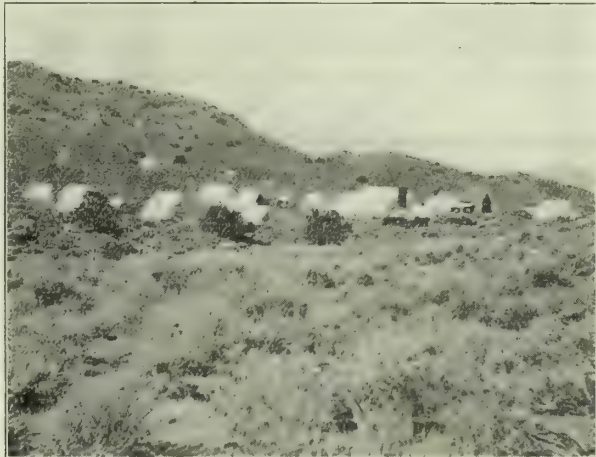
MORE BEGINNINGS IN NEVADA.

From time to time for many years we have noted interesting beginnings in Nevada. Not that we have at all overlooked beginnings in California, for we have done much with them also; but it must be admitted that Nevada beginnings are, on the whole, more picturesque and startling than such events in California, where the first break in the sky-line is apt to be a tourist hotel or a school house or something highly civilized and conventional. This may be owing to the fact that in California we deal more in climate and view and in the desirability of nature very much adorned by the builders' and planters' arts. In Nevada they seem to go more upon what is in the ground or under it and they proceed by raising the infernal regions to the sky-line more than we do. Therefore, we count their processes of development more picturesque than ours.

It is wonderful, indeed, how fast they go. It is only a little while ago that we painted the commencement at Tonopah, Goldfield, Bullfrog, etc., in succession, and these settlements may now be counted hoary with age—as age goes in Nevada. But though such towns soon grow old, Nevada is always new and only this week, as, in fact, nearly every week, manifestations are made of it. Now it is the region of Walker Lake where an old reservation is thrown open to settlement. It proceeds largely upon a mineral basis, as do all fast things in Nevada. Agricultural development lingers and has to be promoted, as is shown by the irrigation project in the Carson district, but mineral development gets there unaided except as things may be helped on or off with a little pistol play, which has figured also in agricultural beginnings in the West but not to the same extent. Agriculture is naturally slower and less exciting than mining

Every one is on the alert and ready at a moment's notice to "roll their blankets" and "hit the trail," for any new discovery that may be announced, no matter how

staked, with lots temptingly ready for the investment of his spare cash—if he has any. The first building, or more often tent, to go up on the new townsite, is



The Beginning of a Town.



The First Building—Saloon and Printing Shop.



The Bourne of the Prospector.



An Open-Air Blacksmith Shop.



The Beginning of What May Become a Rich Mine.

far distant or how inaccessible. The past year has seen these new pioneers of the sagebrush State rushing hither and thither, across its deserts and mountains, acting promptly upon the slightest hint and sometimes on the merest rumor, of a new strike—fearing to be too late to secure a claim. The announcement of a new

usually occupied as a saloon, the next by news papers—the miner sometimes coming third in the race.

The new-comer early in the rush sets up his tent and taking his pick and canteen strikes out at daylight into the hills to find the rich mine of which he has dreamed, but he is unusually fortunate if he can find a vacant piece of ground that he may locate, without interference on the part of the more boisterous element. When he returns at nightfall he has difficulty in finding his camp. The half-dozen brush-shacks and tents he left in the morning have suddenly multiplied into scores of tents and instead of a dozen rough prospectors he is likely to find hundreds of men, many in "boiled shirts" and "store clothes," and to see big automobiles wheeling clumsily over clumps of sage-brush and mounds of sand in the newly laid-out streets. Lots have gone up, too, and the reports of rich strikes are heard and repeated on every side. Rough-looking old prospectors, miners, young fel-



The Pioneers of Commerce.

An appreciative writer in the Mining and Scientific Press recently sketched Nevada beginnings in this taking way:

People in these days are eagerly watching the course of events in Nevada, and sleeping with one eye open.

and rich find is the signal for a rush, as proved at Manhattan, Fairview, Buckskin, Seven Troughs, and others, and now Ramsey. However prompt the adventurous pilgrim—be he prospector, promoter, capitalist, or miner, he usually finds a townsite surveyed and

lows, seemingly store clerks, and even women, trudge into camp at nightfall, their pockets bulging with rocks, some of which glitter with golden scales—of mica. Others, more wise, have the real thing, but make no haste to tell where they got it, and the excitement grows apace.

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THE WEEK

The sky continues clear and the elements undisturbed. If there is a tray of fruit lost or a sack of grain injured by the fall rains this year it will surely be the growers fault. It is seldom that the dilatory man is more mercifully treated. It is some satisfaction, too, that most prices are good and that produce is worth saving. It looks now as though the weather would be quiet until after election at least and this is fortunate, for a more vexed and involved campaign for State officers has probably never been experienced in California. Never were the mutual relations of men and motives more difficult to trace, nor the connection between public and private interests more indistinguishable. It is a good thing that everything has favored public assemblies and the fullest opportunities for getting such light as is afforded. We do not claim that it has been very clear but the only way to proceed is to accept the focusing of rays which the election will accomplish and which our system of government affords. The temper of the American people makes such a recourse practicable and there is some comfort in the reflection that every such appeal to popular judgment has in the past either achieved advancement or made the way toward it clearer. Such will undoubtedly be the case this year and the enjoyment of conditions favoring full voting will make it all the surer.

The farmers and the teachers learned to like each other so well at the State Farmers' Institute in Berkeley last Christmas that similar assemblies are planned for other parts of the State in the immediate future. First there will be held in Chico on November 15 and 16 a joint assembly of the University Association. At the morning sessions of each day there will be discussions of the place of elementary agriculture and nature study in the lower schools and the ways these rather new subjects can be successfully introduced and developed. In the afternoons there will be sessions of the Teachers' Association with fine programs of lectures, addresses, discussions, etc. The days can hardly fail of interest and influence in desirable directions and we hope all our readers within reach of Chico may be in town on those dates. The State Normal School and the United States Plant Introduction Gardens at Chico will unite with the Agricultural Department of the University in the undertakings.

We are pleased with the activity of the hop growers in their own behalf this year. The local associations seem to be gaining strength and the growers are taking their advice in efforts to get for themselves all the value the market affords instead of trusting so much to speculators. The foreign markets seemed favorable for early shipment of part of the crop and it is going forward. The hop growers have peculiar advantage in the effort at organization. The crop is characteristic, the acreage limited, and localized, the growers experienced in business and they can not only help themselves but help other producers to do the same by their example.

Mrs. Mary Austin is the priestess of the California open air, as Mr. John Muir is its prophet. Not that they are at all alike nor even counterparts and yet one suggests the other in some way. Possibly it is only in their wholesouled devotion to California, of the sky, the mountain and the desert, although their devoted appreciation manifests itself in wholly different ways and

chooses wholly different aspects for worshipful adoration. Mrs. Austin includes picturesque phrases of California humanity and delights in its harmony with its environment which she makes most delightfully clear. It is not a wonder that she charms everyone with her prose paintings and prose poems. A fitting companion for the "Land of Little Rain" has just been published by Houghton, Mifflin & Co., entitled "The Flock". Mrs. Austin has spent several years among the herders and their flocks, and her book is instinct with the feeling for the open air and the wonderful scenery of the valleys of the Pacific Slope and its mountain ranges. It is practical also, and historical. Mrs. Austin begins with the early Spaniards who drove their flocks up from Velicata. She carries her description through every phase of sheep-nerding, in the valleys, on the mountains, in rain and in drought. She tells of the herders and of the shearers, the Frenchman, the Spaniard, the Basque, and the American, their ways and their rivalries; the shearing baile and the parting of the flocks; the long trail, and how the day's work is accomplished; the open range; the country where there is no weather; and the Sierra meadows. There are some fine passages about the dogs, and a chapter on the strife of the herdsman for control of the free pastures; the beasts of prey and their methods of attacking the flock, and the shepherd's defense. The book closes with an interesting chapter on "The Sheep and the Forest Reserves," with an account of an old California sheep range, and the story of Don Jose Jesus. Mrs. Austin describes all these as well as the individual shepherds whose stories and adventures she relates. But beyond them all is the poetic thought and the nature-love which underlie all incidents and conceptions.

Tobacco pipes seem to be a possible agricultural product for semi-tropical countries and when we get the tobacco difficulties, to which we alluded recently, all settled we can also start in to grow pipes. H. L. Washington, consul-general at large, reports from Cape Town that pipes made from the calabash have come into general use in South Africa. Calabash grows in certain sections of Cape Colony with little difficulty, but seems to demand a very hot and dry climate, with rain at the right season of the year, in order to reach perfection. The curved stem end of the vegetable forms a light and appropriate shape for pipes. It colors like meerschaum and will take a high polish. The life of one of these pipes is about that of a French briar-wood pipe. The usual lining is plaster of Paris, called by the trade meer schaum. A cheap grade is lined with tin. These pipes sell from 97 cents to \$62, according to type of finish. The consul-general reports that the pipe industry is being crippled in Cape Colony by the growers refusing to sell the seeds of the calabash. It is extremely difficult to obtain them from any source. The crop last year was estimated to 60,000 pipes, and this year at about 150,000, but next season's prospects are not so good. An American business man has recently purchased some 20,000 calabash gourds from Cape Colony farmers for exportation to the United States. It occurs to us that there might be a danger in this business in California. The gourds would all grow so big that they would have to be made into soup ladles and drinking cups—just as gourds always have been.

Mr. Newton B. Pierce of Santa Ana sends us two interesting pamphlets he has recently published. One describes his building of his plant improvement gardens for the development of disease resistant varieties until the undertaking became so large that the United States Department of Agriculture took alarm and refused to stand for it any longer. This decision left Mr. Pierce with a great enterprise on hand which he is bravely endeavoring to carry with private means. The other pamphlet is very suggestively connected with this fact, because it contains a surprisingly interesting statement of how few wild species have thus far been developed into useful plants and how many species the plant improver has still to draw upon. We do not mean wild

species in general, for the world is full of them, but wild brothers or sisters of species which have risen to great economic importance—sort of poor relations of our rich plants—which still have traits of strength and resistance which might be very valuable if combined with the strong points of species already highly developed. Mr. Pierce has a clear conception of a great work for which material is available in profusion. He does not say that he has not funds enough to compass this work, but it goes without saying that few men have. We take the liberty then of suggesting that as Mr. Burbank is provided for in some degree, by the Carnegie Institute, that some other rich man or institution provide for Mr. Pierce and let us have two world workers for plant improvement in California. There is plenty of work for both and California is the best place in the world to do such work.

There has been no end of trouble moving hay since the earthquake, and growers have often had to gnash their teeth at high prices in the hay markets which they could not reach. And now comes the interesting statement in Somer & Co.'s hay circular that the schooners which have helped out wonderfully are being diverted. The lessened hay receipts of last week were due to the scarcity of schooners. Weather conditions prevented many of them from making trips within the usual time, and many others not equipped with hay coverings have contracted for their winter's work on coal, brick, gravel, etc., that are not affected by the rain. It is generally conceded that from now on we will have to get along with a somewhat smaller fleet than was provided us during the summer, unless farmers can arrange to hold umbrellas over their hay shipments during transit. If, however, it does not rain soon held back hay may not be a bad thing to have.

QUERIES AND REPLIES.

EUCALYPTUS FROM CUTTINGS.

To the Editor: A friend of mine wishes to plant an avenue of blue gum trees the coming season, and he is informed that it is unnecessary to get rooted trees, grown from seed—that the blue gum will slip, or grow from a cutting, as easily as the willow will, all that is necessary being to cut pieces of the younger growth a foot or two long, strip them of their leaves and plant them in damp earth, in the open, to insure satisfactory results. This is a novel proposition to me. Is it your opinion that such a plan would probably be followed by any reasonable measure of success? My experience has been that even with well rooted nursery trees some care was necessary in order to secure a good stand. If you can give any information on the subject it will be appreciated.—SUBSCRIBER, Chittenden.

We have never seen nor heard anything to indicate that it is desirable or even practicable to grow the blue gum that way. We have often seen shoots start from large posts like the willow, but we never saw them hold on like a willow. The growth seems to be started by sap pressure within the post and it falls when that ceases, because not continued by root action. We have seen all sizes of the smaller growth used as stakes in moist ground, but never saw one grow as willows will and do. Unless someone can enlighten us we shall maintain that your friend has received some very bad advice.

ROSELLE AND RARITIES.

To the Editor: Where can I procure caper plants and seed of roselle and other rare plants and fruits for making jellies. Does Roselle have to be planted each year, and does it fruit the same year planted, or will it grow and fruit several years? Are there any other rare fruits which have been introduced and acclimatized which would make delicious jellies and sauces or preserves for fancy grocers' trade? Kindly send me a list also where they can be obtained. I wish to make a specialty of growing and preserving rare fruits of all kinds.—ENTERPRISE, Visalia.

You can get caper plants and trees of various rare

fruits suitable for jelly making by consulting California nurserymen's catalogues and corresponding with them. Roselle jelly is not made from fruit but from fleshy calyxes of the blossoms, which appear the first year of the plant, and even with a little frost the plant will be destroyed and need replanting the following spring. Seed of roselle can be secured from any of our large seedsmen. It requires a good deal of patience to develop a trade for rare plant products. There is a great deal of satisfaction, of course, in making them for one's own enjoyment, but from a commercial point of view it is usually better to take up something which people understand and are ready to buy. Your fancy grocers will find the trade so small that they will require so much of the selling price that too little will be left for you. It is an enterprising thing to develop a special line of high-grade fruit products, but it will proceed very slowly and require capital as well as the patience to which we have alluded.

PLANTS FOR WILD SALT MARSH.

To the Editor: I am interested in a lot of tide lands. The land produces considerable vegetation which cattle eat, but they are likely to be mired while grazing. I am inclined to think the surface of the land is gradually rising by the growing of a vegetation and by soil deposit held in the water during storms, but this raising seems to be too slow and wishing to utilize this land and still receive the benefit of the supposed deposit, I write to ask whether there is any vegetable or plant suitable for food or for manufacture which could be raised on such tide land without excluding the salt water.—OWNER, San Francisco.

We regret exceedingly that we do not know of any desirable crop that will grow on unreclaimed salt marsh. The native plants which grow in such situations are, as you say, of some forage value, but in order to grow anything better you must undertake reclamation, closing out the salt water and arranging flood gates so that the storm water which accumulates during the rainy season can be drawn off at low tide and carry away the excess of salt with it. By this process the land will become fresh enough to carry barley and then it can be sown down to Australian rye grass and other good forage plants. By holding back the storm water on the ground for a time you will precipitate a sediment and in this way raise the land somewhat, but we know of no way, as already stated, by which the land can be planted without undertaking reclamation.

SUNFLOWER GROWING.

To the Editor: I should like to learn all I can about the cultivation of sunflowers. Are they cultivated for the market in California? Can you tell me how many pounds per acre are considered a fair yield? How much per pound are they worth in large quantities? How many are shipped into California annually and from what state principally? In what soils do they thrive the best? In what manner are they cured and thrashed? How is the oil extracted, and how many pounds of seed will produce a gallon of oil? Will the plant stand irrigation? How do they compare with oats as a chicken food?—FARMER, Santa Barbara.

There is no large trade in sun-flower seeds in California. The most of the business consists in relatively small importations by the seed dealers to be sold out in small quantities to people who wish to grow sunflowers for their own use. We have no idea how much seed is required to minister to this trade. Sun-flowers will grow in any good soil, preferably on a rich loam, and the size of the plant will be greatly increased by irrigation, except in districts where rain-fall is sufficient. There is no easy way of extracting the oil. It can only be profitably done in large establishments with the best machinery. Sun-flowers are a rich food and for chickens would compare better with corn than with oats. The best way to find out whether it would be worth while for you to undertake the crop would be to write to the seed dealers in Los Angeles and San Francisco, and ask them what they are willing to pay for sun-flower seed and how much of a crop they will

take, and if they can furnish you seed of the kind which they most desire to buy, to start with.

NO EASY WAY WITH JOHNSON AND BERMUDA.

To the Editor: Has there ever been found any spray or other application to kill Bermuda or Johnson grass? There are thousands of acres of it here, and it threatens to take the country. It is almost impossible to kill it by plowing where the ground sub-irrigates, and the ditches are full of it, so it comes again from the seed where you irrigate and it kills out everything else.—ENQUIRER, Tulare county.

There has not been any demonstration of success in the chemical treatment of Bermuda or Johnson grass. The plant can be destroyed by the use of salt, but that also renders the soil sterile for any other plant. The same would be true of the use of arsenic, which is an active plant killer. On cultivated ground these grasses can be held in subjection by frequent cultivation with a flat toothed cultivator, or weed knife, which cuts them off beneath the surface, never allowing the shoots to come to the light. This cultivation has to be continued for some time. On lands used for pasturage purposes the sowing of alfalfa does not get rid of the grasses, but the amount of them which is mixed in with the alfalfa, if you get a good growth of the latter is not objectionable for feeding purposes. It must be acknowledged that these two plants are about the worst pests ever introduced into California and no fully satisfactory method of eradicating them has yet been discovered.

GREEN MANURE PLANTS.

To the Editor: We plant our grain here in the fall or early winter and have to depend on the rains of winter and spring to bring it through. Could you tell me of any leguminous plant that would make a good winter growth and that could be plowed under early in the spring for green manuring. It gets quite cold here but does not seem to injure wheat, oats, barley, etc. Could you suggest a good crop rotation for this locality? Would it do to plant Dwarf Essex rape in the fall?—FARMER, Murphys.

Leguminous plants which show most disposition to grow during the California winter temperature, and which are, therefore, most suitable for green manuring, are burr clover, field peas and winter vetches. These are the plants which it would seem most desirable for you to try, on a small scale at first, to see whether they prove to be sufficiently active winter growers under your conditions. The Dwarf Essex rape should make a good winter growth in California judging from the hardness of mustard and wild turnip, to which it is closely related, but it would certainly be inferior either for feeding or green manuring, to either of the legumes we have mentioned. The question of rotation which alternates leguminous plants and stock-feeding with hay and grain growing is rational and feasible where you have to proceed by rainfall alone.

SISAL FIBER IN CALIFORNIA.

To the Editor: I understand that a plant called "henequen" and one called "maguey" are grown extensively in Mexico and that the fiber is used for manufacture of rope, hemp, etc. Can you give me any information regarding same? Do you know whether it is grown in this country and, if so, with what success? Also can it be grown here, or are climatic conditions such as to prevent it?—ENQUIRER, San Diego county.

The fiber plants which you mention belong to the Century plant family and their general name is "maguey." These plants were introduced into California some years ago, but no industry has yet arisen upon them. You can get very interesting information about the growing of them in Yucatan, Hawaii and the Philippines and the manufacture of the fiber by writing to the Bureau of Plant Industry, United States Department of Agriculture, Washington, D. C. The plants have been grown in California and there would seem to be no doubt as to the suitability of the plants

for our climatic and soil conditions, but there is very great doubt whether the fiber can be profitably handled under existing labor conditions. Sisal and henequen are the names of the fiber prepared from the maguey.

FALL PRUNING OF PEACH TREES.

To the Editor: Will it injure twelve-year-old peach trees in a district where there has been no frost as yet to give them their regular winter pruning right away? These trees have not yet shed their leaves entirely, and will be sometime in doing so.—ORCHARDIST, Kings county.

It will not do any harm to prune peach trees from this time onward, excepting for two considerations: One, the removal of large branches gives the cuts a long time to dry out and the wood to check. Large cuts should be painted over, particularly when made at this time of the year. Another consideration is that where the peach blight has been at work upon the buds there is some danger of cutting off your whole crop of next year, because lower buds of the new growth are more apt to be affected than the outer ones. It is suggested in an article upon another page that peach tree pruning should, therefore, be postponed until it appears what buds are going to be good for bloom. This may be theoretically correct from the point of view of the bearing of the tree the following year, but in practice it will be found that to postpone pruning so late will make it very difficult to get it done at all when one has large acreage and short help to deal with.

HOW LONG TO KILL MORNING GLORY.

To the Editor: Some time ago I read an article in the Rural Press about the way to kill morning glory by constant cultivation or cutting it and never letting it reach the top of the ground. I would like to have you answer this question, how long would it take to kill it if the ground were cut below the top about from four to six inches every week? Would it be killed in one year?—SUBSCRIBER, San Luis Obispo.

We cannot tell. We have heard statements that such faithful under-cutting for one season has done it and we have also heard that it has taken longer treatment. We are summarizing the experience of many who have worked at the problem. It is probable that conditions have much to do with the time required. The strength of the plant, the available moisture in the soil and the character of the soil as effecting that; the degree of completeness in the under-cutting due to sharpness of the weed knife and the regular lapping of the swaths so that no shoots escape, etc., etc. In short, the result may be affected by growing conditions for the plant and how well the work is done in killing it. Our observation is that one season's work will not do it, although the result accomplished in one good season's work will be so clear a reduction of the evil that some encouragement can be taken from it for further effort. But one need never expect that the morning glory trouble will ever be completely laid by. It will crop out always probably in spots rather than reviving roots or from scattered seed brought to the surface.

THE PECAN IN CALIFORNIA.

To the Editor: I am looking into the pecan in California. My conclusion so far is that the pecan would do very well on their large, moist river bottom lands in the upper parts of the Sacramento valley. I had some nuts sent to me from the Bidwell ranch at Chico, which were seedlings but which were finer a great deal than the pecans you ordinarily see in the market. I can say the same of some that were sent me from Fowler, just below Fresno. Mr. Roeding states to me that they do well at Fresno. They, of course, are no good in our bay counties, at least I have never seen any that amounted to anything in the way of fruit, although the growth of the tree is magnificent.—STUDENT, Palo Alto.

According to our observation, you are just right as to the suitability of this tree for rich soils, sufficiently moist, in the interior valleys, and it is desirable that experimental plantings be multiplied in such places.

HORTICULTURE.

FERTILIZING LEMON TREES.

(By Mr. W. C. Barth at the Corona Farmers' Club, Riverside county.)

When I was asked to give a paper on fertilizing, I stipulated that it should be my personal experience with my lemon orchard only, and that I should not endeavor to give a scientific treatise on the subject, which I will leave to others that have made it a life study perhaps and can give you the whys and the wherefores from a scientific standpoint. You will therefore pardon me for using the personal pronoun to the extent that will be necessary to show why I treated my orchard as I have.

All intelligent citrus fruit growers realize the necessity of fertilizing in some way or other, but the question is, how, and what to use to produce the best results. I remember when I came to Corona fourteen years ago, most of the orchardists claimed that we had all the ingredients necessary in the soil for the perfect development of the orange and lemon, and fertilizing was the least of our troubles. "Give us plenty of water and the sunshine will do the balance." It did do for a few years, until the trees began to bear fruit, and then we realized that something had to be done to replace into the soil those elements that were drawn from it by the tree growth and the fruit produced.

Stable Manure.—Fortunately for my orchard and pocket-book, I had had experience with the rich virgin soils of Iowa, when first tilled. We were given to understand that they were inexhaustible, but we found to our cost that any soil, however rich originally, must be reimbursed after a time with these elements drawn from it, year after year; hence, about two years after planting the trees I put on a light dressing of barnyard manure, increasing the quantity yearly until at the age of ten years, or when the trees were twelve years old, I used on an average eleven cubic feet to the tree for the year. I have been considered by some of my fellow orchardists a barnyard manure crank, and that I would ruin my orchard by using too much of it; but you will readily see that the quantity is not now considered excessive.

Until last season I did not use any commercial fertilizer, as I was given to understand by Professor Loughridge of Berkeley, who went over the colony and incidentally examined my orchard some years ago, that I would not need any for a number of years to come provided I used manure as I had done, and I think my orchard has shown that he was right in the matter. But he did not say that those conditions would last always, and I knew that I would have to supplement my way of treating it eventually with something besides barnyard manure. I found about three years ago that the fruit was getting rough and not as solid and juicy as it should be, and accordingly added commercial fertilizer, which will be mentioned later on.

We find by studying citrus culture that there are four main elements that are absolutely essential for both tree growth and the proper quality and quantity of fruit, viz.: nitrogen, phosphoric acid, potash and lime. The first of these, nitrogen or ammonia, we get to a considerable extent in barnyard manure, which also gives us the humus that is the very life of the soil both in horticulture and agriculture, but right here is where the fruit grower is very much imposed upon in often getting a poor quality unless he is well versed in this article, as a great many ranchers have no conception of the way to treat the manure to retain the properties it originally contains. Most of it is thrown into a pile and left to burn itself out, and thereby losing as high as 50 per cent of its original contents.

Manure should never be allowed to heat or fire, for as soon as it does it deteriorates. It should be used as soon as possible and gotten into the ground, but that is not always practicable. Manure that is left to decay without firing in the barnyard or corral is a good second and would possibly be more advantageous to the buyer, as it is then in a more compact condition and contains more material to the cubic foot. However, beware of that which looks as though flour had been sprinkled on it, as that is a sure sign that it has been fired.

Green Manuring.—There is another way, however, of supplementing the above, and that is green manuring by use of the cover crop, and I believe it is absolutely necessary to keep the ground in the very best condition. It is also much cheaper, but I would not feel safe to depend on it alone; but with the proper amount of each I'll guarantee to bring out any orchard where the trees have not been stunted beyond recovery. I believe that burr clover is the ideal crop for the lemon, as it

is indigenous to the climate, reseeds itself, and has a fine root growth. The vetch is also being used to good advantage.

There seems to be a radical difference, however, in root growth between the hairy vetch and the sand vetch, as the former produces a bushy root growth and the latter a vertical growth, which is what is wanted. However, I'll take my chances on the burr clover till I find something better. I mention the burr clover and vetch only, as these would seem the only ones that could profitably be used in the lemon orchard on account of the continual trampling they would be subjected to from early fall till late in spring on account of the necessity of picking the fruit at least, every forty-five days, and in some of the winter months considerably oftener.

There is also another source whereby humus and some of the foregoing elements may be derived which has not to a great extent heretofore been taken advantage of, viz: the pruning and clipping from the lemon trees (which is a prolific wood producer), necessitating frequent pruning. This has been at considerable expense, hauled from the orchard and destroyed. We are now working it into the ground, cutting the larger limbs or old growth into lengths of from six to eight inches. Leave on the ground till thoroughly dry and brittle, then run over them with a disc harrow, which cuts and works them into the soil. The expense is but little more than hauling it away and burning it. In working them into the soil it not only improves the mechanical condition of the ground, but it replaces a certain amount of the elements—nitrogen, phosphoric acid, and potash, which were extracted therefrom by this growth.

Phosphoric Acid.—A ton of leaves and cuttings (dry) contains about fourteen pounds of nitrogen, four to five pounds phosphoric acid and about ten pounds of potash. If rich in leaves and not much old wood, it would run larger to nitrogen and correspondingly less to potash. Some authorities claim that there is actually more chemical value per ton than in barnyard manure, besides it gives us the humus, of which we can never get too much. The second element, phosphoric acid, is very important for the proper development of the fruit. Its function to a great extent is the fertilization of the bloom, developing it into healthy fruit, and properly balanced by the other constituents, will cause the tree to retain its fruit to the maximum capacity and hasten maturing of the same, that will be much firmer in texture and less liable to disease (fungus growth, puffing in orange, or brown rot in lemon), etc.

Potash.—A lack of this element is apt to produce a coarse, rough fruit with very little juice. In the orange it is apt to grow coarse and sour. In the lemon it has the same effect on the skin and is deficient in juiciness. I found that condition in my orchard about three years ago and I came to the conclusion that I needed something besides what I had been feeding them. I gave the trees a dressing of steamed bone containing one to two per cent nitrogen, ten to twelve per cent available phosphoric acid and four per cent potash, and find the fruit much smoother and firmer, and the keeping quality has improved very much. I understand, however, that our soil contains quite a large amount of unavailable potash which can be made available by the use of the fourth element mentioned, lime or gypsum; hence, we would not need as much of that ingredient as other localities (where there is a deficiency in the soil), if we would apply this element (gypsum), which can be derived very cheaply by hauling it from the mountains south of town. It would not only recover the potash from the soil necessary for the strengthening of the fruit and trees, but the gypsum has a tendency to make the soil friable, loosens it up, and puts it in better mechanical condition, besides bringing out the other ingredients that would otherwise be held insoluble in the ground.

An Outline of Practice.—First of all I would use seven to ten feet of good stable manure to the tree each year, applied if possible between May and October. My main reason for doing this in these months is the beneficial result it has in conserving the irrigating water, as it has a tendency to hold it from flowing fast in the furrow. I know from actual experience that the soil will absorb one-third more water, directly after applying a dressing of manure as stated. Besides, when raising a cover crop, it would not be practical to apply it much later than October.

In conjunction with the above I use a well-balanced commercial fertilizer. I prefer steamed bone meal base for lemons, as the bone properly treated has the requisite amount of phosphoric acid. A bone fertilizer that contains about two per cent of nitrogen and about ten per cent of available phosphoric acid, would

in my estimation be preferable to a blue bone where the nitrogen is nearly all extracted. While the available phosphoric acid would be greater, it would be at the expense of nitrogen, of which we cannot get too much, even with the amount of barnyard manure mentioned. The steam bone above mentioned will all become available eventually in the great laboratory of "Mother Earth" by the action upon it of these constituents, thus making it a continuous food to the tree, and it would seem to me to be preferred to a superphosphate that would act more like a stimulant than a substantial food.

I have used with good results the foregoing, containing of nitrogen about two per cent, phosphoric acid ten to twelve per cent, and potash four per cent. This, of course, is not an arbitrary rule to go by, as it depends altogether on your orchard. If you need tree growth, use more nitrogen. If the bloom drops unduly (with your trees in healthy condition), you need more phosphoric acid, as one of its functions is the fruiting of trees. In the orange it hastens the maturing of the fruit. This is not so essential in the lemon, but the setting of the fruit is very important in either case. If your fruit is rough and thick-skinned, defective in juice, etc., use more potash, and as it has a tendency to harden and mature the wood, it would naturally put the tree in better condition to withstand frost. Use the above elements as you see that your trees need them.

Good Cultivation.—And last, but not least, work the soil deep. Do not merely scratch the top to give the proper appearance only, but dig down into it. The man who is forever worrying about destroying the fibrous roots of his trees by deep cultivation, never gets the results his orchard is capable of producing. I know from experience that this is a fact. There are orchards in the colony that have been well fertilized but indifferently cultivated, that do not produce the results that others that have the right care, with less fertilizer, are showing.

What success I have made of the ranch is due to a great extent to deep cultivation, about eight inches on an average. We set the teeth down to where it makes a good draft for a four-horse team, and any one that claims to do good cultivating with two horses with a nine-tooth cultivator is simply deceiving himself, and it would be a waste of money to fertilize along the line suggested. But combine the two and you will realize both pleasure and profit out of your orchard.

TEXAS PROLIFIC ALMONDS.

To the Editor: Having received much encouragement in the way of visits and letters relative to the Texas Prolific almond, of which I wrote some weeks ago, I will give a little further information. We have finished gathering and marketing the almonds so that I can give some figures which may be interesting.

One block has two rows of Ne Plus, eleven rows of Texas Prolific and thirteen rows of Nonpareil, the latter alternating with the others. Rows in this block are forty rods long, trees 24 by 32 feet.

The two rows of Ne Plus gave us 216 pounds; the eleven rows of Texas Prolifics gave us 4100 pounds; the thirteen rows of Nonpareil gave us 2700 pounds. From rows of these Nonpareils were extended another forty rods and alternated with I. X. L. instead of Texas Prolific, gave us less than 100 pounds, though of same age and having same care.

Another block of ten acres has six rows of Drake Seedling and seven rows of Texas Prolific almonds. The rows are each eighty rods long, alternating varieties, and trees 24 by 26.

The six rows of Drake Seedling gave us 2761 pounds, while the Texas Prolific gave us 10,363 pounds from seven rows or about one ton per acre.

The adjoining lot has seven rows of Drake Seedling and six rows of Texas Prolific, alternating. The seven rows of Drake Seedling yielded 2840 pounds, while the six rows of Texas Prolific yielded 6902 pounds. Both varieties sold for 11 cents per pound.

The Texas Prolific is of the Languedoc family, a trifle smaller, harder and smoother shell than the Drake Seedling. It is the latest of all our almonds to mature and quite the easiest to knock from the trees and to hull.

A notable feature is that where the Texas Prolific and Nonpareil are alternated in rows, the Nonpareil shell is much firmer, more perfect and well closed, while the Texas Prolific shell is markedly softened, so much so that they have passed in the market as Drake Seedlings for the past two years.

And now we have stumbled on another peculiar and notable thing about these almonds. Some four years ago a large number of IXL trees, then thirteen years old and unproductive, were topped about five or six

feet from the ground and worked over to Texas Prolific. This year these trees gave us about 20 pounds or \$2 per tree. When we harvested them we discovered that the "IXL blood" in the stump between ground and graft had broadened the meats or kernels and softened the shells to somewhat near the IXL. While the Texas from the ground up weigh 100 pounds to the standard sack, these with the IXL blood only weigh 90 pounds.

Here are secured the good qualities of the IXL with the Prolific bearing of the Texas Prolific. I confess that this was a surprise to me for I thought a bud or graft would bring fruit true to its kind no matter where set in the tree. I would be glad to know of any other experience along this line.

In conclusion, I might add that I have no trees to sell nor do I know of any nursery that has the Texas Prolific for sale. They should be propagated very largely, however.

Acampo, Cal.

J. P. DARGETZ.

SPRAYING FOR THE PEACH BLIGHT.

To the Editor. I note your answer to the queries from Oleander with regard to spraying with Bordeaux and as we are very deeply interested in the subject this year, and there seems to be so much on the subject that the growers are not informed about, I write a few observations and ask a few questions.

The peach blight around Fresno was very bad last spring, and a late heavy rain prolonged the active period of the disease, so that it spread on to the new season's growth.

We were in hopes that as soon as the hot dry weather came on, the disease would stop working, but from my observation I am satisfied that it has been more or less active all the summer, and a large percentage of the buds on this season's growth are already infected.

In this case, if spraying with Bordeaux is preventive only, a great deal of damage has already been done, for it was proved by examination last year, that wherever the bud was infected before the spray was applied, the spore would germinate and grow out through the spray and destroy the bud or twig. Now, if as you say, spraying with a straight bluestone solution during the dormant period will not endanger the tree, could we not spray in this manner and destroy the fungus spore as the rust spore is destroyed on seed grain? Quick, short action on the fungus spore is what we desire, as preventive action by Bordeaux is already too late to save a great many buds. Of course, we should follow with Bordeaux to prevent re-infection, for, as you remark, the straight bluestone would be washed from the tree by rain. (This seems a very rational treatment.—Ed.)

With regard to pressure in spraying, I think the higher the pressure, the better, provided you have the right nozzle. A coarse nozzle will get away with an enormous amount of liquid and accomplish inferior results, but a new, fine nozzle will throw a mist that will penetrate every crack and crevice in the bark and bud, allowing little chance for the spore to find a place to germinate and grow.

The ordinary spray pump spoken of by the enquirer is a pump costing about \$12, with a very small air-chamber which allows the pressure to vary about 40 pounds to every stroke, the best results can not be obtained from a pump of this kind. Get a pump of large capacity with a gauge to indicate pressure and keep it between 100 and 120 pounds. A man of ordinary strength can do this with the improved pumps put out by California manufacturers. They cost about \$50 but they are cheaper than the \$12 ones for you get the best possible results from them.

Just a word about pruning infected trees. Don't prune till you see they are overloaded with fruit. If you prune before this you may cut away the greater part of the healthy buds, as the disease spreads from the base outward, and the healthy buds are at the end of the growth. I would, however, advise cutting out, while the trees are in foliage, all the wood killed by the blight last spring. The sooner this is done the better.

Growers intending to plant peach trees next spring, should get their stock early and give it a thorough coating of Bordeaux to prevent infection. This can be done very quickly by holding the bundle of trees over the receptacle containing the Bordeaux and pouring it through the bundle with a dipper.

Of course, great care should be taken not to plant infected trees. Considerable loss was caused in this way last spring. It is not an easy matter to get trees free from this disease, after such an epidemic, as we experienced last spring.—H. H. WRIGHTSON, Oleander, Fresno county.

THE FIELD.

THE FARMER AND THE POTATO WORM.

To the Editor: I was almost heading this the other end foremost, "The Potato Worm and the Farmer." The reason was that in some places where I have been the farmer seemed disposed to consider the worm and not himself the boss of the situation. The farmer seemed to be quite helpless and despairing while the worm seemed quite hopeful and full of energy. The farmer was badly scared of the worm, but the worm did not worry a bit about the farmer. Now, Mr. Editor, I don't think I'll give you any chance to ask why "I make so much fuss" over things this time. I want to tell you that in Salinas valley tens of thousands of dollars worth of potatoes have been lost to farmers from ignorance of how to cope with this worm. And I am going to ask you to print (perhaps to reprint, for I do not recall just what you have printed in the Rural Press) all that has been found out up to date by Mr. W. T. Clarke and others of the methods of exterminating this pest. The potato perishes for lack of this knowledge.—EDWARD BERWICK, Pacific Grove.

THE POTATO WORM.

In compliance with the above request we will undertake to set forth leading facts about this pest and how its injuries can be reduced and prevented. This information was given in 1901, in Bulletin 135 of the University of California Experimental Station, by W. T. Clarke, but that publication is not now to be had. The story was also given quite freely in the Pacific Rural Press of January 4, 1902, but that is not now attainable except to those who preserve their files. It is a very good suggestion, therefore, that the facts be set forth for the guidance of a newer race of potato growers and those of the old race who did not take notice:

The most serious potato pest in California is the potato-worm (*Gelechia operculella*, Zell.), a widely distributed insect also known in the Southern States as the Tobacco Leaf Miner or Split-worm.

The damage to the potato crop in California, as estimated by the writer on the basis of opinions obtained from a large number of growers and dealers, aggregates in some years fully twenty-five per cent.

In one section where some of the finest of potatoes are grown, the Salinas valley, the dealers estimate that at times the loss has gone as high as 40,000 sacks in a single year, and indeed the potatoes from any section of the State have to be watched carefully by the dealers to avoid wormy lots. This need of care is because of the fact that a very few wormy potatoes may effect in a few weeks a whole storeroom full of what were originally clear tubers. As the potato is a food product that is expected to retain its value for many months, this possibility of infestation becomes a most serious question.

Potatoes for the Philippine and Hawaiian trade require very careful culling before shipping, because the warm, moist conditions on the voyage into the tropics favor both the insect and the fungus, a single infested potato often spoiling a whole crate.

The injury to the plant in the field, though not as large in the aggregate as that to the potatoes in storage, occasionally results in the total loss of the crop.

General Description.—The potato moth is grayish-brown, with ochreous tints intermixed. Under magnification it appears to be dusted over with white and black specks. The brown and ochre of the anterior wings is in the form of more or less regular longitudinal bands. These bands, varying in relative size in different specimens, cause a certain amount of variation in color to appear. The general color-effect of the posterior wings is similar to but lighter than that of the anterior wings. Both sets of wings are well fringed, the posteriors having longer fringes than the anteriors.

When at rest the wings are folded somewhat roof-shape over the abdomen, and when in this position the length of the insect is about one-third inch. With wings expanded the insect measures from tip to tip two-thirds inch. They are quite quick flyers, and are easily recognized in storerooms by their rapid flight toward the light when they are disturbed. The female is somewhat larger and more robust than the male.

The egg is of oval shape, and shows under the magnifying glass the color-play of pearl, its general color being a shining white. Its extreme minuteness and the fact that it is placed in the most inconspicuous positions available render it difficult of detection.

On hatching the larva or worm is of a transparent white color, with the head and thoracic region darker. Its minuteness renders it difficult of observation, and it is only noticed by the ordinary observer after its second or third molt. At this stage it is quite noticeable. The head is characteristically of a dark brown

color, with the mouth parts well developed. The first thoracic segment is of a clouded pink ("old rose") color, colored over dorsally with the dark mahogany-colored cervical shield. The second thoracic segment shows the clouded pink color both dorsally and ventrally, and the third thoracic segment is clouded white, as are seven following abdominal segments. This clouded white color may verge to yellow and to green; this color-change being dependent on whether the larva has been feeding on the heart of the potato or on greener material near the surface. Frequently these abdominal segments will be suffused dorsally with pink. The eighth (terminal) abdominal segment is of a shining yellow color. The various segments are ornamented with sparsely scattered hairs or spines.

Character of Injury.—The injury done by the insect naturally falls under two heads: the injury to the growing plant and the injury to the tubers. The character of the injury in the first case, that of to the plant, has been touched on on page 5, and is perhaps not so often noted as is the injury to the tubers. When the moth oviposits on the plant she seeks some desirable position, such as the base of the leaf, in which to place the egg, and the young larva on hatching immediately burrows beneath the epidermis of the plant and eats its way along downward, always just beneath the epidermis. This burrow can be quite easily traced when the larva begins to attain some size, and by careful search can be detected even when the larva is quite young. The worm fills the burrow behind itself with excrement, and this ejected material turns quite dark in color. Following in the wake of this primary injury is the inevitable mould and fungous growth, and the stalk soon succumbs to the combined injuries, the actual material taken as food by the worm and the consequent decay.

The injury to the tuber is very similar to that to the plant. The worm enters the potato and burrows its way through the tissue of the tuber. This entry is in the bud, and the point of entry is generally marked by a little pile of excrement. The worm having succeeded in entering, tunnels along beneath the epidermis or right through the substance of the potato. It does not seem to be at all particular which method it follows, and indeed may show both kinds of work. When the burrow is sub-epidermal it may be easily traced by the shrinkage of the potato on either side of it. When the burrow is in the substance of the potato it is very evident and can be easily traced by the discolored excrement. The burrows, with their excremental filling, soon become the starting points for rots and fungous diseases, and the injury is complete.

Modes of Infection.—There are various ways in which the potatoes may become infected, and these ways may be described in this order:

By infection of the stem: The adult female moth, being on the wing when the young potato plant appears above the ground, oviposits on the plant itself at a point near the junction of a leaf with the stem. The larva hatches and immediately begins work by "mining" a burrow beneath the epidermis. The general trend of this burrow is downward, though a spiral course may be pursued. If the attack has been made on a very young plant the larva may come to maturity and work its way out of the stem and pupate in the ground beside the plant or in some depression in the stalk itself. In this case the tuber is not injured, but the plant suffers both because the nutriment has been taken from it and also because of bacterial and fungous disease bred in the excrement with which the burrow is filled. Cases have been reported to us where hundreds of acres of potatoes have been wholly lost through an attack of this kind. If the oviposition takes place in an older plant, the larva burrows down the stalk as before, but the hardening of the plant causes it to leave and enter a tuber and continue operations there. This entry is generally made near a bud or eye, and the larva actually passes out of the stem and through the surrounding earth to the tuber, and not down the stem and into the tuber, as is generally stated. On infested plants observed in the laboratory the larva left the stalk and crossed over the space of one decimeter (4 inches) of earth to potatoes placed at this distance from them. When the larva had found the potato it would wander about the surface for some time, twenty-four hours in some instances, but seemed to have no difficulty in finally piercing the skin and entering.

By direct infection of the tuber in the hill: In the experimental plot it was noted that in many cases there were tubers that were not completely covered in the "hilling" process. The exposed portions of these tubers, being open to the light, turned green, and the moth oviposited in these green places. The fact that the fully covered tubers in the same hill were

entirely free from the larvae, and the further fact that in some cases remnants of the egg were found in these green places on the potatoes, shows the direct infection in the hill.

Direct infection after digging: The moth will oviposit in the potatoes that are left exposed in the field after digging. Many perfectly clear tubers were so exposed, and in the large majority of cases these tubers were later found infested; in one case five larvae were taken from one potato.

Indirect infection after digging: If the stems are infested at the time of digging, the larvae will leave them and find their way to and enter the tubers, if these are available. The common practice in the potato fields of covering the piles of newly dug tubers with the leaves and stems of the plants by way of shade is a sure way to secure infestation if the latter contain larvae. Even though the leaves and stems may be uninfested the practice of using them as a covering is not to be commended, as when they are used for this purpose they also furnish a place of concealment for the moth in close proximity to the tubers.

Infection in the sack or bin: The moth will oviposit on the stored potatoes. A number of clear tubers were placed in a gauze-covered box, and a lot of the moths placed with them. Infestation always followed this experiment.

Remedies.—In discussing the experimental work under various headings, remedies have been noted that proved successful in practice, and the various recommendations here made have been tested under working conditions in actual practice. Attention, however, must be drawn to the fact that in any case of infestation there comes a point where remedies, that at one time would have been successful, are useless. So, in handling an insect attack, we must not wait until the insect is out in force and then try to rid our crops of the pest, but the fight must be begun when the invasion is in its incipency, and beginning thus we may confidently expect our efforts to lead to success. The farmer who carefully watches his potato field, and is ready to begin the battle against the moth when it first appears, has an easier fight than he who waits until the full army of the moth is in array against him; and so it is all along the line until the potatoes are marketed.

By vigilance and watchfulness, as well as by the use of discrimination in suiting the remedy to the conditions, the insect may be controlled, even in the localities worst affected.

Food Plants Should Be Destroyed.—The insect, according to all observations, confines itself in its larval form to solanaceous plants, and its great injury is done among the cultivated representatives of this family, notably in the potato and tobacco. It has been reported as feeding and breeding among the wild members of the family, and this feature of its career was considered of value in this investigation, because if any of these wild members were to be found near the cultivated plants they would constitute a good breeding-place for the insect and a point for infection to originate. We have in California much of the so-called "night-shade," and where these plants are found the insect is sure to be found also, as collections made among and near them have shown. Furthermore, collections, especially at lights, made hundreds of feet from any solanaceous plants, have shown the moth to be present, thus indicating its ability for flying quite long distances. This, together with the fact that the insects are not confined to the cultivated plants of the family Solanaceae, but attack the wild representatives also, at least suggests that any patch of such plants as the night-shades constitute a menace to any potato plants in the neighborhood, and that all such patches should be destroyed.

Light-Trapping.—It has been noted that the moth is easily taken in large numbers at lights, and in the use of light-traps we have a most effective method of killing it. The use of the light-trap, too, is the most satisfactory way of finding out whether the moth has begun to work in a potato field, as two or three such lights scattered about the field will surely show specimens, if any are flying. If the moth is found to be present, then the traps might be placed in the field at intervals of 100 feet or so, and kept in action each night until moths fail to be taken at them. It seems most probable that the persistent use of these traps at this time will greatly reduce the possibilities of infestation. There are various forms of these traps on the market, and some of them are quite effective, though probably not more so than the common lantern trap, made by soldering a torch body into the center of a shallow pan and attaching beneath a tin ferrule, by which it is supported on top of a stake driven into the ground.

Destroy Infested Stocks.—If infestation of the plants

has begun before note has been made of the presence of the moth in the field, then in addition to the use of the lights suggested above it would without doubt amply pay to go carefully over the field and cut off the infested stalks just below where the injury is apparent, and remove and destroy them. The infested plants will be recognized from their evident wilting, and this work can be done quite rapidly. When a man has become expert in recognizing the trouble he will be able to remove all infested stalks from a row in about twice the time it would take him to walk the length of the same row. The object of this work is to stop the infestation before it becomes general; but it is evident that much watchfulness is required in detecting the attack in its incipency. If the plants showing stalk-infestation are not too young, the removal of a part of the stalk does not materially hurt the plant as a tuber-producer. If the infestation is noted in an old plant, then the whole head may be removed a short distance beneath the surface of the ground a week or ten days before digging, thus effectively disposing of the worms, but in no way injuring the tubers. The necessity of destroying it at this time depends upon the fact that the worm may either come out from its burrow and pupate and then transform to the moth and be ready to multiply the damage many-fold, or may leave the stalk and work its way to the tubers in the ground.

Careful Hilling.—One of the most effective methods of preventing infestation of the tubers where flat culture is not imperative, is to be found in careful, compact hilling. Too often in our large potato fields where hilling is the practice, it is done so carelessly that many of the tubers are not covered completely, or if covered it is by a very thin and dry layer of earth. The potatoes that are not completely covered are attractive to the moth and are almost sure to be infested, while those that are thinly covered may be easily reached by the worm when it leaves the stalk.

If the covering over the potatoes in the hill is composed of lumpy material, the moth itself may find its way to the tubers, and infestation will follow. The greatest care should therefore be taken in this matter of hilling if the moth is about, as experiment has shown that where careless hilling is the practice great damage will ensue. When flat culture is practiced the same protection of the tubers should be accomplished by deep planting, supplemented, where necessary, by slight hilling at the last cultivation.

Avoid Exposure While Digging the Potatoes.—The potatoes should not be exposed to a possible visit from the moth while they are being dug. The moth at this time is ready for the potatoes and will find them if they are exposed for any great length of time, and especially if they are left exposed over night. The practice of covering the newly sacked potatoes with the potato tops to shade them, should also be avoided, and care should be taken to remove the sacked potatoes within, at most, four hours after digging. If such removal is impossible, then the sacks of potatoes should be stacked in the field and covered closely with a cloth of some sort to ward off possible visits from the moth.

Clean Up the Field After Digging.—The old heads and waste potatoes should be destroyed in the field after the crop has been removed, especially if the insect is at all in evidence, as this waste material offers a good breeding-place for the moth and may serve to carry the infestation forward to the next crop. The most satisfactory way to clean up a field of any large size is to turn sheep into it to pasture. The sheep are even more effective in their work than hogs, and seem to find every potato in the field, even going so far as to paw up any tubers that may have been missed in the digging and have remained covered with earth. In cases where a field has been flooded for two or three weeks the infestation seems to have been thoroughly destroyed. Any method that will destroy the waste potatoes on and in the ground will be effective, but this destruction must be accomplished if the ground is to be used for potatoes the ensuing year. Where this cannot be done, a rotation of crops is suggested as the only safe means of procedure, and it is effective because the worm feeds solely on solanaceous plants. Attention is here again called to the fact that the tubers used as seed must be free from infestation, as the moth will breed from such infested potatoes and will soon overrun the field.

Control of the Moth among Stored Potatoes.—The attack of the moth is the cause of great loss among stored potatoes, and it is probable that it is the damage done at this time that has been most observed. It is in the storerooms that surrounding conditions can be most easily controlled, but it is also here that the attack is most concentrated, and therefore at this time the

work against it should be prosecuted with the greatest vigor.

Attention has been called to the use of carbon bisulfid as an effective weapon against the moth when it is in the chrysalis form, and the careful use of this agent will undoubtedly stop the infestation among the stored tubers. To use the carbon bisulfid to any advantage the tubers must be placed in tight rooms or bins made in such a way that when the gas is being generated little or no leakage may occur. A bin made of tongue-and-groove lumber, with a top cover fitting quite closely, is to be considered the best for disinfecting small quantities. When larger quantities are to be treated, they may be piled in a tight room; the exact dimensions, the cubic space, of the room or bin must be known, as the amount of the carbon bisulfid used is determined by this cubic content.

It has been found in fighting insects in stored grain that one pound of the bisulfid to one thousand cubic feet of space is effective, but as potatoes are sacked this amount had better be increased to one and one half (1½) pounds, on account of the large air spaces occurring between the sacks. As far as our experiments go, they have shown that the gas generated diffuses thoroughly among sacked potatoes, and that the chrysalids are killed here quite as well as when the tubers are not sacked. Five treatments of the carbon bisulfid should be given to each lot of potatoes, in this order: A treatment when the tubers are first stored; a second, third, fourth, and fifth treatment at intervals of two weeks. In a room or bin that measures 10 feet each way, we have 1,000 cubic feet of space, which will hold from 200 to 250 sacks of potatoes, and five thorough treatments of the contents will require 5 to 7½ pounds of the carbon bisulfid.

The material should be placed in shallow dishes on top of the potatoes, and then all should be tightly shut in. The liquid carbon bisulfid becomes a gas on being exposed to the air, and this gas being heavier than the air, sinks to the bottom and soon fills the spaces between the potatoes with its poisonous fumes. The gas is highly inflammable, and the greatest care must be exercised in handling it; be sure that no lights of any kind are near by at the time, or the results will be disastrous. The gas will kill all the chrysalids and all the adult moths present at the time, and will not injure the tubers.

FORESTRY.

SUGAR PINE AND WESTERN YELLOW PINE IN CALIFORNIA.

(By A. W. Cooper, M. F., in Bulletin 69 of the U. S. Forest Service, in co-operation with the State of California.)

[Third Paper.]

Description of the Sugar Pine.—Sugar pine belongs to the white pine group, and botanically closely resembles its eastern relative, the white pine (*Pinus strobus*). It is a five-needle pine, with needles 3 or 4 inches long, rigid, usually erect, and of bluish or dark green color. The cones of the species are of remarkable size, sometimes 18 to 20 inches in length and from 3 to 4 inches in breadth. They require two years to ripen. The seeds are usually liberated in September or October, the cones persisting until the next spring or even longer. The seeds are from one-half to five-eighths of an inch in length, with broad, obtuse wings.

Sugar pine prunes itself well, surpassing the eastern white pine in this respect. This is an important factor in the value of the tree for lumber, since it enables it to form a clean stem much earlier in life. At maturity the sugar pine has a long, clean, symmetrical, and rather slowly tapering bole, surmounted by a flat, spreading crown.

The height growth of sugar pine is rapid, and the mature trees usually tower slightly above the rest of the forest. The tree has an average height of from 150 to 165 feet and a diameter of from 4 to 5 feet, although it may attain a maximum height of 235 feet and a diameter of 12 feet. At no period of its life does sugar pine have a deep root system, though that which it has is strongly developed and wide spreading, so that in spite of the absence of a taproot the tree is very wind firm.

In its demands upon the soil sugar pine is never very fastidious. The principal soils of the region in which it occurs are a rather light, loamy, or sandy soil resulting from the decomposition of outcropping schistose rocks, and a loose, rather coarse, gravelly soil, which results from the breaking down of the granite backbone of the Sierra Range. On both of these soils the sugar pine grows equally well, provided they are well drained, of sufficient depth, and not too dry. A third soil, and one to which it does not take so readily,

is found in the Shasta region. It is a loose, dry, glacial drift, underlain by a subsoil of decomposed lava. The scarcity of sugar pine on this soil is, however, undoubtedly due to the extreme dryness of the surface soil, for on exactly similar soils where moisture is more abundant the tree is very thrifty. Sugar pine is found most often and does best in situation with moist atmosphere, where transpiration is slow, hence its preference for cool north and east slopes and heads of gulches and canyons. As might be expected from this, the sugar pine is unable to stand drought, especially when young, a fact that is of great importance in the reproduction of the species.

The sugar pine is an intolerant tree, possibly the most so of any of the Sierra conifers. It can not attain full development without an abundance of light, and is invariably suppressed or killed under heavy shade. In early youth, however, it is to a certain extent shade demanding, and in full light is apt to be stunted or even killed. The moister the air, of course, the less apparent is this shade-demanding quality, and on cool northern slopes young trees will sometimes thrive without any protecting shade. As it grows older the tree demands more and more light, and is usually seen with its crown fully exposed.

A scale of tolerance for the coniferous species of the Sierras beginning with the most tolerant would be: Incense cedar, white fir, Douglas spruce, yellow pine, sugar pine.

The two pines are very close together in tolerance, but on the whole the yellow pine seems to stand suppression rather better than does sugar pine, hence it is placed ahead of it on the list. Both rank as intolerant species, while incense cedar and white fir are tolerant species, and Douglas spruce can hardly be called either tolerant or intolerant.

The sugar pine does not produce seed as early in life as do the other Sierra conifers. It is seldom that a tree less than 16 inches in diameter bears cones, and usually only trees 20 inches or more in diameter bear to any considerable extent. This species, moreover, is neither a regular nor a prolific seeder at any period of its life. Individual mature trees, it is true, often bear seed steadily, but in small quantities compared with either incense cedar or yellow pine. There are undoubtedly, at intervals, extra heavy seed years for sugar pine, but that there is any general regularity in their recurrence is extremely doubtful. Locally good seed crops occur at intervals of five to seven years, but sugar pine will be found seeding a little every year.

The principal Sierra conifers rank as seed bearers about as follows: Incense cedar, yellow pine, Douglas spruce, white fir, sugar pine.

In distributing its seeds the sugar pine, thanks to its height, can cover a considerable area, though this is somewhat offset by the size and weight of the seeds, which prevent very wide distribution by the wind. Ordinarily a tree will seed up the ground thoroughly at a distance from its base equal to its height. Wind, slope, and water can often be depended on to greatly increase this distance.

The sugar pine is not only the least prolific seed bearer, but it is one of the most particular species as to seed bed. It prefers a moist, rather loose, bed on which to germinate, such as the natural duff or humus of the forest floor affords, and will seldom germinate, on bare mineral soil. The condition of the ground after fire is hardly favorable to sugar pine germination. Under even the best conditions sugar pine seed has not a high percent of germination. Tests made by the Forest Service place it at about 25 per cent. In addition to this fact a large number of seeds are destroyed by squirrels and ground mice, the squirrels often stripping a tree of its cones before they are ripe and leaving a large part of the seeds to rot in the cones on the ground. These facts explain to a large extent the scarcity of sugar pine reproduction. Add to this the dependence of the young seedlings on the right degree of shade and it is at once apparent that to secure natural reproduction of the species is by no means easy.

Sugar pine seedlings are often found under the virgin stands, but they are never very abundant. The conditions of seed bed here are usually favorable to germination, but the shade is too heavy and in a short time the young trees suffer from suppression, and soon die. In small openings in the virgin stand and along the edges of roads or broad trails cut through the virgin forest the conditions for sugar pine seem most favorable. Such openings are usually very quickly filled with young growth of all species, but the protection afforded by the side shade and the stimulation to

rapid height growth from the overhead light are just the conditions that favor sugar pine, and its rapidity of height growth enables it to outstrip all competitors and ultimately to gain possession of the ground. It is probably by such means that sugar pine is enabled to hold its position in the virgin forest.

When lumbering takes place these conditions are entirely changed. The forest is cut clear, and any sugar pine that secures a start is likely to suffer from drought and exposure, while yellow pine, which is more adapted to such conditions, gains possession of the ground.

In some localities where lumbering was first carried on, only the larger trees were taken, and thus only a partial clearance made. In such localities sugar pine had a better chance, and it is here that the best reproduction and second growth are found. The species never reproduces in pure stands and seldom forms as much as 25 per cent of the young growth, but it seems fair to predict that some of these stands when mature will contain as much as 30 per cent of sugar pine. Excellent examples of the above conditions are to be found in Butte, Tehama, and Eldorado counties.

The power of mature sugar pine to resist fire is sometimes underrated, for in this respect it far surpasses eastern white pine and compares favorably with most of its associates. In youth all suffer about equally from fire, and are either killed outright or injured sufficiently to fall a prey to fungus and insect attacks. Up to the time it is an inch in diameter, sugar pine is killed outright, and from that time until the pole stage is reached it is usually killed ultimately by anything but the lightest ground fires. Mature trees are very rarely killed by fire, unless it should get into the crown, and although sugar pine has a much thinner bark than either yellow pine or Douglas spruce, it ranks well up in the list for fire resistance, the trees usually continuing to flourish without apparent permanent injury long after the butt has been badly burned.

In point of resistance the Sierra conifers rank as follows: Yellow pine, Douglas spruce, sugar pine, incense cedar, white fir.

Windshake in the mature trees is not uncommon, but is usually confined to localities where the nature of the topography renders winds unusually severe or where for one reason or another the tree does not grow at its best.

Sugar pine is not particularly susceptible to fungus attacks, since trees that are badly fire scarred often live for a long period without suffering from fungus diseases. This is in part due to the six months' dry season, which is naturally inimical to fungus growth. In some localities, however, the mature trees suffer considerably from the attacks of "Trametes pini," which produces what is known as "red heart." It is claimed by some lumbermen that sugar pine growing on the Chico and Red Bluff ridges in Butte and Tehama counties is particularly bad in this respect, often 50 or 60 per cent of the mature sugar pine being infected more or less with red heart. It is significant in this case that rainfall in this region is as heavy as anywhere in the range of sugar pine in California. There are other fungus diseases to which the species is liable at different periods of its life, but the amount of injury from such causes is, on the whole, slight.

All the Sierra conifers are attacked by a parasite, a species of mistletoe (*Arceuthobium occidentale*), which grows on the limbs and small branches, drawing its food from the living cells of the tree. Sugar pine is probably freer from this parasite than any other species, and when mature trees are attacked the harm done, is, as a rule, not great. Trees attacked early in life, however, are sometimes badly deformed, and young trees up to an inch or two in diameter are occasionally killed outright.

From insect injury sugar pine is again more immune than some of its associates. Attacks from insects that are capable of injuring healthy trees seem at present to be very local, and show little indication of spreading. Dr. A. D. Hopkins, in his report on his trip through the West (Bulletin 21, Division of Entomology, Department of Agriculture), makes the following statement:

A *Dendroctonus* allied to the one just mentioned (*D. brevicornis*), but evidently undescribed, was found to be a special and dangerous enemy of the sugar pine and mountain white pine (*Pinus monticola*), especially of the latter. It was frequently met with in the vicinity of Grants Pass, Ore., in sugar pine, and was found abundant in the bark of dying and dead standing and felled trees in the vicinity of Sand Point and Kootenai, Idaho, where a large amount of timber had died, evidently as a result of its attack. * * *

It is undoubtedly capable of attacking and killing great quantities of white and sugar pine, but may possibly be prevented from doing so in the future, in all regions where extensive timber cutting is carried on, by its being attracted to the stumps, logs, and tops of trees felled for lumber and fuel.

The sugar pine has, of course, many other insect enemies, some of which attack leaves, roots, twigs, or seeds, but that described in Doctor Hopkin's report is probably the worst.

Besides the enemies of sugar pine already discussed, there are numerous others that do it more or less harm. Squirrels and ground mice destroy the seeds, and cattle and sheep sometimes destroy the young seedlings. In the case of cattle the injury is very slight as they eat only the smallest seedlings. Sheep grazing is much worse as the sheep eat or destroy all young growth in their path and leave the ground hard and trampled and in poor condition for seed germination.

THE MARKETS

Wheat.

Although the market has not shown any great movement, wheat is a little firmer this week than last. Buying is a little brisker but the element of speculation has not entered into it enough as yet to make any noteworthy change in the situation. Futures are showing a very firm tendency though spot is much the same. Prices for December wheat have ranged a little higher during the week than during the week preceeding. There is undoubtedly a growth of interest in this city and the trade here is watching the market much more closely than was the case a short time ago. Grain held in the country will probably have less inclination than ever to come to the market, now that the situation is firmer without any actual increase in price. Now that more storage room is being secured here, a little more grain is coming in to the city and more wheat is being traded in than earlier in the season. Milling wheat is selling best here at present but sales of milling are only large enough to supply the immediate demands. In the interior much the same state of affairs exist. It is the general opinion locally that the market will open up in the near future and that wheat may then be worth considerably more than at present. In the north the situation is much the same, with the feeling a little firmer but with no buying to amount to anything.

Barley.

Barley has been booming a trifle this week, having made a rise of from \$1.25 to \$1.50 per ton for future barley over the ruling quotation for last week. Spot barley is also firmer and is selling at higher prices. Buyers are now paying from 50 cents to \$1 more than they were a week ago. The immense demand in this city for barley for feed is a strong factor in holding the situation firm and there is also steady buying for export. Several ships have left this port lately with cargoes for Europe and it is expected that the export trade will be heavy for some time. In this city stocks are carried only for the local needs.

Oats.

Oats are firm at fair prices in San Francisco and dealers are carrying rather extensive supplies. The demand is chiefly for good clean seed oats but as all the cleaners here were burned and as the crop has turned out exceptionally foul, there is practically no good seed on the market. There is also a brisk demand for good feed oats as the daily consumption here is very large. The new crop has proved satisfactory as to quantity but the quality has fallen short. Oats range in price from \$1.30 to \$2.

Corn.

In spite of the fact that the United States corn crop has broken all previous records, very little is being shipped to San Francisco. Some is consumed locally, however, and dealers are carrying small quantities. The Mexican corn crop has fallen short and it is expected that large amounts of American corn will find their way to that country.

Flour.

The price of flour is a little firmer this week in sympathy with wheat. Otherwise the market is about as before reported. Dealers report a very heavy local trade and they are finding it about all that they can do to handle it with the present facilities. Stockton and Port Costa continue to send in about all that arrives and very little is now coming in from the Columbia river or Puget Sound.

Millstuffs.

There has been a marked improvement in the tone

of the market for millstuffs as the local consumption continues to increase. Just now, however, very little bran or shorts is being fed, as barley and oats are now chiefly used for feed. The firmness in the market is not altogether a local matter, as the northern markets are also reporting a stronger market. The old supply seems to be about exhausted and the expected ample supply in the north has not as yet materialized according to expectations.

Hops.

Some little interest is taken in the developments in the hop situation in Sonoma county. The crop has proved large, being about 40,000 bales, and the market has been dull. This, together with the report of a shortage in Europe, has induced the growers who have not already sold, to make a pool and ship their hops to England, where a shortage of 100,000 bales is reported and where a price as high as 35 cents is quoted. Locally very little is doing in the hop market.

Wool.

The big sale of Marysville wool took place last week, the highest price received being 13 $\frac{3}{4}$ cents per pound. A number of sales were made at other figures, some going as low as 10 $\frac{3}{4}$ cents. Growers in that district are, however, not satisfied with the prices offered, and many are holding for 15 cents. Red Bluff wools are practically at a standstill. Holders continue to ask more than the buyers are willing to pay and very few clips are changing hands. Growers are holding for 13 cents and upward but buyers are not offering more than 12 $\frac{1}{2}$ cents. The regular sales day has been set for December 5.

Beans.

The movement in beans is not so heavy as it has been in previous years, but as the season advances it is constantly growing in volume. The quotations on most varieties remain unchanged and the market is quiet. Blackeye beans, however, have taken a sudden leap and are now bringing about $\frac{1}{2}$ cent per pound more than last week. Limas are firm at unchanged figures. These are beginning to come in in fair volume. The quality is good and the quantity bids fair to be above the average. The harvest is particularly late this year and has put a damper on the early opening of the market.

Potatoes.

The price of Salinas potatoes is going up week by week and is now quoted as high as \$2.10 for the best. The crop is short but the great difficulty seems to be in getting them to market. Rivers are bringing all the way from 85 cents to \$1.20. The supply of rivers is just about equal to the demand at these figures and the daily receipts are just about cleaned up.

Onions.

The onion market is without interesting features this week. The supply is ample and the demand fair. Prices range from 65 to 75 cents.

Bags and Bagging.

Now that the bean harvest is well under way, the rush for bean bags is about over and dealers are finding time to fill orders in fairly good shape. Prices remain unchanged, with a steady demand for all lines.

Hay and Straw.

The arrivals for the week were only about three-fourths of those of the week preceeding and the market is stronger than before. Very little really choice hay is coming in and the demand for it is far in excess of the supply. Alfalfa hay is not coming in so freely and the market for this is better. Poor grades of various sorts are dragging and the market seems to be well enough supplied with these. Straw is still very scarce.

Seeds.

The onion seed shortage is growing more and more serious as the scarcity is beginning to be felt. The price has now reached \$2 per pound, as it transpires that a great deal of the onion seed acreage has yielded practically nothing. Radish seed is plentiful and is taking the leading place in the export trade among seedmen. Prices of other seed are generally satisfactory.

Vegetables.

Vegetables are beginning to run short in the local houses and prices are looking up. Tomatoes are, however, still plentiful and of good quality. These are now attracting more interest than anything else. Beans are beginning to thin out and dealers are realizing a little more for what they have in stock.

Butter.

Butter is a little easier this week and the price had dropped to 31 cents. The receipts are still very short, however, and the price is not expected to fall below present quotations at an early date.

Eggs.

The scarcity of eggs continues. Receipts are almost nothing and the price continues to go up. This week some sales were made at 50 cents for the best. This is the highest price reached in many months.

Cheese.

There has been a still firmer advance in the price of the best quality cheese, which is now bringing 14 $\frac{1}{2}$ cents. The common varieties are more plentiful and are not effected by the advance in the best grade.

Fresh Fruits.

Many varieties of fresh fruits have practically run out. No more peaches are to be had and plums are almost gone. Apples are arriving pretty regularly and are bringing all the way from 50 cents to \$1 a box. There are no more Bartlett pears. Other varieties are bringing from \$1.20 to \$2 a box. Pomegranates are bringing 75 cents per small box, \$1.25 per apple box and \$2 per orange box. Grapes are quoted as follows: Tokays 75 to 85 cents, muscats 75 to 80 cents and Issabellas \$1.

Dried Fruits.

Dried fruits are arriving in limited quantities only and the price is good in nearly every variety. The quality is good and the size satisfactory.

Poultry.

The demand for good large young stock continues and there is a very poor demand for all others. Generally speaking, there is little change. Prices are as before.

Honey.

Comb honey has gone up one cent last week and is now bringing 16 cents. There are no changes in the previous reports of a serious shortage.

Citrus Fruits.

The demand for lemons is brisk and has brought the price up to \$5 and \$6 per box. Oranges are conspicuously scarce in the local houses. Some ripe oranges of the new crop are reported in Placer county, but none have reached this market. Dealers are realizing from \$3 to \$4 per box for old oranges.

Life seems entirely wanting in the nut market here. Prices are high and are tending higher, but the range is so varied that exact quotations are hard to fix.

Raisins.

Raisins have reached a figure that is higher than any reached for many years and as there has just been a still further advance in New York there may quickly be a further advance in California. The present price is 5 cents in the sweat box at Fresno.

FRUIT MARKETING.

WALNUTS IN FRANCE.

Vice-Consul T. W. Murton, of Grenoble, reports that the walnut crop of the Isere valley this year will not exceed the average, while it is feared the nuts will suffer in quality because of prolonged drought. In July last indications were promising for a large and fine crop, and Vice-Consul Murton so reported. Writing, September 30, he says:

Since my last report conditions in the growing crop of walnuts in the Isere valley have changed. The cause of this change is the prolonged drought and excessive heat, unusual for the season, that has prevailed in these parts for more than six weeks, no rain having fallen from the 27th of July till the 10th of September, when a little rain fell during one day, too late and not sufficient in quantity to do much good. The consequence has been that all standing crops in general have suffered greatly, and as regards walnuts the immediate effect has been to retard the normal development of the fruit, which this year will be smaller than usual and probably wormy. The shells, however, appear to be fairly well filled, though in some cases the kernels are shrunken. On the whole, it is estimated at present that about 35,000 bales of 100 kilos of Mayettes will be available for export, and 40,000 cases of Chabert halves of 25 kilograms each. (One kilogram equals 2.2046 pounds.)

I am informed that many contracts have already been made for future delivery at prices varying from 90 to 110 francs per 100 kilos for Meyettes (first quality wal-

nuts), and from 190 to 230 francs for Chabert halves. First shipments, it is presumed, will go forward to the United States about October 20.

This district has been remarkably free from thunder and hail storms this year, which often do considerable damage to the standing crops, but the long drought has perhaps done more harm.

MALAGA ALMOND TRUST.

Consul D. R. Birch writes from Malaga that several features of interest to American buyers have developed in the Malaga almond season, which opened the last of August.

Late in July it was feared that the Jordan trees would yield perhaps less than half of last year's crop, but the indications are now that a greater percentage will be available for exportation, or roughly estimated about 50,000 25-pound boxes. The preponderance of large fruit is greater than for many years, the smaller sizes desired by American houses being about 40 per cent of the crop.

One-fifth of the Jordan production has been marketed to local exporters at an average price which started at \$7, but soon reached \$7.85 the arroba (25 pounds). These almonds are brought from the growing districts in bags of 200 pounds each, and contains Jordans of all sizes and grades from which the local merchants make their classification. The price paid by the latter fluctuates to the extent of about \$1 an arroba, according to the proportion of larger almonds in the given lot.

Now the average price is \$7.25 the arroba, and the growers are said to be holding out for better figures. This price is from \$1 to \$1.50 more than the growers secured for their almonds in 1905. Selling prices are much higher than last year. The short crop, which increases first-cost figures, and the appreciation of Spanish money may be held chiefly responsible. Small almonds of the size popular with American confectioners sell at \$8.40 the 25-pound box against \$6 last year. Sales to the United States up to the present show a slight decrease from those of last season.

"Valencias" are reported to be fewer, but plentiful. The local almond "trust," at the outset of its second season, finds more vigorous opposition from independent shippers, one of whom made an early attempt to control the market.

SHEEP AND WOOL.

Mutton and Wool.—Mutton is the most profitable if you have the right quality, and then the wool can receive as much attention as possible, and with a few years of careful breeding it is quite possible to have both combined in a very profitable way. The Shropshire is now a breed that combined the two in an excellent way; it yields a heavy fleece and also brings out the very best of mutton. There are several advantages in a dense fleece of good length. One is that the sheep are protected from all storms, and specially is this true if sheep are well woolled on the belly. The day for a bare-bellied sheep is over, and we must guard carefully against it, and see that every sheep has a good covering of wool. Strong constitution is one of the most important features about a sheep. A sheep with a strong constitution is the best for every purpose, whether they are being kept for the breeding pen or for the feed lot. The weak sheep is no good anywhere in comparison with the sheep with the wide chest and the large heart girth. The sheep that is small around the heart has not much room for his digestive organs to do their proper duty, and when that is not done the sheep is at a great loss. It is a good time for anyone to get a flock of sheep, and it is a good time for the old breeder to be keeping his best. The thing for the beginner to do is to learn all he can about sheep from the successful breeders whom he may be near to and apply this knowledge to the best advantage that he can. Anyone can succeed with sheep, that will try, but they do not want too much attention. Some men think that they need to be watched like a baby, but that is a great mistake. They are better if they are let run and rather care for themselves. Get a flock of good ones and see that they are on reasonably good pasture. When winter comes give them a little grain, and the sheep will prove profitable; in years to come you will wonder why you were not in the sheep business at an earlier date. No farm animal responds more readily to good care.

THE DAIRY.

BERMUDA GRASS.

To the Editor: Having been absent from home some two weeks, I did not, until this evening, see your issue of the 13th, containing Mr. H. E. Dye's letter and inquiry concerning Bermuda grass, and your expression of a desire to know what experienced readers think of that grass.

I have several patches of it growing on low land, near the Cosumnes river, in Sacramento county, and my cattle, horses and sheep avoid it if possible. Only in extreme seasons, like last fall, when the tardiness of the rains caused the practical exhausting of the pasturage will any of my stock eat this grass at all. The yard about my house on the high lands is well sodded down with this grass, in the midst of which some alfalfa and other grasses may be found. In several instances, I have placed lambs three or four months old, and occasionally a full-grown sheep in temporary enclosures in this yard. They seemed to do well until they had exhausted the growth other than Bermuda. After that they became thin and I am satisfied would have died in every instance, had abundance of Bermuda remained in the enclosure. It should be remembered, in all the cases falling within my observance, the grass, before the stock went or was put upon it, had become quite large and wiry. Perhaps if it were pastured from early in the season and always kept short it might prove more palatable and digestible.

San Francisco A. C. FREEMAN.

(Mr. Freeman accounts for his experience in his last sentence. Bermuda grass stems are pretty poor feeding. We would like to have further observations on the subject.—Ed.)

CREAMERY CONVENTION AT STOCKTON.

The executive committee of the California Creamery Operators' Association has decided to hold the annual convention on December 7 and 8, in Stockton.

The committee hopes to get Hon. E. H. Webster, Chief of the Dairy Division at Washington, to attend the meeting. Others whom the committee have in mind for part in the program are Hon. Peter J. Shields and Geo. G. Knox of Sacramento; A. Jensen, of Ferndale; A. L. Peterson, Kingsburg; E. J. Chubbick, San Francisco; H. P. Glazier, Oakland; Prof. Le Roy Anderson, San Luis Obispo; John R. Murphy, Fresno; Prof. E. W. Major, Berkeley, and J. H. Severin, Oakland.

Mr. E. B. Stowe, of the Stockton creamery, has taken up the matter with the Stockton Chamber of Commerce,

and considerable enthusiasm is being aroused.

The butter scoring contest will as usual be one of the big features of the meeting, and most of one morning will be devoted to that part of the program. Liberal prizes will be offered.

TO HELP THE CHOKING COW.

Many farmers will feed apples or potatoes occasionally to the cows, but there is great danger, unless they are first cut into pieces. A correspondent of The New York Tribune Farmer tells how he relieved a choking cow by holding a board on one side of the apple in the gullet and striking the other side with a mallet. This procedure removed the apple, but killed the cow.

Dr. Smead, the veteran veterinary, describes how such obstructions could be removed, as follows:

The method used, namely, a block of wood and mallet, is sometimes successful when the obstruction is an apple; but when it is a turnip or, worse yet, a cabbage stump, to attempt to crush it generally means death to the cow. An apple is the easiest obstruction to remove from the gullet of any that animals choke upon, as it is smooth. There are a few general principles to be kept in mind in relieving a choking animal.

The first one is: Never try to push down any obstruction they may be choked upon when it can be felt with the fingers when feeling along the gullet (oesophagus); second, never disturb it until some oil or melted lard has been poured down the throat so as to grease it well; third after this has been done, in most cases by carefully working with the fingers from the outside, the obstruction can be worked up into the throat, where, by inserting a common clevis large enough to run the arm through into the mouth, the hand can be run through the clevis and down into the throat and the obstructing body removed.

This species of choke is known as high choke; now there is a worse form than this, and that is where the body, whatever it may be, has pressed down inside the thoracic cavity. In that case it cannot be brought upward and must be pushed downward into the paunch (rumen).

Now please keep in mind that the entrance into this is in most animals past the middle of the body. A cow of medium size will require a probang or some flexible instrument fully six feet long to push the body fully down.

A whipstock or bow-top whip with a bulb on the end has been recommended, but it rarely ever is long enough to reach the rumen, or paunch, and when the operator thinks he has the body down he has not.

When a cattle probang is not on hand use a piece of seven-eighths or inch rope,

with four inches or more of one end unraveled and doubled or braided back so as to form a bulb on the end, which makes a fair emergency probang.

Unless the rope is new it will be too limber, but if you will for one minute allow the rope to soak in a pail of water it will be stiff enough. Grease it with lard or oil; also pour oil or lard down the throat, and gently pass down the rope probang, and carefully push the obstruction down.

Don't be afraid of pushing on the rope until you feel the obstruction enter the rumen. Failure comes when the body is not pushed far enough down.

LEGAL TESTING OF CREAM.

Mr. W. H. Saylor, Secretary of the State Dairy Bureau of California, has issued the following circular:

The inspectors of the State Dairy Bureau in their work among creameries, cream-receiving stations, and other places where cream is purchased by the Babcock or other fat test, have learned and reported to the Secretary that in a number of cases the testing is incorrectly done, and generally to the pecuniary loss of the dairymen who patronize such buyers. It seems to be a rather common practice to make fat determinations with the Babcock test by measuring 17.6 c. c. of cream into the bottles regularly used with the test, as in testing milk by means of a pipette, instead of using scales and weighing 18 grams of the cream to be tested into the bottle, as should be done. The method of measuring the cream with the pipette gives a result grossly incorrect and at the expense of the seller.

This circular is issued as a warning to buyers that in pursuing such a course in testing cream, they make themselves liable to prosecution by this Bureau for violating Section 381-A of the Penal Code of California, which prohibits the use of means of testing that give "inaccurate or false" results. Inspectors of the State Dairy Bureau are hereby instructed to investigate the methods of making tests at all places where cream is purchased and to report to the Secretary of the Bureau all cases in which the Penal Code is violated, in order that prosecutions may be instituted against offending parties.

The same section of the Penal Code makes it unlawful and punishable to use any glassware or apparatus for determining the fat in milk or cream that is "not accurate and correct, or which gives wrong or false percentages." Section 381-B of the Penal Code directs the State Dairy Bureau to enforce the law in this regard. It also directs it to inspect and test for accuracy the glassware, measures, scales, weights, etc., used in connection with the Babcock test. Those citizens of the State who wish it may have the apparatus tested in the laboratory of the Bureau by sending it to us

The Cream of Cream Separators

The Sharples Dairy Tubular is the cream of cream separators—the pick of the whole bunch. Supply can wait low, you can fill it with one hand. All gears enclosed, dirt free, absolutely self-oiling—no oil holes, no bother—needs only a spoonful of oil once or twice a week—uses same oil over and over. Has twice the skimming force of any other separator—skims twice as clean. Holds world's record for clean skimming.



Bowl so simple you can wash it in 3 minutes—much lighter than others—easier handled. Bowl hung from a single frictionless ball bearing—runs so light you can sit while turning. Only one Tubular—the Sharples. It's modern. Others are old style. Every exclusive Tubular feature an advantage to you and fully patented. Every Tubular thoroughly tested in factory and sold under unlimited guaranty. Write immediately for catalog J-131 and ask for free copy of our valuable book, "Business Dairying."

The Sharples Separator Co.,
West Chester, Pa.
Toronto, Can. Chicago, Ill.

and upon paying for the same at the rate of one dollar per dozen for the pieces to be tested. (The amount thus collected is paid by the Bureau into the State Treasury.) When found correct, each piece will be durably stamped "D. B." and apparatus bearing this mark from the Dairy Bureau will be passed by inspectors in the field as correct.

Inspectors will report to the Secretary and test for accuracy all apparatus where inaccuracy is a violation of the law.

HOW SMALL A SILO IS PRACTICABLE

The answer to this question, says Edward Van Alstine in the Rural New Yorker, depends largely on the man. For some with one cow it would be a practical thing to sink a molasses hogshead in the ground and fill it with cut corn. Its practicability would depend on the amount of roughage available, and the lack of other succulent foods, as well as the means at hand for growing the corn, and putting it into the silo. Now these same principles obtain in every case up to ten cows. After that in any case where corn will grow, and the silage milk can be sold (and the only place I know where it can't is to the Bordens), I believe it is not a question "Can I afford a silo?" but "Can I afford not to have one?" The average feeding season is about five months, or 150 days. The ordinary cow will eat about 40 pounds of silage daily, or three tons in this period; ten cows mean 30 tons. A round silo 20 feet deep. (I do not believe it wise to have one above ground of less depth), and 12 feet across would hold 38 tons, allowing for settling, would mean just about 30 tons actual. One the same height and 14 feet in diameter would hold 50 tons, about 40 actual after settling. This would cost but a trifle more to build and would hold enough more for a longer feeding season. Either of these certainly is a practical thing.

It Makes a Big Difference

how you skim your milk. Perhaps you don't fully realize how big a difference. May be you haven't even thought of it. But look at those two cream pails! One is twice as big as the other. Yet both were actually filled from the same quantity of milk, and Mr. R. A. Shufelt, of Cohoes, N. Y., didn't realize he was losing every day actually as much cream as he saved, until he tried a

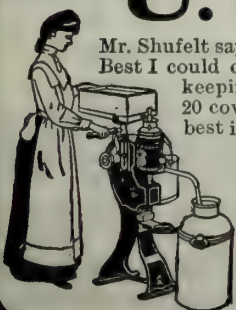
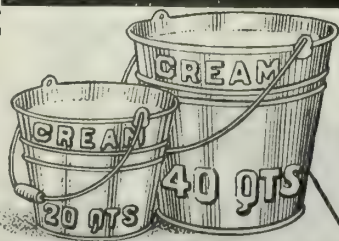
U. S. CREAM SEPARATOR

Mr. Shufelt says: "I set the milk in coolers and skimmed with dippers. Best I could do was about 20 qts. cream per day from 20 cows. By keeping an accurate record, I found with the U. S. I was getting about 40 qts. cream per day from 20 cows. As the total amount gained by the U. S. paid for it in 30 days, I will say that it is the best investment I ever made."

How much cream are you losing? Cream is money—the U. S. gets more than any other separator. The U. S. holds the World's Record for cleanest skimming. We will gladly send you our big, handsome, new catalogue telling plainly all about the construction and wonderful skimming records of the U. S., if you will just write us: "Send new construction catalogue No. 148". Write today, addressing

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Enosburg Falls, Vt.

Gentlemen: I have been using KENDALL'S SPAIN CURE for neuralgia, and it has done me more good than anything I ever used.

Truly yours.

MRS. E. A. DORREL.

HOME CIRCLE

Playmates.

Oh, cottage 'neath the maples, have you seen those girls and boys
That but for a little while ago made, oh, such pleasant noise?
Oh, trees and hills and brooks and lanes and meadows, do you know
Where I shall find my little friends of forty years ago?
You see I'm old and weary, and I've traveled long and far.
I am looking for my playmates. I wonder where they are.

—Eugene Field.

THE EMANCIPATION OF MILDA.

Her real name was such a pretty one it seemed a shame to corrupt it into anything else. But Milda she was called, though the entry in the baptismal register of the little country church where her mother had been married read Millicent Hilda. Quite early in life the nickname had been bestowed upon her, while yet she was displaying a pair of chubby legs beneath her short skirts and her golden hair fell in ringlets over her shoulders. As she grew older the name stuck, as names will.

Milda's mother was a widow whose husband had died in absolutely penury, and the little servant they kept had too much sweeping and cleaning to do ever to turn her hand to needle and thread. So Milda darned, mended, helped in the work of the little house, and grew into as lovely a maiden as Burne-Jones has ever portrayed, with velvety brown eyes encroaching on hazel; a wide, low brow, over which her hair waved naturally and inimitably, and a pair of crimson lips.

From year to year she grew in beauty, yet at twenty Milda Forde was still awaiting her emancipation.

"But every dog has his day!" she sighed to her mirror one cold afternoon in January. It was Twelfth Night, and she had been asked to a party next door, at which each guest was to appear in fancy dress. "And I suppose I shall get mine if I wait long enough—my day in caps, false teeth and a bath-chair."

Her dress for the party must be inexpensive, and she had chosen to impersonate the evergreen Cinderella; but even that necessitated stitching, so she took out cotton and began to sew.

The people next door had come down in the world. With a long family and a short purse, it is possible to have fun, but it must be of an inexpensive kind. When Milda and her two brothers arrived there were other guests in various costumes. Rosiland was arm in arm with William Rufus; Amy Robsart took Friar Tuck under her protection; while a clown in calico had decoyed a slim, white-robed Elaine into a corner, whence

they emerged under pressure when supper was announced.

Cinderella was dancing with the youngest son of the house, when her hostess touched her arm. "Milda," she said, "is your card full, dear? Or may I introduce you to the son of a very old friend, Mr. Humphrey Carrington?"

Milda stopped.

"My card isn't quite full," she answered, smiling.

And the introduction was effected forthwith.

Young Jack Stone frowned at his mother.

"We are going on again if you don't mind. This is my dance, mater," he said, with all the eagerness of a youth of sixteen. And he swept his partner away without waiting to hear more.

It was not till supper was a thing of the past, and after the clock had struck eleven, that Milda found herself whirling around the room with the best waltzer Providence had ever seen fit to send her. Humphrey Carrington could dance; and Milda forgot the narrow grind of her ordinary everyday life, the dull monotony of mending, and gave herself up to the enjoyment of the present. Yesterday was yesterday; tomorrow would be tomorrow, and could take thought for itself, in all its completeness; but today—tonight—was her own—the privilege of her youth.

Cinderella had met the Prince! And the Prince, to all appearances had met Cinderella. Mrs. Stone had merely said, "A young friend, Miss Forde, from next door!" She had also called her Milda in his hearing—a most uncommon name, certainly.

Where there's a will, man will find out a way; and Carrington determined to learn all there was to learn about her.

"My name?" she repeated, as he found her a seat in an apparently "undiscovered" room. "Oh, it's Milda—at least that's a corruption of Millicent Hilda! The boys began it—"

"The boys are evidently of a discerning and artistic character," Carrington replied, laughing, as he waved her fan to and fro. "It is a very pretty nickname!"

Milda opened her hazel eyes wide.

"It had not occurred to me to think about it in that light," she answered, simply. "But I suppose it's nicer than Millicent, which seems dollyish; and Hilda, which sounds too clever for me."

A little sigh escaped her lips, and her companion looked at her quizzically.

"Be good, sweet maid, and let who will be clever," he began, but she held up her hand.

"Don't," she pleaded; "it's so hackneyed; and such an excuse for laziness at lessons." Carrington laughed.

"At any rate, it shows what a power for good or ill the tongue—"

"The pen," corrected Milda, with a

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San Mateo County

merry glance. "I doubt if Kingsley ever said it to anyone, though he wrote it."

"The pen!" Carrington nodded. "Yes, of course; he was before the days of universal typewriters. Haven't we wandered a little on to a dry subject? Let us get more—personal. Do you think your people would have any objection if I were to call?"

Something in his eyes sent the color to Milda's cheeks—or was it something in his voice? But her confusion was only momentary.

"I expect my mother would be glad to see you," she returned, gently. "We live next door on the right, No. 10. But, Mr. Carrington, there will be nothing to do. We never entertain."

"You do nothing all day," he suggested with a mischievous twinkle in his eye.

"Nothing?" Milda repeated, quickly. "Oh, I darn stockings all day and every day. I help our one little servant!"

"You are, in fact, a veritable Cinderella!" he said, sympathetically. "Never mind; some day the prince will come and you will be wafted away. You will be emancipated, little Milda!"

Carrington bent forward. Love at first sight had enveloped him as with a mantle; this little Cinderella had crept into his heart. What would he not give to be her prince—her emancipator?

"You want to be emancipated," he went on, "I will show you the way—I will emancipate you! Milda! Little Milda—marry me!"

"How dare you!" she cried, and she looked prettier than ever in her passionate wrath. "Mr. Carrington, how dare you!" And without waiting for the astonished man to reply she escaped from the room.

A clock in the distance struck twelve, the hour of flight. Of course, she had left the house. She would not have been Cinderella if she had stayed.

But in spite of all, Humphrey Carrington made up his mind to call at No. 10 the very next day.

"Yes, of course, Miss Forde, you are to come to the picnic with us. You will enjoy it. We're going to have great fun. Mother told you our cousins were coming to meet us."

It was eighteen months later. In the interval many things had happened. First of all, Humphrey Carrington had called upon Mrs. Forde, as he had arranged; but the visit was not altogether a success, and he had been obliged to forego the pleasure of seeing Milda again, for she had steadily refused to be present at the interview.

Then, only a short six weeks afterward, Mrs. Forde had fallen ill of pneumonia and died, and Milda went from

one drudgery to another. Her brothers were placed through the kind offices of friends, and a situation as companion to a blind girl had been procured for Milda. The ensuing months had passed slowly, and now the girl found herself reveling in summer sunshine and the delights that seaside and country afford in June and July.

Mrs. Marshall lived at a small seaside place with her blind daughter, and during the summer their relatives often came down and took rooms not far off. Her sister's family were down now, and a picnic was in prospect.

Milda's heart sang in unison with all things young and beautiful as they drove to the desired haven. Mrs. Marshall was exceedingly kind to her daughter's pretty companion, and was glad to see her appreciation of simple pleasures.

"Aunt Tommy and the twins and Fred and Edgar are to be there, and they are bringing an old friend who has come down from Saturday to Monday for some fishing," Mrs. Marshall explained to her daughter, Ethel, a girl of seventeen. "I forgot his name!"

"How dull, dear!" the blind girl answered, patting her mother's shoulder; "the man without a name! How flattered he would feel!"

"Aunt Tommy did tell me," Mrs. Marshall said, apologetically, "but I can't remember it. Never mind! Here we are!"

Milda sprang from the carriage and had helped the two ladies to get down, when a voice at her elbow caused her to start.

Miss Forde—you—"

The girl turned around.

There stood Humphrey Carrington with his hand outstretched, and the

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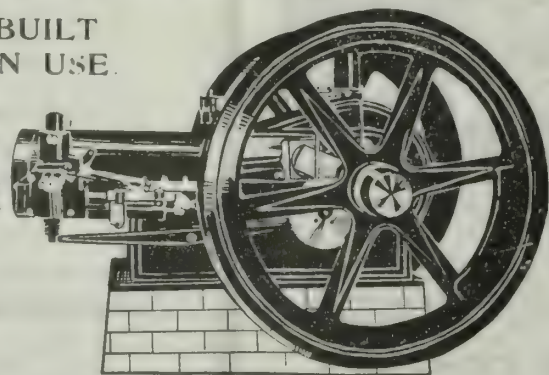
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sight of him brought back to her mind a dimly lit room—a fancy dress dance—the months that had gone since it had all happened.

She laid her little hand in his palm. "I never thought it would be you," she said. "Mrs. Marshall said that Mrs. Hext was bringing a friend to the picnic, but she could not remember his name!"

"Do you remember it?" he asked. And somehow it seemed to Milda as though the intervening months rolled back, and left them standing as they had done that evening long ago.

"I ought to!" she answered. Then it struck her that they were somehow separated from their companions, and she hastened her steps.

But Carrington was as cool, as determined, as ever.

"Why such haste?" he asked calmly. "I promised Mrs. Hext to look after Miss Marshall's companion, little dreaming it would be you! Ah, Milda, don't turn

away. How can you be unkind when the sun is shining, and the heather is blooming, and the gorse fills the air with such a seductive fragrance? I think you've even grown a little thinner since I saw you! Ah, that's right. I did see something more than the back of your ear then!"

He laughed at the embarrassed color which flooded her cheeks.

"I never took your 'No,'" he reminded her, quizzically.

"I never said it!" Milda flashed at him, bravely.

"That is promising. Don't please hurry so. I am growing old and fat; the tea, I know, won't be for another half hour at least. Ethel is being looked after by her cousins; the twins have gone off together; Mrs. Tommy and Mrs. Marshall are deep in the latest bit of gossip. Only I am left—unaccompanied. Take pity on me, Milda, take pity!"

"I think—" she began, relenting, and slowing down her steps.

"I know it's your duty," he assured her, triumphantly. "There is more in my request than meets the eye. You've tried being companion to a girl, Milda. Won't you try—the other thing?"

"The other thing?" Milda frowned a little at him, and he laughed at her softly as he caught her hand.

"I mean being companion to a man! You are the only girl I have ever thought of in that way, the only one I shall ever think of! Won't you let me emancipate you? I have loved you ever since I was first introduced to you. I wouldn't have dared to propose to you, of course, if I hadn't—"

"You didn't say so," returned Milda, shaking her head.

"You didn't give me the chance!" he reminded her, wickedly.

There was a pause, during which Milda made no attempt to withdraw her hand.

"Well?" said Carrington, at length. "I think it must be nearly tea time. Will you marry me, Milda?"

She still looked doubtfully at him.

"It seems like refusing you when I had a home, and accepting you when I hadn't," she demurred.

"I don't mind what it seems like," he returned, joyfully, "as long as you take pity on me. And if I don't mind, why should anybody else?" Come—to be or not to be? Milda, do you love me?"

He leaned forward and raised her chin with his hand until her eyes met his. Then he laid his lips to hers.

"I believe you do!" he said solemnly. And she did not contradict him.

Milda was emancipated!—Modern Society.

Blackleg is prevalent at this time of the year and reports show that quite a few people have neglected to vaccinate and are therefore losing stock. This is to be regretted inasmuch as the early use of reliable Blackleg Vaccine would prevent such losses. The PASTEUR VACCINE CO., Ltd., of Paris, London, New York and Chicago supply the original Blackleg Vaccine produced by Professors Arloing, Cornevin and Thomas. They are the greatest authorities on the subject, and as it pays to use the best our readers will find it to their advantage to specify "Pasteur" in ordering.

Most makers of lamp-chimneys don't mark their wares—possibly they are ashamed to.

If I didn't make as good chimneys as I do, I wouldn't mark mine either.

I mark mine "MACBETH"—my own name—because I am proud to be known by them.

My Index—it's free—tells other reasons why my lamp-chimneys are marked and why I am proud to put my name on them. May I send it to you?

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A linen bag hung near the range offers a clean, handy place for holding stale bread.

If the nose of the pitcher is brushed over with butter, milk or cream will not drip on to the tablecloth.

To remove the lime deposit from the teakettle, boil a pint of vinegar in the kettle, scrape, and rinse well.

A few grains of rice in the salt shakers will prevent the salt from caking, and cause it to sprinkle out freely.

Lemons and cranberries kept in water will retain their freshness for a long time.

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AGRICULTURAL REVIEW

Mendocino.

WOOL-GROWERS THINK PRICES ARE TOO LOW.—The Sacramento Union, Oct. 28: At the wool sale in this city yesterday about 700 bales were disposed of at between 11 and 15 cents per pound. Growers are generally dissatisfied with the price received, and there is a move on foot to organize the wool growers and build a warehouse for storing the clip when prices are below what the market warrants.

Santa Clara.

STATE FRUIT GROWERS WILL HOLD CONVENTION.—San Jose Herald, Oct. 29: The fruit growers of the State will hold their annual meeting at Hanford, December 4 to 7 inclusive, the secretary of the State Horticultural Commission having announced the place and date in the usual way. The program for this meeting will cover all the important topics of fruit growing possible and especially those relating to cultivation, marketing, raising-growing, wine making and tree propagation. The railroads will give the usual one and one-third fare and the people of the Hanford section will do the entertaining in good style. Arrangements have been made with the hotels of Hanford for greatly reduced rates. A large delegation will represent Santa Clara county. Very many questions of vital importance to all concerned in the fruit industry will come up for discussion at this convention, and it will be a season of profit to all who attend.

San Diego.

PRICES OF LEMONS ARE UNUSUALLY HIGH BUT WILL NOT LAST.—The Fresno Republican, Oct. 30: Lemons in San Diego county are commanding a higher price than ever before and the growers are wearing happy smiles. Packers are now paying 3 cents per pound, nearly treble the price offered in certain seasons of the year, even in the summer, when the citrus fruit is in great demand. There are plenty of lemons on the market here and all orders are easily filled. Cold weather in the East is expected to kill the Eastern trade almost immediately and the San Francisco prices are not expected to last many days.

San Joaquin.

WILL FIGHT PEAR BLIGHT.—The Lodi Sentinel, Oct. 27: The Federal Department of Agriculture is making extensive preparations for a vigorous campaign to be carried on this winter in California against pear blight. Last winter was an unusually wet one, which

seemed to make the blight worse in the summer than it has been in former years, and while most pear growers who followed closely the instructions of the Government experts succeed in gathering an abundant crop, those who failed to heed the warning and made but little effort to eradicate the blight from their orchard now find that their trees must be given a vigorous overhauling at once if they are to be saved. Professor M. B. Waite, pathologist in charge of investigation of fruit diseases, has written from Washington to O. H. Miller, secretary of the Sacramento Valley Development Association, saying that he expects to arrive in Sacramento between the 1st and 3d of November with a corps of able assistants, consisting of Messrs. O'Gara, Miles, Rorer, Ballard and Faurot, and possibly one other, to be selected later. The department is determined to do all in its power to eradicate the pear blight in the Sacramento valley, and Professor Waite and his assistants will probably remain here during the entire winter and devote their time to instructing the growers as to the best ways of combating the disease and influencing those who seen backward to take up the work. Reports from nearly all the interior pear-growing sections of the Sacramento valley who have paid but little attention to the blight are now firmly convinced that in order to save their orchards they must follow the Waite system of eradication. The Sacramento Valley Development Association is arranging to co-operate with Professor Waite and his assistants in every way to assist the officials in their work.

SEEDLESS TOKAYS ON EXHIBIT.—The Lodi Sentinel, Oct. 27: What is said to be the first seedless Tokay grape ever produced, has been successfully grown by the California Nursery Company at Niles. A few days ago, the nurseryman sent a small express shipment of the new grape to W. H. Thompson of the Buck Company of Lodi. In every way the grapes resemble the Tokay except that they are seedless. While the seedless variety is much smaller in size than the old Tokay, which is the usual case in producing seedless varieties, the seedless grapes are in shape, color and flavor exact miniature reproductions of the seeded variety. The growers of the new grape say that they believe they can increase its size and improve it in every way.

WILL MAKE FORTUNE FROM POTATO CROPS.—The Saturday Bee, Oct. 27: The price of potatoes has gone away up following the recent great storm in Colorado during which 2000 carloads of the tubers were frozen in the ground. Quotations have jumped from 60 cents to \$1. It is said here that George Shima, a Japanese potato grower on the San Joaquin, will clear \$250,000 this year on his crops. He has under lease over 8000 acres of land, and he expects to realize from \$1.50 to \$2 per sack for the 200,000 sacks he now has on hand.

Sonoma.

FRUIT NOTES.—The Healdsburg Enterprise, Oct. 27: The Board of Supervisors of Sacramento county has donated \$2500 to be used in waging a fight on the pear blight.

According to a statement issued by the Government Bureau of Statistics the value of fruit orchards throughout America in 1900 was \$404,783,273, while in 1905 the valuation reached the comfortable amount of \$430,530,166, or an increase of \$25,746,893.

Governor Pardee has been notified that the regents of the State University have set aside \$35,000 for the erection of buildings on the new State farm at Davisville.

HOP MEN TO HOLD IMPORTANT MEETING.—The Healdsburg Enterprise,

Oct. 27: The meeting of the hop growers in Santa Rosa today will be one of much interest. Secretary A. S. Gibbens, of the Sonoma County Hop Growers' Exchange, under whose auspices the meeting is held, expects a large attendance. At this meeting the hop growers will consider the proposition of shipping a third of the crop of hops to England, supplying a demand there and also keeping in this country enough hops to supply the demand. In this way it is claimed the market will be kept up to the standard. Secretary Gibbens has received a cablegram from English dealers to the effect that they were paying 29 and 30 cents per pound for American hops. This news has stirred the local growers to greater enthusiasm regarding the project they are to consider next Saturday.

Stanislaus.

MODESTO'S CROP WEALTH GREAT.—Stanislaus County Weekly News, Oct. 26: Much general interest is being awakened in Modesto's new commercial enterprise, the canning and cold storage plant which is to be built here by local capital, that an inadvertent slip in the morning paper which made it appear that this city's shipments of soil-produce do not amount to one carload per year, has caused several gentlemen to furnish figures for a correction. It was given out that Turlock's produce shipments were immeasurably better than Modesto's, which is untrue except in a few minor particulars, in products where the bulk was much greater than the money value received. Even then, Turlock's seasonal shipments are probably twice as great as the 100 carloads estimated, while it is certain that Modesto's general shipping figures are much above this. Turlock's watermelon and sweet potato shipments, while of great bulk, are vastly outweighed by the dairy products of Modesto and vicinity. The total make of butter at the local creamery from January 1 to September 1 of this year are 386,922 pounds to say nothing of the cash value of the cream and by-products, which would run the total in cash value of this form of soil products alone to \$150,000 a year or even more. This butter is closely followed by the egg and tomato shipments, which the Produce Exchange says amounts to in the matter of eggs, to sometimes as



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much as sixty cases per day, with a total of about 75,000 dozen per month, and in the matter of tomatoes, to about seventy boxes per day through the growing season. In the case of one grower, John Crocco, the profitable disposition was made of 227 boxes of tomatoes of 50 pounds each. Cantaloupes, onions, beans, corn, squash, and all the variety of garden truck make up the big express shipments to Oakland daily, the sending of grapes amounting to about 50 boxes daily by express, while the wine grape shipments amount to about 25 carloads per month. Modesto's stock shipments also aggregate 25 carloads per

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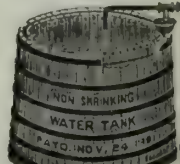
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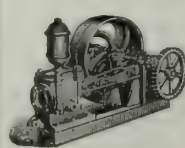
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month, while the hay figures approximately 60 or 70 tons per day during certain periods. The total figures for local produce of the soil, therefore, are known to be surprisingly large and of a high monetary value, and effectively dispose of any fear that the new canning factory will not have all it can do to care for the augmenting crops of produce suitable for preserving. And in a few years, when the increased acreage and the intensive methods of cultivation have resulted in still greater enrichment of the farmers, the business of caring for Stanislaus county's diversified crops will be a still larger task for the energies of our capitalists.

PROMOTION WORK AT THE EAST.

Rufus P. Jennings, chairman of the California Promotion Committee, recently returned from a five-weeks' visit to the East, and was much impressed with the progress that has been made here during his absence. He spent most of his time in New York, where he conferred with the manager of the Eastern bureau of the committee, and selected permanent quarters. The offices of the bureau are essentially Californian. They are finished with Cal-

ifornia redwood, and the force is composed of California people who are acquainted with the State. California literature and California newspapers are available for all visitors, and a genuine California atmosphere pervades the place.

Every evening stereopticon pictures of California scenes are displayed on the windows of the bureau and large crowds gather.

"I am much impressed with the interest that is shown in California in the East," said Mr. Jennings to-day, in California Building, in Union Square. "Many people visit the office of the Eastern bureau every day asking for information about California. We have literature and newspapers about the whole State, and no matter what part the man or woman may be interested in we can tell him about it. The lantern slides which were furnished by the various counties are doing effective work. Mr. Brown is going to give a series of lectures on California under the auspices of the Board of Education this winter and the pictures of every county that slides have been procured from will be shown.

"Mr. Brown was invited to give a lecture last Saturday night before the Building Trades unions of New York, and made a strong showing for California. The newspapers of New York are printing our daily bulletins which are sent by wire from the home office. We send items of progress from all parts of the State and every day send the maximum and minimum temperature from Eureka, San Francisco and San Diego. This is shown on a bulletin board at the office of the bureau, and also at Young's, a most prominent place on Broadway.

"There is quite an interest in California, and many people are coming out

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SIMMONS HARDWARE COMPANY,
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to settle among us. The low one-way colonist rates on the railroads are being taken advantage of and hundreds are coming every day. These people will go to all parts of the State, and many of them receive their impressions from the pictures they see in front of the Eastern bureau of the California Promotion Committee.

"Financiers are becoming more and more interested in California, and all of them express themselves as feeling that this is a country with a great future. The work of the Eastern bureau of the committee has been especially effective in creating a change of the sentiment

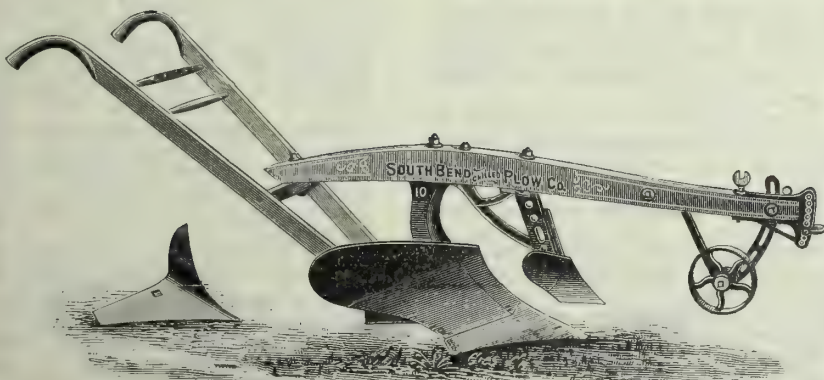
toward this State. I am sure that Californians who visit New York will be pleased with the conditions at the bureau, and they will see that good work is being done for the State. I wish the members of every commercial organization in California could pay a visit to the headquarters of the Eastern bureau, and they would see that their organization could help to make the work most effective."

Jackson, O., Jan. 26, 1905.

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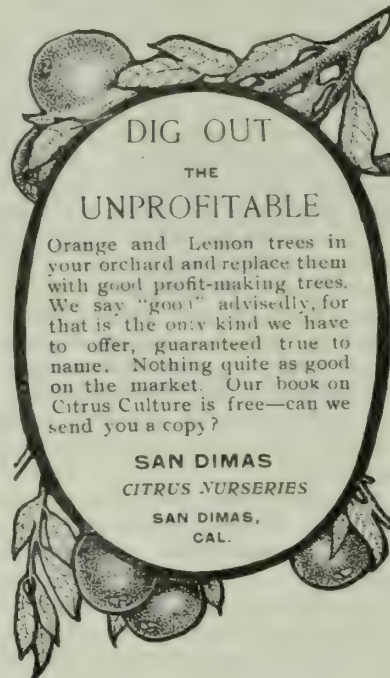
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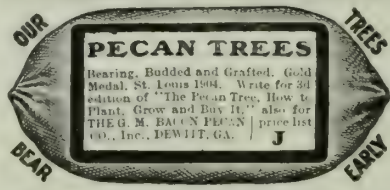
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Peaches give to them throughout the season a wide range of territory not reached by peaches from other localities, and an intelligent selection of varieties will make them for eastern shipment a very safe and profitable investment. Canned and dried they command the world for their market. No other can compete with the California canned and dried production. Peaches for canning, drying or shipping, or both, are a very safe investment.

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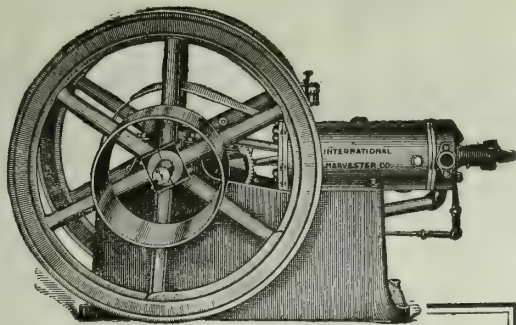
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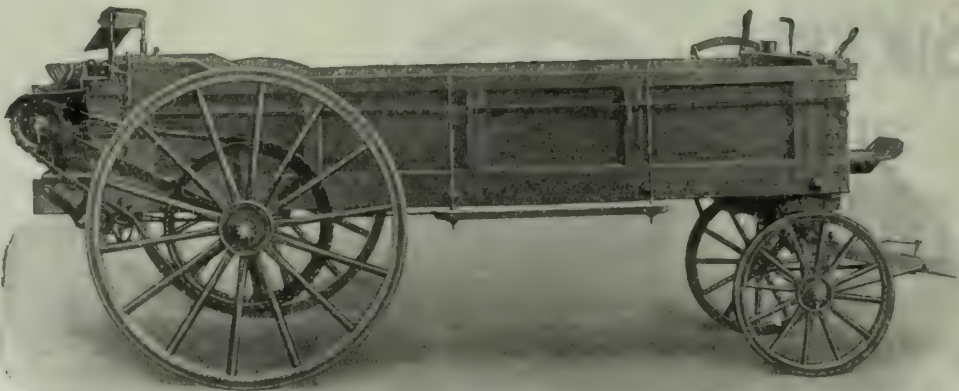
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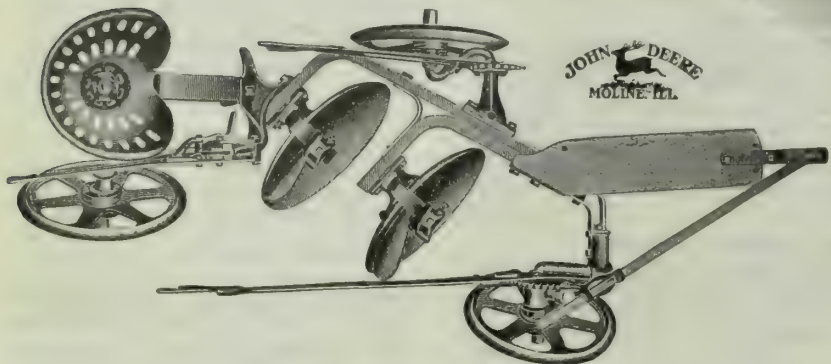
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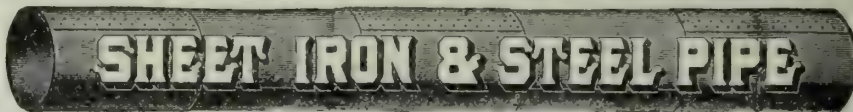
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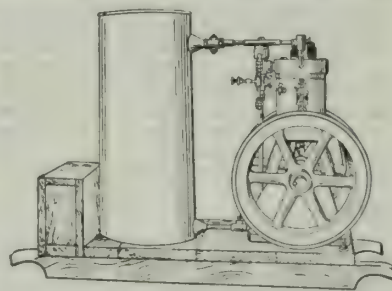
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AND CALIFORNIA FRUIT BULLETIN.

LXXII. No. 19.

SAN FRANCISCO, SATURDAY, NOVEMBER 10, 1906

THIRTY-SIXTH YEAR

FRUIT TREES IN DISTRESS.

It is customary to present pictures of California fruit trees in the glory of their full development and to give grand figures of the depth of the soil in which their roots penetrate, of twenty feet or more and extend laterally much more than the reach of their branches. It is right that this should be the California custom, because conditions of land wisely chosen for fruit run along those lines to a greater or less degree. There are places, however, which have been sometimes too widely planted with fruit where conditions are quite otherwise and the effect upon the growth of trees is quite worth noting.

An examination of the soils in which trees were plainly suffering was made some time

acceptable, as pertaining to the particular trees caught by the photographer.

The first figure is that of the uncovered roots of an almond tree growing on land which was underlaid by hardpan at a depth of two to three feet. It was a twelve year old seedling and the picture shows the extent to which the almond was forced to grow on the surface. Yet, as the photograph shows, some roots in the center really succeeded in penetrating the hardpan. These central roots were unable to pierce through to the substrata, but they helped to maintain the tree.

Quite similar is the root showing of an apricot under similar conditions of hardpan and shallow soil. This tree was about ten years old and never bore a satisfactory crop of fruit.



Growth of Almond Roots on Hardpan.



Root System of Apricot on Hardpan.

ago by the soil experts and horticulturists of the University Experiment Station and we draw upon their results to show how trees behave underground when they cannot do better. The pictures on this page are of the underground development of different kinds of fruit trees when they are forced to grow in a shallow layer of soil overlying hard pan and they are almost self explanatory, although a few descriptive words may be ac-

The picture illustrates the lack of penetrating power of the apricot root. The area of soil drawn upon by these apricot roots above the hardpan was less than 475 cubic feet. They seemed to lose their power of extension beyond seven or eight feet from the base of the tree. In a normal orchard with a deep soil the roots

of an apricot tree may spread through upwards of 2000 cubic feet.

The olive has too much of a reputation for doing well in poor places as many planters have ascertained to their financial sorrow. The olive responds to good conditions about as enthusiastically as other fruit trees and although it will stand poor conditions better than some others it does not hanker for them as the man said when he claimed that he could eat crow. The picture shows a tree which had almost ceased to grow and at thirteen years of age was about nine feet high and five in diameter and had never borne anything to speak of.

The large picture shows how the peach performs on hardpan. Such trees generally fail before they get to be ten years old. Those which lived longer were no larger at twelve years of age than they had been at three—and bore less fruit. They never paid for cultivation. They became very unhealthy, portions of the branches died back, and they blossomed and leaved out at irregular intervals. The nectarines appeared to withstand adverse conditions a little longer than the peaches. Plums and prunes on hardpan also failed. The plum roots made no more descent into the hardpan than did the peach, and suffered more from the heat of the surface of the soil. The roots of grapes, while penetrating a little, in no case passed through the hardpan and were consequently stunted. Chestnuts, English walnuts, and Japanese persimmons succumbed. A California black walnut slowly penetrated the hardpan, held its own and continued healthy.



Peach Tree on Hardpan Less Profitable at Ten Years of Age Than When Three Years Old.

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THE WEEK

Are we never to have a rest from the pretensions of Abrus Precatorius? And yet it is perhaps wrong to put in that impatient way for Abrus is not to blame for he is only a very pretty bean hard and shapely and scarlet and he is called Precatorius because that means something to pray with and this is secured when these beautiful beans are strung into a rosary. But Abrus never set out of his own free will to prey upon credulous people; he is simply used that way by either fools or imposters. We supposed Californians were too wise to be misled by the old Abrus superstition, which is a thing of centuries and old enough to enable every one to know better, and yet this dispatch is current in California papers this week:

Pacific Grove, Cal., Nov. 6.—Information has been received here of the intended establishment of a rival weather bureau in San Francisco and probably another in Pacific Grove. In Cuba and Mexico there has been found a "weather plant," said to have extraordinary powers in forecasting not only atmospheric but seismic disturbances. Its bontaic name is Abrus Precatorius Nobilis. Professor Josey Norvack, an eminent Austrian, recently arrived in England with 22 cases of these remarkable plants. They have been found peculiarly sensitive to the magnetic and electric influences. When changes in these occurs, its twigs and leaves perform peculiar and abnormal movements, each of these having its definite significance. By its aid weather forecasts can be made to two to seven days ahead of rain or fog, and earthquake forecasts as much as twenty-six days in advance over an area of 500 square miles. It also predicts volcanic eruptions and accumulations of firedamp in mines. Norvack will establish bureaus in San Francisco, Bombay and Tokio.

This is an old imposition with amendments, truly, for the earthquake features are new and suggested probably by recent experiences. The plant is probably affected by moisture conditions and so are many other plants, and they perform capers as aerial moisture changes but claims to distant weather wisdom are absurd and have been disproved many times. If anyone wishes to know how to dispose of them and how to whack anyone who proposes to travel on them let him read the writings of Oliver in the Bulletin of the New Gardens London for 1890. We hope no reader of the Rural Press will be misled by the false use of this innocent and beautiful tropical plant.

Some cereal readers may remember the allusions we have made to the dirt in Indian wheat and how if the wheat is not dirty enough they put in dirt to bring it up to the percentage which the trade is willing to accept. It is now announced that the British importers and millers will refuse to accept Indian wheat lest the weevils and dirt with which it abounds should deteriorate the clean wheat from America, Russia, and Argentina. The agitation that this condition of things has caused is not without its effect on the Indian government, which is casting about for means of reform. The solution of the problem might be easily worked out with American thrashers and cleaners. The crudest methods for thrashing and cleaning wheat obtain in India. The flail and tramping processes, long since discontinued in almost every wheat-producing country, are still adhered to in India.

California is getting some deserved distinction for the successes of our ostrich growers. Consul-General William H. Michael reports from Calcutta that the subject of ostrich farming is receiving considerable attention from those deeply interested in the develop-

ment of India. His letter reads: "The demand for ostrich feathers of high class is greater than the supply, and the farmers of the Cape and Egypt who give intelligence to the raising of ostriches make large profits, just as the ostrich farmers of Southern California have done. A comparison of the soil, climate, and other physical conditions of Africa and Egypt, where the ostrich does well, with the same conditions in parts of Southern California, Arizona, and New Mexico would suggest that there is hardly a limit to ostrich husbandry in America. The foregoing seems justified. Ostriches are probably looked upon by many as merely show birds because that is one prominent feature of their value, but the producing side is good if careful accounts are to be trusted.

California is not a good country for turf as our long dry season favors rather the growth of annuals which span it in the seed form and yet there are parts of the State where fibrous turf is available and it will be interesting to know that the agricultural test station at Jena advocates the use of turf as a means of preserving manure. Results obtained through experiments in and about Jena demonstrate that the use of turf is far more efficient in preventing loss of nitrogen, while fermentation is in progress, than is sulphate of lime, phosphate of lime, sulphuric acid, etc. Turf permits the escape of but very little nitrogen, while the application of the above-named chemicals is most deficient in result and expensive. The conclusion corroborates experiments of a similar nature conducted by Italian agriculturists.

We have suggested that what is now so prominent in public fruits as dry farming is nothing new in principle and that its practices have been freely used in California every since the first Americans proved that rainfall farming was feasible in this State which our predecessors at the Missions thought only suited for irrigated farming. And now Eastern agricultural papers are projecting the claim that the new dry farming is only the old good farming. There is no secret about it, says Successful Farming. It is the old truth that the agricultural press has been hammering at for years — careful preparation of the seed bed. In order to raise a crop without sufficient rainfall they make the rain come up instead of down. They draw from the soil what others trust to a kind providence to pour on from above. Deep plowing and subsoiling, subsoil packing, persistent discing and surface cultivation after every shower stores and saves the little rain that falls. The seed bed is in such condition that it gradually gives out for the plant roots the necessary moisture. As a result of this method the rain is not wasted, nor the plant growth ever checked by a scarcity of water or a baked surface. Plants do not need or can they use over twenty inches of rain a year. Because we get more in the humid regions we get careless and prodigal in our use of rain water and for that very reason our crops are usually short of having enough at the right time. We let the soil bake and the water evaporate. Nor are we as careful about preparing the seed bed as we should be. The fact is we try to farm too much and do our work about half as well as we should and receive about half as large a harvest as we might. And so we come back to the principle of good tillage which are applicable both to the wet situations and dry which is now being exalted as very new and startling. It is well enough to urge the claim constantly toward demonstration and to use new devices to secure it, but it is wrong to look upon the fundamental principles of it as either new or strange.

It is some satisfaction to know that we can clean house without losing our neighbor's good will and respect. The Department of Commerce at Washington gives notice that the export meat trade of the United States has not fallen off in the aggregate, other products having increased in lieu of the decline in canned goods. The meat and animal product shipments from Chicago amounted for the seven months ending with

July to 1,675,436,262 pounds, against 1,391,938,756 pounds for the first seven months of 1905. The total for the month of July was 203,252,030 pounds, against 192,490,724 pounds in July last year. The canned meat shipments declined, however, from 8,732,550 pounds in July, 1905, to 4,830,975 pounds same month this year. Dressed beef, cured meats, and lard, however, showed very large increases in the export trade. But people will get tired of so much smoked meats and it is to be expected that canned meats will be as popular as ever when they deserve to be.

American prunes for Americans seem to be very nearly a deed accomplished. According to trustworthy authority the consumption of prunes in the United States exceeds 100,000,000 pounds annually. Prior to 1886 the prunes consumed were nearly all imported and sold under the designation of French or Turkish prunes. Now the importation of plums and prunes (they are classed together) for the fiscal year ending June 30, 1906, reached in value only \$53,348, but the exports of prunes alone in the same fiscal year reached \$1,410,636 in value. In the previous year the exports were of the value of \$2,455,056, and in 1904 they were \$3,410,497 in value. "This very large decline in exports is not explained, says the Washington writer. It is not hard to explain. The large exports were in years when the European crops were short and California had immense supplies at low prices.

QUERIES AND REPLIES.

MISTAKES WITH ALFALFA.

To the Editor: Perhaps you are not aware of some of the mistakes made in alfalfa growing. Acre after acre was lost last season through improper seeding. The custom here is to plant barley and alfalfa together and the result last year was that the barley thrived (it being a wet year) and the alfalfa was either entirely choked out or had made such a weak growth that it died before a flooding could be given it, following the harvest of the grain as hay. The practice of flooding during the intense heat of the day in July and August is also responsible for the loss of much of our acreage in alfalfa annually. The shallow standing water becomes exceedingly hot under a temperature of 135 to 140 degrees in our August sun. Another practice here is that of light, shallow flooding, which is productive of a hard, baked surface and carries no water to the roots of the alfalfa. In slightly alkaline lands, irrigated by slightly alkaline waters, this shallow flooding has worked considerable damage, depositing as it does, in the most condensed form, all the undesirable salts in the first two feet of the soil. The farmer usually makes four cuttings of his alfalfa and irrigates to about two inches depth after each cutting.—OBSERVER, Fresno.

It is rather strange that California growers do make such mistakes in the face of the accounts of good practice which are continually published in our agricultural papers. Such accounts are written by practical growers who have succeeded and one would think that such wide publication as has been made of their experience would prevent such mistakes as our correspondent describes, but there are probably many who have more liking for a sententious declaration over a wagon wheel or from a box in the country store than for the most careful statement ever made in print. So long as people do not discriminate more closely in the sources of their advice they will continue to go astray. Nothing is clearer in California experience than that alfalfa should be carefully put in by itself and not with another crop. The grain if sown with it will either overgrow it, as our correspondent suggests, or more frequently will famish it to death by taking away from it the surface moisture which young alfalfa plant needs until it can get its root down into the moister layer below. The result is a very poor stand. If sown by itself and properly handled afterward it will make a full stand very quickly and hold it for a score of years or more. And yet people keep putting in alfalfa to be starved out as soon as started. The scalding of alfalfa ought also to be understood by this time. Water must not

stand in the sun on the alfalfa field. Either irrigation must be done on alfalfa after cutting so that the water will go below before the sun gets hot or the flooding must be done before cutting and the mowing done as soon as the land will carry the machine well. Of course, with alkaline soil or water everything must be done to get the water as far down into the soil as possible so that it will carry down and distribute the alkali through as great a depth as possible and thus prevent the surface concentration which our correspondent speaks of. Disking the alfalfa occasionally to break up the crust is also desirable.

EUCALYPTUS SEED.

To the Editor: How is the seed of eucalyptus trees treated? When is it supposed to be ripe?—J. Z., Arcata.

The pods cannot be allowed to ripen on the trees because of its disposition to scatter from the pods. When the caps begin to show signs of parting, the pods must be gathered and dried on shallow trays or other tight receptacles which will catch the seed which escapes and the balance beaten or shaken out as drying proceeds. The pods are quite green when gathered.

SUNBURNED FIGS AND WALNUTS—FERTILIZER FOR FRUITS.

To the Editor: My fig orchard (White Adriatic) suffers apparently from sunburn. The top leaves and figs, in fact, the top half of the trees withered gradually, leaves turned brown and dropped. The fruit burned badly on the south and west exposure until at this writing the orchard looks as if a fire had swept over it. Soil is fairly moist and well cultivated. English walnuts in adjoining orchard were badly sunburned on south exposure. How can this be remedied another year? Do you advise cutting away dead wood from deciduous trees now, or when we prune in March? Where stable manure is not available, what is a good general fertilizer for old orchards?—NEW SUBSCRIBER, Ukiah.

We cannot answer. The case seems to be simply sun heat and if this occurs on thrifty trees we know no remedy. You must have a pretty hot corner, however. The English walnut is more susceptible to sunburn than the fig. Are you sure the trees have water enough for the latter part of the season? The sooner dead wood is removed the better and if you have time for it now, the winter pruning work can be to that extent lessened. For the reinvigoration of old trees a complete fertilizer, and sold under that name by dealers, is most desirable.

CUCUMBERS UNDER GLASS.

To the Editor. You recently kindly told me of books and pamphlets on raising cucumbers under glass. I found many suggestions in them. Can you tell me the cheapest and best way of obtaining the necessary heat? Can it be done by small stoves or lamps? Must it be done by pipes.—BEGINNER, Long Beach.

We can only say that if your local conditions are such that you can get almost heat enough by sunshine and the exclusion of cold air, which your house will afford, you can employ stove or lamp heat, just enough to hold the temperature above the freezing point on the few nights when sharp freezing is likely to occur, and it will not take much heat to do that. You could almost prevent it, probably, by rigging up some sort of a cover to place over the glass on cold nights. This will serve to check the rapid radiation through the glass and hold the temperature, then, above the freezing point. Very much more can be done in California situations, which are almost frost free, by the use of sun heat and such covering than is generally thought possible. If you proceed upon this basis it will be easy enough for you to provide heat if occasion should arise, as you can determine by careful watching of the thermometer on frosty nights. This is, of course, for small scale amateur work. For commercial forcing adequate heating by pipes is essential, although the use of heat may be light.

WALNUT BLIGHT.

To the Editor: I write to ask you if you can tell

me what treatment will benefit my English walnuts. When the nuts are about two-thirds grown, black spots appear on them, which finally cover nearly the whole nut, when they drop off—the entire crop. What spray or other treatment will effect a cure, and when and how should it be applied?—GROWER, Los Gatos.

You evidently have the walnut blight, a bacterial disease which occurs in nearly all parts of the State and is occasioning much loss. No satisfactory treatment has yet been demonstrated. Spraying with the Bordeaux mixture early in the spring just before the blossoms open, has been effective in saving about one-half the crop and this is the most satisfactory statement that can be made at present. Investigation and experiments with this disease in southern California are still in progress.

BORDEAUX FOR PEACH BLIGHT.

To the Editor: Will you kindly advise me what proportion of bluestone is necessary as a perfect treatment for "shot-hole fungus" or "peach blight"? I had intended using 15 pounds bluestone to 50 gallons water, but on account of the scarcity and high price of bluestone, do not want to use more than is necessary, but at the same time want to be sure that I am using a sufficient strength mixture. I intend to spray my entire orchard in December, as I have about 600 plums grafted on peach, which this year showed the same signs of blight as did my peach trees.—GROWER, New Castle.

Twelve pounds of bluestone to 50 gallons of water was the strength used by the Suisun growers who made the demonstration of effectiveness in December spraying. Probably ten pounds would be quite as efficient. Such a mixture perfectly distributed would certainly be better than a stronger mixture not so well put on. We should be inclined to use about one-third less bluestone than you propose.

THE BIG CONE PINE.

To the Editor: I would like information about a California tree known as the big cone pine (*Pinus macrocarpa* or *Coulteri*). Is it considered a useful timber tree? If it is durable timber to what uses is it put?—READER, Victoria, Australia.

Mr. H. M. Hall, assistant botanist of the University of California Experiment Station, kindly furnishes us the following notes on the subject: *Pinus coulteri* (of which *P. Macrocarpa* is a synonym) is the "big-cone pine" or Coulter pine. It grows in California from Mount Diablo through the south coast ranges to San Bernardino and San Jacinto mountains, but is nowhere abundant, being scattered among other trees in the lower part of the pine belt. It is not considered a useful timber tree, for it is too scarce, the wood is brittle, resinous, coarse-grained and soft, the trunks rarely attain a diameter of more than 3 or 4 feet, and it yields but little clear lumber. Its principal use is for re-foresting to protect water sheds from excessive erosion, since it withstands more drought than most coniferae and since the seeds possess a remarkable vitality. It is now being experimented with for this purpose near Santa Barbara and elsewhere in southern California. In Hough's "American Woods" we find the following: "Timber useful for general construction purposes when its resinous and brittle nature are not objectionable, but with the abundance of more valuable woods in California it is not extensively used." The cones are more massive than those of any other pine. They yield exceptionally large seeds which are sometimes gathered by the Indians, but the less oily seeds of the tree nut-pines (*Pinons*, *P. edulis*, *P. monophylla*, etc.) are preferred.

ALMONDS AND WALNUTS.

To the Editor: Having purchased a farm in Merced county, which I wish to devote to the standard fruits of California, you would do a great favor to advise me whether walnuts and almonds could be grown without extra hazzard in that locality, which is about ten miles south of Turlock, and the soil a well-drained sandy loam, with ample irrigation water.—OWNER, San Francisco.

We cannot definitely settle the proposition which

you have in mind. Two questions you should determine by local observation and inquiry; the occurrence of spring frosts, which would be very likely to make almonds unprofitable, and the occurrence of alkali in the soil or ground water, which would be injurious to both almonds and walnuts. Nothing can determine these matters so well as local experience. If you can find almonds and walnut trees doing well in such a situation as you have, in the immediate neighborhood, your enterprise would be on a good foundation. If you are obliged to proceed on an experimental basis, we can only advise you to undertake small plantings at first until you have evidence upon which to proceed.

CALIFORNIA SWEET POTATOES.

To the Editor: We know that a sweet potato brought from New Jersey loses its sweetness when transplanted to California. Do you attribute that loss to irrigation or difference in soil?—ENQUIRER, Oakland.

This is a subject which has not yet been fully expounded. We do not regard it as established that such a change takes place in the character of the tuber, although we apprehend that such might be the case, to a degree at least. It would be reasonable to expect, judging from differences produced in other fruits and vegetables, that growth under semi-arid conditions would be modified from growth under humid conditions. We apprehend, however, that the ruling difference in the common market stock of sweet potatoes in California and at the east and south is due to the popular choice here of the drier, less sugary varieties which are better for baking and the consequent unpopularity of the soft, sugary kinds which work better, perhaps, for boiling and frying. We would like much to hear observations of those who have tested this matter by experience and observation.

INFORMATION ON FRUIT GROWING.

To the Editor: I am advised to write to you for publications on California fruit growing. I want particularly a book on growing figs and grapes, but other fruits as well. Does the University furnish publications of this kind?—SETTLER, Merced.

We regret that we cannot name to you a general work on the growth of fruits in California which you can get at the moment. Our own work on that subject is temporarily out of print, all remaining of the third edition having been destroyed in the San Francisco fire and the fourth edition still in preparation. There is no other book on the subject. You can get a good pamphlet on fig growing for 25 cents, by applying to Mr. George C. Roeding, Fresno. There is no general work of recent writing on grape growing in California. You can get very much current information about growing fruits by subscribing for one or more of our California horticultural papers. The University publications relate for the most part to special problems, chiefly in the line of difficulties which arise, and are not intended to cover elementary information for the guidance of beginners. This field seems to be fully occupied by private publishers.

BURR OR CRIMSON CLOVER.

To the Editor: I have been thinking of sowing some burr clover, and perhaps some crimson clover, as soon as the rainy season sets in, which will perhaps be in a few weeks, and intend to use them simply as a winter growth to be turned under in the spring. Do you think the growth during the five or six months of winter would be enough to pay me for the trouble of doing this? I also have some of the Government legume culture, and will use this culture with the clover if it is best to sow clover at all.—PLANTER, Palo Alto.

Burr clover is great for this purpose and should be your main sowing. We would like to have you put in a little crimson in a place where you can keep track of it. We apprehend that you will not get much winter growth even if we have but little frost and will lose the plant if frosts are sharp.

HORTICULTURE.

THE PEAR BLIGHT BATTLE.

Professor Merton B. Waite, of the United States Bureau of Industry, arrived in Sacramento this week to make preparation for an active campaign which is to be waged this fall and winter in the various pear-growing districts of the State against the destructive pear blight. The Sacramento Union gives an outline of his season's program as follows:

In this work the Bureau of Plant Industry will co-operate with the agricultural department of the University of California, with the California Pear Growers' Protective Association, and with the Horticultural Commissions of State and county.

Professor Waite will be the pathologist in charge of the work. He is already very well known in California for the active work which he and his assistants did in the pear orchards of the State last winter, when the blight was all but stamped out. He will be assisted in the campaign of this winter by P. J. O'Gara, scientific assistant, and W. S. Ballard and F. W. Faurot, special agents of his branch of the bureau; George F. Miles, scientific assistant to C. L. Shear, pathologist for diseases of grapes and small fruits; W. M. Scott, pathologist in spraying and demonstrative work, and James B. Rorer, scientific assistant to Mr. Scott.

Most of these experts who will assist Professor Waite are now enroute to California, and will be here by the middle of next week, except Mr. Scott, who will arrive about the first of December. Mr. Scott will have charge of the work during the holidays and at such other times as Professor Waite is out of the State. The objects of the experts in coming to California is to work with and advise the people interested in the eradication of the pear blight in the State and to lend every assistance to that end.

The Bureau of Plant Industry has been interested in investigations of this sort for a number of years, and Professor Waite is recognized as the most eminent authority on this disease in the United States, and those who have taken an interest in the extirpation of this destructive plague are gratified that the Federal Government has recognized the importance of the pear blight. The Government has sent a number of men so well qualified to come here to assist in its extermination. All are professional plant pathologists who have received the best training and are recognized as possessing the capacity to root out the pest if by any means this end can be accomplished.

It is expected that these officials will work in very close co-operation with the California Pear Growers' Protective Association, which was recently organized with a large membership, including a majority of the growers of all the important pear-growing districts of the State. This association was formed for the principal purpose of stamping out the blight, and will lend assistance to the experts in every possible manner. Hon. Alden Anderson is president of the association.

The Government specialists will also work in connection with the State University officials. Professor Ralph E. Smith, of the university, has about six men available for this work. The State Horticultural Commission and the Horticultural Commissions of the various counties interested will also give assistance to the Government and university experts, and it is expected, in fact, that the active and detailed work will be effected under the direct supervision of the several county commissions.

The Government assistants to Professor Waite will be detailed to various pear-growing sections, and as soon as preliminary investigations are made Lieutenant-Governor Alden Anderson, president of the California Pear Growers Protective Association, will call meetings of the members of that organization in districts wherever necessary to secure the co-operation and assistance of those interested in the work.

In one feature the campaign against the blight to be waged this season against the pear disease should prove vastly more effective than that of last winter, although great good was accomplished at that time, in that it will begin shortly after the 1st of November, whereas last year active work was not taken up until much later in the season.

THE BOTANIST.

WILD PLANT IMPROVEMENT.

(By Mr. Newton B. Pierce, in charge of Pacific Coast Plant Improvement Gardens, Santa Ana, California.)

Agriculture, the grandest of all industries and the foundation of all wealth, is directly dependent for its enormous development upon the improvement of wild plants. Yet the improved plants now in cultivation, from which this vast industry has developed, con-

stitute but an exceedingly small fraction of those growing wild and worthy of improvement.

All nations recognize the importance of fostering agriculture, but none has recognized the wisdom of broadening the real foundation upon which our agriculture stands. Of the 895 Experiment Stations and Agricultural Colleges now being supported in the world not one has been founded for, or is specifically devoted to the improvement of wild plants. Such an institution is non-existent today, though sporadic cases of wild plant improvement occur at many centers and in all lands. The agricultural institutions of today are almost exclusively devoted to the consideration of plants already under cultivation—this is plant industry.

Viewing the matter from the standpoint of botany and forestry the facts remain the same. There are today 252 important Botanic Gardens and Arboreta distributed through all lands, not one of which has for its main purpose the improvement of wild plants. The central object in the founding of these many institutions is the study of systematic botany, often, of course, with side issues of more or less importance. The workers in these great collections of plants have given us many floras of the world's vegetation, but floras of plants are like catalogues of libraries or inventories of stock—they are useful, but the intrinsic value remains with the plants in the forests as with the books in the library or the goods on the shelf.

It is held, therefore, that the need is of sufficient importance, that the time is opportune, and that the United States should be first in the field to tap these real sources of agricultural wealth. We should found a bureau for the specific and in valuable work of wild plant improvement.

When forestry has done its work, wild plant improvement begins; where wild plant improvement ceases, plant industry begins.

I will call attention to a very few of many specific groups of wild plants which await systematic efforts for improvement:

WILD FRUITS.

Coffee.—The American nation is annually importing coffee to the valuation of 70,000,000 dollars. The cultivated coffee plants of the world belong to but a few species, and these are mostly indigenous to tropical situations. There are, however, 81 wild species of coffee described by botanists, and many of these inhabit countries having high mountain ranges. This fact makes it probable that several of these species grow at altitudes possessing temperate or semi-tropical climates. Some are known to grow at an altitude of several thousand feet. To bring these hardier forms together and to improve their berries by hybridization, if necessary, is the work of wild plant improvement, and it is not improbable that some of this large number of wild coffees could thus be adapted to the conditions of climate existing within the United States. This work alone, in view of the annual outlay of 60,000,000 to 70,000,000 dollars required for foreign coffee, is worthy of most liberal support.

A new species of coffee has just been described from Africa, said to produce the finest coffee known and to grow upon a tree sometimes attaining a height of sixty feet. One of the wild species already secured is much harder than the leading forms in cultivation, and the bean is said to be priced at the highest figure in the English market.

Grapes.—The Twelfth Census reports over \$14,000,000 worth of grape products for the United States for 1899, of which \$5,622,825 is given as the valuation of the output of California vineyards alone. The vineyards of California are nearly all of one species, *vitis vinifera*, though of hundreds of varieties, and are all descendants of a single wild type still growing in Asia Minor. These California vineyards are worth at least \$75,000,000. Leading botanists now recognize from 340 to 400 species of *vitis* in the world, and it is safe to say that over 300 species of these wild vines have never been cultivated by man. Many of these wild forms are known to bear large edible grapes. The improvement of these 300 grapes or a fraction of them would add hundreds of millions of dollars to the resources of the world's viticulture.

Figs.—The figs of commerce are all derived from one species, *figus carica*. There are known to botanists today 718 species of this plant, and large numbers of these wild forms bear edible fruits and are well worthy of cultivation and improvement.

Persimmons.—The persimmons in cultivation belong to a very few species of the genus *diospyros*, while the described wild forms of that fruit are 234 in number. The possibilities for developing valuable new fruits in that group are large.

Olives.—The extensive olive oil and pickled olive

industry of the world is all the outgrowth of the improvement of one species of olive (*olea Europea*) still growing wild in the Mediterranean region. There are, however, 37 described species of wild olives, several of which bear fruit in the wild state far larger than the wild form from which our cultivated types sprang. This mine of undeveloped wealth should be worked.

Raspberries and Blackberries.—These berries, all of the genus *rubus*, are cultivated in all lands and to the extent of approximately \$10,000,000 annually in the United States. The number of species of blackberries and raspberries actually in cultivation is somewhat larger than with most fruits but still quite small. On the other hand the number of wild species of these berries is very great, and the qualities and types of these wild forms are many and valuable. There have been over 800 species of *rubus* described, and some of these wild berries are superior both in size and flavor to many forms now under cultivation. One species of wild raspberry is known with fruit nearly or quite two inches in diameter. The fact is that the wild berries of the world constitute a resource of great value largely awaiting exploitation. Hundreds of millions of dollars worth of new fruits could soon be given to the horticultural interests of the world from the improvement of the wild berries alone.

WILD NUTS.

Chestnuts.—The chestnuts under cultivation today belong to but three species—one Japanese, another European and a third, the sweet American chestnut, which is still rarely cultivated. According to some authorities, however, the three forms here mentioned belong to a single species. In striking contrast to these cultivated chestnuts there are now described at least 44 species of chestnuts and chinquapins, or more than forty species entirely unknown to nut culturists of the world. Most of these wild forms are large trees and some produce large nuts. They have never been brought together with a view to cultivation, while work with these nuts would be sure to give the people many desirable and valuable acquisitions.

Walnuts.—The crop of the persian walnut (*juglans regia*) in the United States amounts to something over \$1,000,000 annually, yet the 17 to 18 other species of walnuts known to botanists are still growing wild with the exception of a very limited cultivation of the fine Japanese species. By hybridization and selection these wild nuts may be greatly improved and brought into cultivation. The wide extension of nut culture in all parts of the United States is also quite practicable by means of hybrids produced by the use of the hardy wild species. It is quite possible by this means to increase the nut resources of the country tenfold.

Various Nuts.—In Asia, South America, Australia and Africa are several genera of wild nut-bearing trees, each genus represented by several species. Some of these nuts have a finer flavor than any nut grown in the United States today, are hardy and if properly handled by modern methods would add greatly to the wealth of the United States.

FORAGE CROPS.

True Clovers.—(*Trifolium*). The true clovers are largely grown agriculturally, but thus far most of the acreage is devoted to four species—the red, the white, the Alsike and the crimson. The total yield of these four clovers for 1899, in the United States, was 5,167,188 tons, which at an average price of \$8 per ton gives a total valuation of over \$41,000,000. This takes no account of the great stores of nitrogen annually added to the soil of the 4,103,968 acres devoted to these crops.

In strong contrast to the great good derived from these four cultivated clovers in the United States during a single year is the fact that there are over 330 species of clover (*trifolium*) as yet wholly uncultivated, and growing unused in various parts of the world. Among these are more than 25 species indigenous to California, and over 75 species indigenous to North America.

Burr Clover.—(*Medicago*). Best known among these plants is alfalfa or Lucern, though the fat sheep of the arid hills of California owe their condition to one or more wild species of the same genus. The value of the alfalfa crop of the United States in 1899 was reported as somewhat greater than that of clover (\$41,000,000); still there are uncultivated over 100 species of these plants well deserving attention.

Millet.—(*Panicum*). These grasses, members of the old genus *Panicum*, to which the millets belong, produced \$17,000,000. This output arose from the cultivation of a very few species of that genus. On the other hand it is recognized as one of the largest and most important groups of grasses, containing from 975 to 1000 described species. This genus of grasses, if made a special subject of improvement, should yield to the agriculture of the country far more than the cost of main-

taining the entire wild plant improvement work in all its branches.

Blue Grass.—(Poa). We all realize the great value to the stock raiser of the blue grass of Kentucky, but few men realize that this genus of grasses is represented in the world by at least 377 described species adapted to all types of soil and climatic conditions. These grasses give us a broad and fertile field for the present line of work.

Eleusine.—The grasses belonging to this genus represent a staple food to hundreds of thousands of people in various portions of the world, yet thus far have not been properly introduced to the American public. Samples of grain of several species of this genus have been grown by the writer, and an analysis by Dr. Wiley shows over 86 per cent of carbohydrates in the kernel, placing the grain with rice in its nourishing qualities. The 32 species of this valuable grain have never been subjected to systematic improvement. It is believed that such work would result in giving to the United States a new grain worth many millions of dollars, and a true hay as a substitute for the barley hay of the Pacific Coast. The work of improvement has already been commenced at the Pacific Coast Laboratory, where several acres of these grasses were grown in 1905. The yield of Eleusine from a single stool is enormous, and both the hay and grain are valuable for horses and cattle, being preferred to many other kinds of fodder. The possibilities in this genus of grasses are large.

GRAINS, ETC.

Wheat.—(Triticum). The 658,534,252 bushels of wheat produced in 1899 within the United States was valued at \$369,945,320. While it is hardly probable that any new wheat will be developed from the 62 described species of triticum which could supplant our present forms, it is still among the possibilities to produce by hybridizing and selection among these many species such grains as shall fill numerous special needs to great advantage.

Oats.—(Avena). As many as 122 species of this genus are described, and while, as in the case of wheat, it may not be hoped to supplant our present grain it is not improbable that grains of much commercial value could be reared through the study and improvement of these many wild types.

Barley.—(Hordeum). Fifty-eight species of this genus are known and their collection and improvement is certainly desirable.

As with the named grains so with rye, buckwheat, rice, corn and other cereals, of which there are many unused forms.

Beans and Vetches.—As known today these crops belong to several important genera of legumes, as phaseolus, vicia, etc. In 1899 nearly 454,000 acres of beans were grown in the United States, producing a crop worth \$7,634,262. This income was derived through the cultivation of varieties belonging to but a few species of the named genera. However, the vast majority of the beans of the world are wholly unknown to agriculture. The genus phaseolus contains 164 described species of widely differing characteristics, while the genus vicia contains over 230 known forms, making a total for these two genera of beans and vetches of 400 or more species.

When we consider the great value of these plants not alone as food for man and feed for stock, but their great worth as soil enrichers, the wisdom of bringing together these hundreds of species for study and improvement will be self-evident. This work has never been attempted in a comprehensive manner, but if carried out by the United States it would add tens of millions of dollars annually to our wealth.

VEGETABLES.

Asparagus.—The United States devoted over 10,000 acres to asparagus in 1899, and the industry is one capable of large expansion. Our cultivated asparagus is descended from asparagus officinalis through a period of cultivation of more than 2000 years. There are 60 described species of this genus, many of which are ornamental and some of which are edible in the wild state and evidently capable of supplying us with new and valuable vegetable forms. The group is well worth special attention and careful work.

Celery.—All cultivated celery is developed from one species (apium graveolens), while 29 wild species of this plant is known. The celery growers of the country would gladly endorse the wisdom of bringing these together for hybridizing work, looking to greater resistance to disease, variety of flavor and other qualities possessed by the wild forms, to say nothing of the improvement of the latter.

Sweet Potatoes.—In the year 1899 over 537,000 acres of land were devoted to the growth of sweet potatoes

in the United States, the value of the crop being 19,876,200 dollars. Practically all of the sweet potatoes grown were of one species of plant, ipomoea batatas. While this resource of nearly \$20,000,000 to the United States was thus derived from the improvement of one species of ipomoea there are 766 described varieties of this genus of vines known to botanists, and several of them are known to possess edible tubers in the wild state. While it is probable that a great majority of this three-fourths of a thousand species of ipomoea would never produce edible tubers under improvement, many of them would do so, and an exceedingly large number would become vines of great ornamental value. Some of the most beautiful vines known are to be found in this genus.

Yams.—The true yams are but little grown in the United States. The yams belong to the genus dioscorea, of which there are 365 described varieties. Many of these yams are edible in the wild state and are well worthy of the use of all modern methods for their improvement. There is little question that millions of dollars could be added to the annual production of the country by the introduction, study and improvement of these numerous new sources of human and animal food. The yams are extensively used in most warm countries and some of the tubers are of immense size and contain a high percentage of starch.

FLOWERS.

Roses.—(Rosa). The sale of cut roses in the United States averages \$6,000,000 annually, to say nothing of nursery roses for grounds. This industry is based on the culture of many varieties of roses descended from a considerable number of species, still the very large number of wild species are but poorly represented thus far in cultivation. Kew recognizes over 400 described species of roses, and the study and development of this great number of distinct types could not fail to yield a great diversity of valuable forms for cultivation and a material increase in the financial output of the industry.

Lillies.—(Lilium). Lily culture in the United States represents an industry of considerable extent. This industry could, however, be easily doubled through a thorough study and the systematic improvement of one hundred described species of lilies now known to botanists, but many of which are practically unknown to the trade. The collection, crossing, selection, and general improvement of the wild lilies of the world would certainly prove a worthy and profitable line of investigation.

Violets.—(Viola). The cut flower violet industry of the United States amounts to over \$750,000 annually and is capable of great expansion. Scarcely more than half a dozen species of violets have come into the market or received special cultural attention. Contrasted with this it may be said that there are now recognized nearly 400 species of viola in the world, of all colors and shades of color. The field for wild plant improvement in this genus is very large and would prove richly remunerative in the giving of new phases to this branch of the floral industry.

New Flowers.—There are actually thousands of the most beautiful, attractive, and worthy wild flowers as yet untouched by the florist and only awaiting systematic and intelligent effort in collection, cultivation, and selection to give to our country many new important floral industries representing millions of income to the trade and wide refining influence upon the people.

TIMBER TREES.

While the forest flora of timber trees in the United States is extensive and exceedingly valuable, the world at large presents for the uses of man thousands of species of valuable and varied timbers as yet wholly or almost entirely unknown to carpentry and the wood constructive industries of our country. Thousands of these timber species could readily be introduced and established within the limits of the United States and its islands. While it might not be necessary to conduct improvement work among these trees, intelligent comparative study of varieties and well directed selective work would lead to the establishment of many new types of timber trees within our borders that should yield, in time, hundreds of millions of dollars worth of most valuable timbers for furniture, car work, and general wood finishing purposes. Mention of a few of these trees will be sufficient for our present purpose, though the list could be almost indefinitely extended. In India, South America and Africa, for instance, are hundreds of species of timber trees having great value for cabinet purposes, entirely unknown to the United States.

Oaks.—(Quercus). The great value of the oak timber of the country is generally known. The value of

the oak lumber manufactured in the United States in the year 1900 was over \$61,000,000, mostly from the output of the white oak trees of Indiana, Ohio, Pennsylvania, Kentucky, Tennessee and West Virginia. In spite of the great, permanent, and constantly increasing value of oak timber in manufactures, little if any effort has been made to study or introduce the foreign species of this excellent timber tree. There are known to botanists nearly or quite 400 species of oak, 47 of which are listed by Sargent for the United States. The bringing together of the 350 foreign species, as well as our indigenous forms, for study and selection as to their adaptations to specific lines of manufacture, tanning qualities, ornamental uses, etc., would naturally become an important branch of the wild plant work, and could not fail to yield valuable returns.

Maple.—(Acer). The value of the output of maple lumber for 1900 was \$7,495,052, more than half of this output coming from the great sugar maple forests of Michigan. The beauty and value of the curled and birds-eye maple of that State is well known. There are over 30 species of maple, all of which should be given careful study in this wild plant work.

Eucalypts.—(Eucalyptus). There have been described up to today some 251 species of Eucalyptus. While this genus of trees includes a large percentage of valuable species none are natives of the United States. The timber of some species of Eucalyptus has great enduring qualities and the wood of some forms is very ornamental; the rapidity of growth and the ability of certain species to withstand dry soils is remarkable; the value of eucalyptus oil is generally recognized in medicine; the fuel value of some species is of high order; their ornamental qualities and value as wind breaks is widely known. For the arid portions of the West there is probably no more valuable tree, and a broad study and selection of all known species is certainly to be desired.

Acacias.—(Acacia). The acacias of the world are very numerous, Kew giving the described species as 687. Most of these trees are natives of foreign countries. Many species are valuable for the high percentage of tannic acid contained in the bark and for the gums produced; others bear fruit of edible nature; while a large percentage of species are classed among the most ornamental of trees. It is believed that no systematic effort has ever been made to bring the species of this genus together in the United States, though many forms have been introduced at various times. An effort along this line would give us many species of value and would eventually add much to the resources of the country.

THE VINEYARD.

SELECTION AND PREPARATION OF VINE—CUTTINGS.

By Frederic T. Bioletti, in Circular 26, of the University of California Experiment Station.

One of the most important factors in determining the profitableness of a vineyard is the choice of the cuttings which are used to start the vineyard. This factor is very generally neglected, or when a choice is made it is often not the best.

Any one who will carefully examine the vines in a vineyard cannot help being struck with the great variation in the amount of crop on different individual vines. Sometimes this variation can be traced to difference in pruning, to accidental injuries, to more or less irrigation, or to variations in soil and position. There is, however, a good deal of variation which cannot be ascribed to any of these causes and which exists in every vineyard, no matter how uniform the conditions or how careful the cultivation.

This variation is something which is inherent in the vine and cannot be overcome by any cultural method. It is much greater in some varieties than in others. With some varieties it is so great that certain vines are recognized as almost sterile and are commonly called "mule" vines in California. With other varieties the variation is much less noticeable, but is none the less real, and by weighing the crop of each vine in a row it will be found, even with the most uniform producers, to exceed 50 per cent. If any vine in the vineyard bore as much as the vine with the heaviest crop the total production of the vineyard would be much increased. By grafting the poor bearers with cuttings from the best bearers the crop in a vineyard has been more than doubled. Vineyards of unselected Cabernet produce on the average about two tons to the acre. Cabernet vineyards from carefully selected cuttings have produced nine tons.

Owing to the great natural fertility of most of our Californian vineyards, due to favorable soil and climate,

these facts have not received the attention they deserve. In most parts of Europe, and even in South Africa, more care is taken in the selection of cuttings than here. In many vineyards the vines bearing the best crops are marked and cuttings taken only from these. In others only those cuttings are used which are made from bearing wood; that is, from canes which have borne grapes, as shown by the remains of the bunch stalks, or by the position of the cane on the vine.

It is perhaps not right to say that no choice is exercised in the selection of cuttings in California. There is inevitably some choice, though principally unconscious and generally harmful. The man who is making cuttings will, if he has no other standard, choose those canes which he can work up with the greatest ease. These are the long, unbranched canes from the most vigorous vines. Such canes are usually suckers or water-sprouts, the least fruitful on the vine, and the most vigorous vines are generally those which have produced the fewest grapes. Such selection as this cannot fail to be harmful, especially with the finer varieties, which vary more than the common, and must finally result in the deterioration of all varieties.

The ordinary European method of simply marking the vines which bear good crops the year the cuttings are taken is imperfect and can do no more than keep the varieties from deteriorating. By more careful selection, continued systematically for a series of years, it has been proved possible to greatly increase the bearing qualities of certain varieties. Other qualities besides that of more or less productiveness could undoubtedly be influenced by the same means. In this way numerous variations of the Pinot or Burgundy have arisen. These varieties differ from the type in color, acidity, time of ripening, and even in flavor. It would probably be possible to produce a loose bunched Tokay, a close bunched Zabalkanski, or a large fruited Sultanina in the same way.

There is no quality, however, which varies so much with individual vines as that of bearing, and there is no quality that is so quickly and easily influenced by cutting selection. It is this quality, therefore, which should receive most attention in choosing our cuttings. The selection of vines for cuttings is the work of the plant breeder and is too slow, difficult and uncertain for the practical grape grower. It is, moreover, at least in the case of wine grapes, unnecessary, for we can find almost any quality we want among the two or three thousand known varieties of wine grapes, but unfortunately not always combined with high productiveness. The most promising means of obtaining the *rara avis* we desire is to commence with a variety possessing the necessary flavor, color and chemical composition and by proper cutting selection to bring up its productiveness to the desired degree. It would be much easier to "grade up" the Cabernet until it bore crops equal to those of the Carignane than to attempt to improve greatly the flavor and color of Carignane by selection.

Method of Selection.—The first question to be settled is, of course, what variety should be chosen. This will depend on whether it is intended to raise table, raisin, or wine grapes, and if wine grapes, on the kind of wine desired, sweet or dry, red or white, and also on a multiplicity of local and market conditions. The question of variety is too large and complicated for treatment here and has already been given much attention in various publications of the Station. Only the question regarding the means of obtaining cuttings capable of growing into strong, heavy bearing vines will be considered here.

The Locality.—Any locality where the vine grows vigorously and ripens its wood regularly will produce good cuttings. As a rule the warmer localities produce the best wood, heavy, firm, and well nourished. The canes on vines grown very near the coast, as at Berkeley, are often soft and pithy. Certain varieties such as Refosco and Almeria do not ripen their wood well in the cooler parts even of Sonoma and Santa Cruz counties where they are exposed to frequent sea fogs during the summer. Being immature when the frosts cause the leaves to fall, the canes are easily attacked by saprophytic fungi. The work of these fungi is often seen in the blackened or mottled appearance of the canes. Any discoloration of the canes is a bad sign, whether it is caused by fungi which only attack imperfectly matured wood, or by parasitic fungi, such as oidium, which may occur anywhere. With the exception of a few isolated localities quite near the coast, it may be said that good, well ripened cuttings may be obtained from any of the vine-growing regions of California.

Vine Diseases.—An exception should perhaps be made to this statement as regards localities where the

so-called Anaheim disease is prevalent. Until we know more about that disease it is wiser to avoid obtaining our cuttings from such regions. That this disease can be transported and communicated by cuttings is perhaps not thoroughly demonstrated, but at all events the disease results in poor growth and poor wood, and cuttings from diseased vines cannot be expected to give the best results.

With regard to other diseases there need be no fear of their introduction into the vineyard by means of cuttings. Phylloxera can be guarded against by proper disinfection of the cuttings and all other vine diseases, which exist in California, are found in every district. This is not true as regards rooted cuttings. There is no sure and practicable method of destroying Phylloxera on the roots, and rooted vines should be introduced into a new district only with extreme caution.

While there need be no fear of introducing Oidium, vine-hoppers, etc., for they exist in every vine-growing region of California, no cuttings should be used which show distinct signs of their attacks, as such signs are proof that the vines from which the cuttings came were not perfectly healthy, and unhealthy vines do not produce the best cuttings.

The Vineyard.—As a rule it is best to obtain the cuttings in the district where they are to be planted, if the desired variety is grown there. The only exceptions to this rule are for districts where Anaheim, Oidium, or some other disease is so prevalent that it is difficult to find perfectly healthy vines.

The locality being decided on, it is not a matter of indifference what vineyard is chosen. Only a well kept, vigorous vineyard can produce the best cuttings. If the vineyard is badly cultivated, the vines mildewed, or the grapes of poor quality, it is a bad source for our cuttings. A vineyard which has healthy vines producing paying crops of good grapes is the best place to get them.

The Vines.—Given the locality and the vineyard from which vines in this vineyard shall we take our cuttings? This is the most important question of all and that which is most generally neglected. It is hardly necessary to say that no cuttings should be taken from vines which have never produced a good crop. Some vines exist in nearly every vineyard. A few growers mark such vines and avoid them when making cuttings. It would be better to graft them over or dig them out.

Instead of marking the poorest vines in order to avoid them, it is better to mark the best vines in order to choose them when making cuttings. When the crop is ripe and still on the vines the vineyard should be gone over carefully and a sufficient number of the best vines marked to supply the amount of cuttings needed. Only vines showing health, vigor and heavy crop of well-ripened grapes should be marked. A dab of paint on the stake or the stem of the vine is perhaps the most convenient way of marking.

While this will insure our cuttings coming only from vines which are capable of producing a satisfactory crop, it omits one very important factor—the regularity of bearing. Some vines bear good crop occasionally, or on alternate years. The ideal vine is one which bears a good crop every year. This vine we can find only by keeping a continuous record of its performance. This can be done to some extent by going over the vineyard every year just before the vintage and marking every vine which has a good crop. At the end of four or five years the vines which have borne a good crop every year will show four or five marks, and these are the vines most likely to yield cuttings capable of producing a vineyard of ideal vines.

To make this selection most effectively and quickly would require a special vineyard for the purpose. A vineyard of pedigreed vines of all our most desirable varieties would be a most valuable acquisition for the State. Such a vineyard might be started with cuttings selected in the way described, and each variety gradually brought up to its highest possible bearing capacity, by grafting all the vines of each variety with cuttings taken from the vine of that variety which had shown the best and most regular bearing qualities during a term of years. Twenty-five or thirty such vines of each variety would be sufficient to maintain and improve the productiveness of all the vineyards in the State if it were used to supply stock to nurserymen and other growers of vine cuttings. This would make it necessary to abandon many of the finest varieties of grapes, as has been done to a great extent lately.

Part of the Vine.—While any cutting from a good vine is probably better than the best cutting from a poor vine, it is not a matter of indifference from what part of the vine the cuttings are taken. It is a well established fact known to all skilled pruners that certain buds on a vine are much more likely to produce

fruit than others. These buds may be called, from analogy with similar bud on orchard trees, fruit buds. The fruit buds of vines, unlike those of most orchard trees, are not distinguishable by shape or size from wood or sterile buds. They can be recognized only by their position.

The buds on suckers (cones from below the ground) or water-sprouts (canes from the trunk or older parts of the arms) are usually unfruitful with most varieties. The only buds which can be depended on to give fruit are those on canes which have grown on wood of the previous year, or as pruners usually express it, "fruit spurs and fruit canes consist of one-year-old wood growing out of two-year-old wood." The canes of such wood are called by the grape-growers of South Africa "bearers," and no others are used for making cuttings.

Now, while the choice of this wood is perfectly safe, it has not been demonstrated that such choice is necessary. It may be that cuttings taken from heavy bearing vines will grow into other heavy bearing vines whether they have originally been water-sprouts of fruit wood. This seems probable, for in pruning vines it is constantly necessary to use water-sprouts to form spurs for the purpose of replacing lost arms or for shortening arms which have grown too long. Now, while these spurs bear little or no fruit the first year, they give rise to wood the following year, which satisfies the pruner's definition of fruit wood, viz., "one-year-old wood out of two-year-old wood," and which is apparently as fruitful as any wood on the vines. A sucker, or water-sprout from a fruitful vine, therefore, is to be preferred in making cuttings to a fruit cane from a vine which bears small crops.

All canes and all parts of the cane, however, are not equally suitable for cuttings. Very small, thin canes are apt to be ill-nourished and immature, as are also the tips of better canes. Many cuttings made from such material are apt to fail, or give weak vines. Very large, over-grown cuttings are also to be avoided. Many growers avoid using the two or three buds nearest the base of the cane on the ground that such buds are not fruit buds, but the same reasoning may be applied to this case as to that of water-sprouts. A medium sized cutting between three-eighths and five-eighths inches in diameter is most likely to give good results.

Form and Length of Cutting.—It was formerly considered good practice to leave a piece of old wood attached to the base of the cutting, on the ground that such cuttings always grew. This practice is now very generally abandoned, as it often gives rise to weak and diseased vines. The piece of old wood always decays finally, and the decay may spread into the trunk and roots of the vine. A good cutting should consist exclusively of one year old wood; that is, the wood which has grown during the current season.

The form and length of the cuttings will depend on the use that is to be made of them. If they are to be used as scions for grafting they may be cut up in any way and of any length that is found convenient for handling and keeping them in good condition. If they are to be used for rooting either in the nursery or the vineyard it is most convenient to cut them up into the exact lengths which are to be planted.

The length will depend altogether on the soil and climate where they are to be planted. They should be of such a length that when planted the base of the cutting will be at the level where the conditions are most favorable to root formation. If the base is too deep, it will be too wet and too cold to develop roots. Roots will start higher up and the bottom part will be wasted, or worse still, may decay and injure the vine. If the base is too near the surface the whole cutting may dry out and die before its roots have developed sufficiently to supply it with water.

In the moister soils of the cooler districts a cutting 10 inches long is sufficient for direct planting in the vineyard. In the drier and warmer interior a 14 to 16-inch cutting is better, while in the driest soils of the warmer districts it is often necessary to have a cutting 18 to 20 inches long. For planting in the nursery a 12 or 14-inch cutting is about the most convenient. If the soil of the nursery is wet and cold more of the cutting should be left above ground; if, on the contrary, the soil tends to be hot and dry the cutting must be planted deeper and even covered up completely.

It is not necessary, or possible, to make every cutting of exactly the same length, because they should all terminate at each end at a node. A vine cane consists of nodes where the buds are and internodes between the buds. The pith is interrupted at each node by a woody partition which extends through the cane at each bud. In making the cutting, therefore, we should cut exactly through a bud both at the top and at the bottom. This will leave the woody partitions,

which will prevent decay at the bottom and drying out at the top.

Conservation of Cuttings.—In some cases vine cuttings may be planted with success as soon as they are made. This can be done only in light, well-drained soils where there is no danger of the ground becoming water-logged and remaining in this condition for some time. Except in such cases it is better to defer the planting of the cuttings until most of the winter rains are over and the soil commence to warm up in the spring.

To preserve the cuttings in good condition until this time they must be kept from drying out or being injured by too much moisture. If they are buried in sand or loose soil in such a way that at least the butts are in contact with the soil they will keep until April. The sand should be comparatively dry and well sifted in to the centers of the bundles of cuttings. These bundles should be small and if they are to remain in the sand for more than two weeks they should be loosely tied, or better still, not tied at all, but simply buried in thin layers. Unless the sand is in contact with the cuttings nearly everywhere, many will dry out and die if the sand is dry, or they will mold and decay if the sand is moist.

A good place to bury the cuttings is a shed or cellar or on the north side of a building. If such a place is unobtainable they may be put in a hole at least as deep as the cuttings and covered up well with soil. Over this soil should be placed a thick bed of straw, or other material, to prevent the soil drying or becoming too warm. This last precaution is particularly necessary if the planting is to be delayed until late spring, for otherwise the buds and roots may start. Cuttings which have started slightly before being planted will often grow, but they do not make the best growth.

Above all, the cuttings must be protected from too much moisture. A cutting injured by being kept too wet is useless, while one kept a little too dry will give good plants if soaked in water a day or two before being planted.

THE FIELD.

THE DESTRUCTION OF VERMIN.

To the Editor: The fall and early winter in most sections of California, is a peculiarly favorable time to tackle many of the pests in feathers and fur that help to make life strenuous for those living outside of city limits, and this whether early rains have fallen or are holding off. Every man has his own methods, and the Pacific Rural Press from time to time publishes much of service on this head. The problem still remains, however, second only in importance to that of disease in the horticultural world. Personally, the writer has read and marked since the middle '80's a large proportion of the data published on the subject, but has perhaps learned quite as much from the native small boy and the beneficent gopher-snake. It is hard to gain much from experience alone in this matter for one's mistakes bring up against a baffling blank wall until a hint is obtained from outside sources.

Squirrels are now ravenously hungry (unless they have found lodgment in the hay-barn) and may be depended on to eat poisoned grain in place of refusing or merely storing it as it appears to be their habit when natural food is plentiful. The whole crux of this matter, so far as individual experience extends, seems to have lain in the strength and activity of the poison used. Looking at the size of the strychnine bottle purchasable at the drug store for two-bits and the can of prepared wheat obtainable for a like sum, the mental arithmetic required to figure out the proportion of poison each grain is likely to bear is of an elementary character when a 25 per cent profit is allowed for the manufacturer and 10 per cent for the store. In those counties at least where poison is obtained gratis, the poisoned grain should be prepared at home according to any of the numerous formulas published in this paper or in bulletins distributed by the Government's Department of Agriculture—but be liberal with the strychnine. Bear in mind that a mere trace, just sufficient to be a wholesome tonic, is quite as bitter as a fatal dose; you've got to kill with one grain or lose all chance of getting rid of that particular animal once it gets a taste. The bisulphide process is favored by many after rain has made the soil air-tight. Apart from machines for its administration of which I have no personal knowledge, the method commonly advocated is to put a piece of saturated rag in each burrow, and then fill the entrance, packing it air-tight, treating and closing all adjacent holes as quickly as may be practicable. So far as the writer has been able to discover, this process makes the squirrels quite ill for a while. After the passage of two or three days, however, they all come

up and dig their way out for a change of air, while the operator is liable to be sick for a week through inhaling fumes while fixing the rags. A quarter of a teaspoonful of properly prepared grain placed well in each burrow—old and new—early in the morning for two or three consecutive days, will be found to beat Chinese methods of warfare hollow. Do not neglect the old holes, for the writer has repeatedly observed wily patriachs leave their own poison untouched and finally succumb to a dose placed for the good of the cause in an abandoned digging. If squirrels are in the barn, a good rifle and a good man or boy behind the rifle appear to be the only remedy. If a poor shot tries his hand, the squirrels are likely to remain and increase around the hay-barn indefinitely, having become so foxy no expert can get a chance to draw a bead upon them. A good full-grown cat is also a help; a poor or young one, like a poor marksman, worse than useless.

No words of condemnation are too strong for those native-born who through a mixture of foolish cowardice and crass ignorance club to death the harmless and necessary gopher-snake every time they get half a chance. Yet this happens in southern California every day all through the summer, when the outrage cannot well be laid to the door of tourists. Of course, the tenderfoot does his share, and notices should be posted on country roads to restrain this cheap form of Bostonian heroism under penalty of a stiff fine upon conviction. There is no trap, most competent observers will probably agree, nor poison nor other destructive agent as efficient in clearing packed ground of wary gophers, when digging is well nigh impracticable, as an adult snake. The gopher that has been once scratched by the teeth of a trap can scarce be gotten rid of in any other way. By the unafraid, the gopher-snake is easily handled by grasping back of the neck, but where this is out of the question, it is only necessary to herd the reptile within a quarter of an acre of the right spot and leave it to its own devices; it will get there and the gopher before sundown.

The use of gopher traps, while requiring some knowledge and skill, has had much unnecessary mystery and a number of absurd superstitions thrown around it. The notion that a gopher's sense of smell will lead it to avoid a trap touched by the bare hand is sheer nonsense; the idea that one must dig until the main thoroughfare or burrow is reached, is ditto; the covering up of the trap to exclude the light is waste of time and foolishness. Yet there are certain precautions to be observed, and observed closely, or success will be very intermittent. There are three traps in particular which are (or should be) constantly advertised in the columns of the Pacific Rural Press, and because they are of different size all three should be available, for one of the main secrets is to have the trap fit the bore of the burrow accurately. An old chisel is an excellent tool for shaping the bore once an unobstructed tunnel is reached; that much digging is, of course, necessary (unless the gopher is actually feeding) and a strong garden trowel is a handy implement for this purpose. Keep the teeth of all traps sharp with a file. The next main point to bear in mind is to hollow out the burrow so as to admit of complete insertion of the trap; 75 per cent of gophers that have been caught and gotten away owe their liberty to neglect of this precaution; they get caught beneath the chin with one paw included, which gives them leverage, enabling them to work loose, never to be caught again. Let them get their bodies well forward into any trap on the market, and however blunt the teeth, the rodent's sphere of earthly cussedness is at an end. Last, but quite the reverse of least, for this applies to all forms of traps and trapping, set on a hair-trigger, so that if you even look cross-eyed at the lever it will spring. The theory upon which gopher-traps appear usually to be set is, that the animal will ram its nose against an iron upright, and this will never be borne out by capture. Now, place a few blades of grass or soft parts of weeds or other green stuff within the trap when in position and around the entrance to the hole, leaving the mouth otherwise uncovered. With these directions intelligently followed any of the traps are "sure-pop" every time.

As for feathered pests, one hesitates to write frankly in a public print upon the best methods of destruction. Each orchardist must hoe this row "on his own" and keep his mouth shut; otherwise he will be apt to find individuals in his immediate vicinity exhibit a surprising fund of sickly sentiment on this subject, while their willingness to gobble all the fruit or berries the linnets leave, if presented gratis, remains quite unimpaired.

214 Leavenworth street, San Francisco.

ALAN OWEN.

FRUIT PRESERVATION.

SULPHURING FRUIT.

The following are the essential parts of the brief in respect to sulphuring fruit presented in behalf of California fruit packers, to the commission appointed to formulate regulations under the new pure food law:

First—The fumes of the sulphur are used upon the fresh fruit before it is spread for drying.

Second—The fruit after being subjected to sulphur fumes remains in a single layer in the open air from six to twelve days, subject to the sun's rays and heat.

Third—An average of at least five-sixths of every pound of fruit dried is evaporated, taking with it its proportion or sulphur combinations.

Fourth—The amount of sulphur combinations left with the dried fruit in the form of sulphites is acknowledged to be harmless, and, if anything, a preservative.

Fifth—It is only the free sulphurous acid that is left in the fruit uncombined that can be assumed to produce injury. And this amount is extremely small.

Sixth—In cooking or preparing the fruit for table use, the dried fruits that are bleached, the consumer adds water to about the same extent that was evaporated in drying, viz., at least five pounds of water to one pound of fruit, also sugar to taste. This again reduces the percentage.

Seventh—The free acid remaining in the fruit after drying combines chemically in some extent with the water and sugar, producing sulphites, which are admittedly harmless.

Eighth—The heat in cooking, with the chemical combinations above named, undoubtedly reduce the percentage still further.

Ninth—Taking the above into consideration, the amount of free sulphurous acid remaining at the time the fruit is prepared for eating is so infinitesimally small as to place it beyond the pale of injury.

Tenth—If these statements are true, and the reasoning consistent with the facts herein set forth, no fair regulation adopted will materially interfere with the present methods as now understood and practiced by the California growers and packers.

Eleventh—That 250-1000 per cent of sulphurous acid would, in our opinion, be a safe maximum limit to place on dried fruits as a full protection to the health of the consumer, and that any regulation fixing the maximum standard lower than that amount would necessitate a modification in processing that would seriously endanger the keeping value of vast quantities, to say nothing of crippling, if not destroying, our great industry.

CALIFORNIA.

Following is an extract from the address of Clarence E. Edwards, chief of publicity of the California Promotion Committee, delivered before the National Irrigation Congress, at Boise, Idaho:

"There is room in California for all those millions now seeking a more congenial clime, where they may make their homes and end their days amid the most favorable surroundings. Fifty millions of her hundred million acres of land are ready for the husbandman, and by grace of irrigation many more millions will be redeemed from the pseudo desert.

"It may be said that much has been done in California in the way of land redemption, but students of irrigation will tell you that the industry is but in its infancy in that State. The world has heard of the wonderful changes wrought in the territory lying south of the Tehachapi mountains by the scientific conservation and application of flood waters of torrential streams to parched and semi-arid lands, but that is only a small part of the great State of California destined eventually to receive the benefit from irrigation. The magnificent interior basin, five hundred miles long and fifty wide, where once rolled the waters of an inland sea, and where now lies the most fertile valley in all the world, is being redeemed from sheep and cattle pasture and rapidly converted into an area of small farms, where intensive systems bring forth products an hundred fold the value of those of early days.

"The great Sacramento and San Joaquin valleys, watered by magnificent rivers fed from the eternal snows of the Sierras, are now in a transition stage, and even under private and individual development are making such progress as astounds the world. This being true, what may we expect when the hundreds of millions of the national government are added to the mites of individual developers?

"California is an opening bud in the beautiful national bouquet of roses, and as she expands under benign skies, with her soil quickened to life under scientific showers, she will blossom forth, complete in her radiant glory.

"Nor is California alone in her need. There is such a community of interest between the Pacific coast States that a single motto should be adopted by the entire section: 'One for all; all for one.' Irrigation is the great subject which now occupies the minds of all in this western country, but there are other interests as vital to its welfare. As it is with irrigation, so it is with all these interests of that vast territory facing the summer sea which trembles under the western sun. It is not a new idea that is now advanced, for three years ago, Rufus P. Jennings, chairman of the California Promotion Committee, saw the vast benefit accruing to California through such combination of forces of the various counties of the State, and he conceived the idea of combining the six Pacific coast states together with the territory of Arizona, into a harmonious whole, with one predominant idea—the upbuilding of the grandest empire on the face of the globe. To this end these commonwealths are now being interested and eventually there will be such a combination of forces through its consummation, that a power irresistible will be wielded in all matters commercial, financial and legislative; the voices of the United Pacific States will be heard and heeded in the halls of the national congress."

THE MARKETS

Wheat.

The wheat market, although a little firmer toward the first of the week, has now eased off again and there is very little doing locally. The situation is much the same throughout the State and there are no indications that point to any considerable changes in the immediate future. Dealers here estimate that from one-half to one-third of the crop is still in the hands of the growers and the general idea is that the grain now held is in such strong hands that it can be held indefinitely. The situation, taking the world over, looks a little better as the year draws to a close and it looks as though the holders stand a good chance of getting better prices later on. The Russian crop has turned out poor and late information from that country shows that the crop is the worst in many years. The quality of the Russian wheat is also far below standard and European millers will have to import an unusual quantity of good grade wheat. Exporting from the Coast is now quite brisk, though as has been anticipated all along, California is taking but a small share in this trade as she has but little more than will be required for her own use before the next crop comes in. Two or three small shipments left this port for the United Kingdom this week but the lots taken were really taken rather as stiffening than because there was any profit in them at the present prices of wheat at this point. Large cargoes are, however, leaving both Puget Sound and the Columbia river for Europe and one cargo has been cleared for Hongkong.

Flour.

Flour, like wheat, has changed but little but that little has been for the better. The local demand is a little better and receipts are coming in more freely until they are beginning to approach those of former years. Arrivals will naturally be limited to about the daily consumption as there are no storage facilities to care for a surplus and the latter will have to be kept at other points this year. According to the indications, the flour consumption here during the winter will not fall far short of those of former seasons. Most of the flour now coming in is from California points as the northern millers are now quite busy with the Oriental trade, present and prospective.

Barley.

Barley has shown a firmer tone all this week and it was firmer at the close than it was at the beginning. The better prices offered have been sufficient to bring in a good deal from the interior and receipts are now heavier than for some time. Exporters are buying quite freely and some large shipments are leaving this port for foreign lands. Aside from the demand for export, there is a good demand for local purposes. The city demand is almost entirely for feed barley for rolling purposes while the interior is quite a free buyer of good seed barley. Brewing barley is firm, though the demand is limited as far as the city is concerned, owing to the recent destruction of the local breweries.

Oats.

There has been some little buying of oats lately, although the market has not been materially changed by the improved demand. Black oats have, however, advanced somewhat and are now bringing as high as 2 cents or a fraction more in some cases. Good quality oats are scarce and the differential in favor of the best

as compared with ordinary grades is greater than it otherwise would be. Red oats have an especially wide range of prices. The following are about the average quotations: Red, \$1.15 to \$1.65; white, \$1.50; gray, firm at \$1.27½; and black, \$2.

Millstuffs.

There is a fair demand for millfeeds in this city and the prices are firm for nearly all varieties. The greatest demand is for crushed barley, though the requirements for bran, shorts and middlings are very large. Good bran is bringing from \$18.50 to \$19 per ton, while shorts are quoted at about \$1 above this mark. Middlings are worth from \$26.50 to \$27.50. The general opinion is that the feedstuffs market will at least hold its own as the supply in this State is not above the average.

Hops.

Although very little is doing locally in hops, there is some little activity in the hop growing districts. The crops in most sections of California being much above the average, in both quantity and quality, there has been much talk of large exportations. Foreign hops are reported far below the average in quantity and fancy prices are reported to have been offered in England. In California very little has so far sold for more than 14 cents, though a good deal is still being held for 15 cents. The general run of desirable grades of California hops are quoted here at from 12 to 15 cents, though there have been a few transactions at 16 cents.

Corn.

Although the movement of corn has been slow in San Francisco for some time, enough has changed hands to establish fairly definite prices and at these the market is quite steady. Small round yellow is selling at \$1.20 to \$1.55; Western mixed at \$1.22½ to \$1.25, and large yellow at \$1.27.

Wool.

The wool market is comparatively dull, though a number of sales have been made both in Yuba county and at Red Bluff. Few growers are willing to sell at present prices and are apparently determined to hold off indefinitely, or until buyers come to their terms. This has limited transactions materially. In fact, at several of the sales set for October so little wool was disposed of that later dates have now been set.

Hay.

Arrivals for the week amounted to 4427 tons, this being more than for several weeks. Of these, however, a large part was for the Government for shipment and will not affect the local market. The extreme difficulty in getting in sufficient stocks is keeping the market very strong and choice hay is jumped at by buyers and taken at prices which are out of proportion to the rest of the market. Anything in the line of poor or cheap hay is meeting with a poor demand. There is apparently no change in the transportation question. The railroad is still unable to furnish cars in anything like the number needed and thousands of tons of hay are still waiting at the railroad sidings. The statement of the visible hay supply made out by the San Francisco Hay Association will soon be completed and ready for publication.

Poultry.

Except for the continued good demand for large fat young stock, the situation here is very uninteresting. The Thanksgiving season is now beginning to make itself felt and arrivals of turkeys are increasing quite noticeably. These, when in good condition, have sold readily at from 18 to 21 cents for spring and from 22 to 25 cents for dressed. Pigeons are coming in more freely but the market is not overstocked.

Butter.

Butter was off a little during the early part of the week, but it came up again at the close. The supply continues small and there are no indications of a bettering of conditions. The best grades are selling at from 29½ to 30½ cents, with not much to be had at these figures.

Cheese.

The supply of good cheese is still very scarce and the price has been further advanced this week. The best is selling at 15 cents and some few sales have been made at something above that price. Poorer grades are about as before.

Eggs.

Eggs are becoming scarcer every day and the best are now selling regularly at 51 cents, with some sales made right along at still higher prices. The supply of good ranch eggs is so far behind the demand that dealers are utterly unable to supply their customers, even at the present prices. Cold storage eggs are be-

ing drawn on to a considerable extent. Prices for these are about as heretofore.

Bags and Bagging.

This is a very quiet time in the bag market as compared with a month or two ago. No special demand exists for any particular line, but the situation continues fairly firm and prices are unchanged.

Beans.

The important thing in the bean market is the stiff advance in the price of Limas. About one-half of the crop appears to have been bought up by some big operator and as a result the price has suddenly jumped about ¾ cent. Buying is steady at the new price and the trade is assuming a fair volume. Blackeyes are also steady and are firmly held at from \$4.50 to \$4.75 per hundred. The market is unchanged for whites, pinks and bayos.

Seeds.

The condition of the seed market is, on the whole, satisfactory. The shortage in the available supply of onion seed is a serious matter, but aside from this the supply is about ample for requirements and in the case of radish seed is more than ample. Some good sized shipments of the latter have been sent to the Orient.

Potatoes.

Salinas potatoes continue to advance as the supply is proving even shorter than previous anticipations. Good Salinas are now firmly held at \$1.95 and not many sales are made at that figure. Rivers are more plentiful and are selling in considerable quantities at from 75 cents to \$1.10.

Vegetables.

Onions are plentiful and the market is uninteresting, though there is a good volume of business at prices ranging from 65 to 85 cents. A good many lines of summer vegetables have now run out and dealers are confined to a narrower range. Cucumbers are getting scarcer and are bringing \$1.25 per box. Green peppers are still plentiful at \$1 per box. Tomatoes continue plentiful at 75 cents per box but it is expected that these will be cut off at any time by frost.

Fresh Fruits.

The fresh fruit market is now running short on many lines and only a few are in regular supply. Apples are occupying the prominent position and the best are readily bringing \$1 per box. Some inferior apples are on hand, however, and are selling as low as 40 cents. Pears are now almost gone and those arriving are bringing enormous prices. Some were sold this week at \$2.75 per box. Grapes are still in good supply and are bringing from 75 cents to \$1 for white and from \$1 to \$1.25 for black.

Dried Fruits.

Dried fruits are coming in a little more freely, but there has been no material change in the situation. Peaches and pears are particularly firm. Prunes are probably about the weakest point in the market, but even these are quite steady.

Citrus Fruits.

The supply of citrus fruits is anything but plentiful but there have been no noticeable changes in values. Valencia oranges are bringing from \$3.50 to \$4.50 per box and the few new oranges coming in from northern California are selling from \$3 to \$4 per box. Grape fruit has a wide range from \$3 to \$5. Lemons are a trifle weaker as compared with last week and are now bringing \$5 per box.

Nuts.

There have been no notable arrivals of nuts and no sales from first hands recently. The business done is at best but little more than a retail business.

Raisins.

The raisin market is very strong and the top price is hard to fix. Six cents in the sweatbox is being talked at Fresno. The new crop has come into a virtually bare market and the situation both East and West is stronger than it has been before in years. A short foreign crop is also a factor in the situation. The Salinas potatoes continue to advance as the supply estimated that upward of one-half of the new crop has been sold and the opinion prevails that the remainder will not go out of the growers' hands for less than 5½ cents. The good drying weather and the abundance of the second crop has led to the extensive drying of the latter and good results are reported.

THE DAIRY.

TULARE GRANGE MEETING.

Tulare Grange held its regular session at its hall on Saturday, the 20th. There was a good attendance and an excellent lunch, and though the hall might have held more members the dining table had all that could find room.

Some members who had taken the first and second degrees being present and others who have taken the same degrees being unavoidably absent, the first Saturday of November was set for conferring the third and fourth degrees.

Brothers Thomas Jacob and E. C. Shoemaker, who had attended the State Grange session at Santa Rosa, and were present at all its proceedings, were called on to give an account of the same. The attendance was good, the proceedings were above an average in importance, many of the subjects were of much importance to the whole community as well as to the Grange. The subject of Good Roads was well discussed and resolutions passed recommending National, State, county and district good roads.

The proposed revision of the State revenue laws was discussed and a summary of the preliminary report of the State Revenue Commission was read. The revenue system, by which the State will get its revenue from license and tax on incorporation and on inheritance tax, met with unanimous approval and a resolution was passed requesting the support of the executive and the Legislature therefor. A just system of taxation in California, requires this change.

The Torrens system of land titles was highly recommended. The present system of proving land titles, by costly and voluminous abstracts, is a fraud and a hold-up on sellers and buyers of land. Lands in California have been, and are still, held in large bodies, as the influx of settlers comes, lands are being subdivided into small bodies of ten or more acres; that the owner of every ten acres of land should have to furnish an abstract of title reaching back to original ownership of Spanish grant is oppressive and legal robbery. The Legislature should see to the enforcement of the Torrens system of land titles.

The report of the committee on education, Sister Emory, chairman, was exceptionally fine and received commendations of approval from the State Superintendent of Education, and from the County Superintendent of Schools of Sonoma County.

Brother Thomas Jacob was re-elected a member of the executive committee.

The subject of the day, "What are Postal Savings Banks, and in What Way Will They Promote the Individual and the Public Good?" was opened by Sister Morris, who read a thoughtful paper thereon, which is herewith submitted. The subject of postal savings banks has been approved and advocated by the Na-

tional Grange, P. of H., The consideration of the subject was very generally participated in by all members present. It was agreed that no system of savings banks can give the sense of security that a governmental postal savings bank can. That corporate savings banks are too often failures and the best of them are liable to panics and runs, that at best they are but make-shifts. That a Government system of savings banks will give such a sense of security as will give a greater impulse to thrift, economy, and saving; it will bring every depositor in closer touch with his government, and thereby give him more patriotism and tend to lead the public mind from socialism of communism.

Brother Barber told of postal savings in England and New Zealand and the excellent results in both countries. Every instance of governmental savings banks but the more strongly illustrates their advantages and their superiority, that they are of right and should be a governmental function and that the government will be made stronger and the depositor more patriotic and thrifty thereby.

The debate was closed by the passage of the following resolution:

Resolved, by Tulare Grange No. 198, P. of H., of California. The establishment and maintenance of savings banks can be had in their greatest efficiency by the government and for that reason are a proper governmental function.

Resolved, That the secretary of the Grange send copies of this resolution to each Senator and member of the House of Representatives from California in Congress, requesting their aid, in Congress, in the establishment and promotion of postal savings banks.

Resolved, That the executive committee of the State Grange of California send copies of these resolutions to every subordinate Grange in the State recommending that each one send a copy of the foregoing resolutions to their Representative in Congress and ask him his support thereto.

In the matter of county corporate insurance it was resolved to prepare and send another application to the State Insurance Commissioner.

The proposed constitutional amendments, to be voted for at the next election, were read. It was agreed that conditions may require a few of them, that the rest are of dubious efficiency and the amendment proposing to exempt mortgages from taxation is absolutely pernicious and unjust. It is advocated, only, by the money lender, for his own benefit, to enable a class of property that has an assured income to put its share of the burden of taxation on some other person who already pays taxes on all he is worth. It is well known the net earnings of prosperity of the State has not exceeded 3 per cent per annum, and if loaners will agree to loan at that rate of interest, they would have

a claim of right to exemption, but to say they will loan at a lower rate than they now do if their security is exempt is too vague and means they will get all the interest the necessity of the borrower will enable them to get. It is not just or right to exempt from taxation property having fixed, safe, and ample income and charge that much more to property bringing an uncertain and precarious income.

It was suggested that the community does not understand these subjects as Tulare Grange does and so does not give the subjects the support they deserve, but it was replied Tulare Grange stands for right and arrives at its conclusions after careful, impartial consideration. It stands for right and justice and it has the courage of its convictions.

Tulare, Cal.

J. T.

HOLSTEIN-FRIESIAN SALES.

Mr. F. L. Houghton, Brattleboro, Vt., Secretary of the Holstein-Friesian Association, sends us the following transfers of cattle in California:

Cows.

Clothilde Dusty 2d, S. G. Brown to J. C. Thorn, Porterville.

Clothilde Dusty Nudine, S. G. Brown to J. C. Thorn, Porterville.

Leda Hartog Gerben 2d, J. H. Williams to C. T. Brown & Son, Porterville.

Clorida Lime, Kaastra Clothilde, Meg o' the Mist 2d, R. M. Hotaling to Chas. J. Welch, Los Banos.

Marie of Riverside, Chas. D. Pierce to E. B. Wilson, Los Angeles.

Soutag De Kol, M. D. E. Sherman to J. L. Kinnear, Newman.

Bulls.

Captain Julip Zampa, R.M. Hotaling to R. F. Guerin, Tulare.

Chief Pietertje Clothilde, J. F. Rouch to P. Bondson, Hanford.

Sir Setske Belle Josephine, J. H. Williams to H. E. Ford, Porterville.

Duke Nichols Paul De Kol, C. J. Welch to E. A. Scharnhorst, Los Banos.

Willemette King, R. F. Guerin to B. Harrison, Tulare.

SHORTHORN SALE.

John Lynch, of Petaluma, shipped last week, by express, a young registered Shorthorn to the "California Polytechnic School", at San Luis Obispo, Cal.

HOUSEHOLD HINTS

A slate with pencil attached by a string should hang in every kitchen, to aid the memory of a housewife.

An ordinary headache may generally be cured by applying water as hot as it can be borne to the feet and back of the neck.

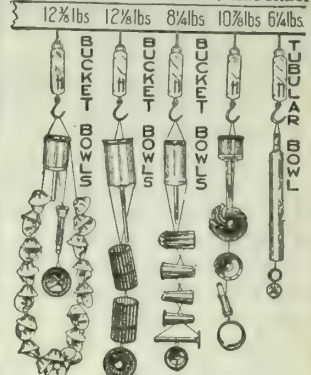
Discolored saucepans of enamel can often be made to look like new by boiling a little chloride of lime in the water with which they are filled.

Many are the uses of soda in the household. Add a small pinch to very acid fruit, such as gooseberries, rhubarb and plums, and less sugar is required, says a writer in the Wisconsin Agriculturist. Add a little to the water in which vegetables are cooked and they will be much more sweet and tender, and a little to meat, especially if it has a suspicion of taint. It is fine for the bath, and a

OF VALUE TO HORSEMEN.—Do you turn your horses out for the winter? If so, we want to call your attention to a very important matter. Horses which have been used steadily at work, either on the farm or road, have quite likely had some strains whereby lameness or enlargements have been caused. Or perhaps new life is needed to be infused into their legs. Gombault's Caustic Balsam, applied as per directions, just as you are turning the horse out, will be of great benefit; and this is the time when it can be used very successfully. One great advantage in using this remedy is that after it is applied it needs no care or attention, but does its work well and at a time when the horse is having a rest. Of course it can be used with equal success while horses are in the stable, but many people in turning their horses out would use Caustic Balsam if they were reminded of it, and this article is given as a reminder.

Saves Hours of Cleaning

Of course your wife would try to wash even the worst cream separator bowl properly twice every day. But why ask her to slave over a heavy, complicated "bucket bowl," like either



of the four on the left? Why not save her hours of cleaning every week by getting a Sharples Dairy Tubular Cream Separator with a simple, light, Tubular bowl, easily cleaned in 3 minutes, like that on the right? It holds the world's record for clean skimming.

Sharples Tubular Cream Separators are different—very different—from all others. Every difference is to your advantage. Write for catalog M-131, and valuable free book "Business Dairying."

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good dentrifice, and a little in the dish-water makes the use of soap unnecessary.

Too much washing of the painted woodwork in the kitchen gives it a dull, shabby look. If it is wiped off with a cloth moistened in kerosene oil it will not only be clean but will look new and glossy.

Never scrape a burned baking dish. Put in a little ashes and fill with water and the burnt substance will easily wash off.

Raisins washed in hot water will seed much more easily, and candied lemon and orange peel should always be warmed in the oven before it is cut up.

Strain the cold tea and keep it to wash the varnished furniture. It does not injure the polished surface and gives it a fine gloss. Go over the oiled floors with boiled oil and vinegar in proportions of one part of oil to two parts of vinegar.

Your windows will never be clear if you wash them in soapy water and let them dry with the sun shining on them. Wash windows on a cloudy day, dry with a soft cloth and polish with tissue paper.

Macbeth's Index to Burns and Lamps is important; it tells what chimney to use on every burner and lamp in use, to get good light and avoid any smell or smoke.

It is important, besides, as a good example of showing how to make one's business as useful as possible to one's customers.



Great Horse Remedy.

The legs and feet need watching and care. Ready for treating the common ailments saves many a valuable animal. Begin in time and Kendall's Spavin Cure is a positive, permanent cure for 90% of all cases of Spavin, Ringbone, Splint, Curb or Lameness. Keep it on the shelf.

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HOME CIRCLE

WHEN EVENING BRINGS US HOME.

When twilight shadows softly fall
Across the fading light,
And vesper bells in music call
The heralds of the night—
O hour that breathes of peace and rest
To those who sadly roam,
Hour that is the dearest, sweetest, best,
When evening brings us home!

Forgot the trials of the day,
The toil, the grief, the care—
All seem to fade at sunset ray,
The world grows bright and fair;
And yet the shadow deeper falls,
And weary wanderers roam;
But through the gloom a loved voice
calls,
When evening brings us home.

And lagging feet quick onward press
To meet those at the door,
Where love in answering caress
Waits loyal evermore.
Most blessed hour of all the day
To those who toil and roam!
Love is the star that lights our way
When evening brings us home.

And if it be that no one waits
In earthly homes to greet,
There is a home beyond the gates
Where all who love shall meet;
So may we say in truth alway
To those who sadly roam;
Each heart will find its own some day,
When evening brings us home.

THE PUMPKIN LADY.

A Thanksgiving Story.

By MAY C. RINGWALT.

The fields lay white with their November harvest of snow. The storm had spent itself in the night, but now and then a flake fluttered down, as if some thoughtful angel were scattering crumbs to the hungry sparrows.

"Peter Pumpkin Eater had a sweet heart, but couldn't keep her; Put her in a pumpkin shell and there he kept her very well."

sang Griffith as he stood on the sidewalk in front of the Homeville drug store and dropped pungent lavender packages into the fur-gloved hand stretched out from the cutter at the curb. "You, Steve, of all people," he teased, "to drive 'round with a contraband woman hid in—"

"Quit your nonsense!" interrupted Stephen, playfully threatening him with his whip, then turning to smile down at the enormous golden pumpkin on the seat beside him.

There was a comical self-complacency about it, as if it realized the importance of being the biggest pumpkin in the county, yet with this personal vanity mingled a bland benevolence of countenance, a good-natured acceptance of a

noble pumpkin destiny, a fragrant, luscious coronation of countless pies for the little orphans' Thanksgiving dinner on the following day. For the small town of Homeville, with its one short, cluttered business street and straggling avenues of houses, was the center of a large farming district, and the warm-hearted people of the scattered farms made it their sweet habit on Thanksgiving eve to give a donation party in the little town for the benefit of their county orphan asylum.

Stephen's whip flicked the pumpkin's golden cheek. "Mother wanted folks to see how big it is, or I believe she'd have made it up into pies for the orphans herself. She's that pert, in spite of all her ailments."

"What are you bringing it to town this morning for?" asked Griffith. "It spoils the fun to have the things sent in ahead. The exciting part's to watch the door and see what's coming next. Well, you'll have to tote your pumpkin in the grand march anyhow."

Stephen flapped the reins upon the mare's back. "I'm not coming in."

"Not coming in!" exclaimed Griffith. "Why, last year you were cock of the walk, and—"

"And last year isn't this." There was a snap of finality in the quick, firm way that Stephen's jaws closed. Again the reins flapped. The reluctant mare strained forward; the old cutter sympathetically creaked. "So long, Griff," called back Stephen's voice above the spluttering slush.

"Ta-ta!" Better change your mind about tonight—Peter." With head at the appropriate angle of youth that prides itself on having had the last word of an argument and a joke, Griffith jumped backward up three low steps and disappeared into the drug store, while Stephen drove to the church and escorted the pumpkin to its enthusiastic reception by the committee on arrangements in the Sunday-school rooms.

"I don't mean to shirk, Molly," said Stephen stroking the old mare's nose, as he unhitched her, "but as long as the kiddies get the pumpkin, my presence doesn't signify, and I couldn't go—this year anyhow." With a sigh, he got into the cutter. "Home, old girl."

The cutter swung 'round the corner away from the business street, past the post office and the Grand Hotel. Approaching the railroad crossing the mare's eager trot was checked while Stephen glanced at his watch. It was later than he supposed. The express from the city must have passed while he was talking with Griffith. Given a free rein, the mare, with a knowing toss of her chestnut head, whisked down the pike—a chalk line leading to barn and oats.

Stephen tucked the robe more carefully around his knees, and settled back

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in his seat. In his thoughts, it was no longer noon-day but a night with stars, and he was not alone in the cutter. "Only a year ago Claire and I rode home together," he murmured, "and she was so sweet!" The old nursery rhyme adapted to him in jest came back to his mind with a sting of truth unsuspected by the innocent Griffith. Shut up forever in a golden dream of his heart must live the girl that he loved. "And I want to let her out," cried his soul in a passion of longing. "To have her sit by my side, to walk with her, hand in hand, before all the world!"

There was a sudden jerk upon the loose rein. Stephen looked up with a start. Just before them a narrow road, a short cut from the railroad station, met the pike. A girl, springing from the road across a snowdrift onto the pike, had landed under Molly's surprised nose. Both drew back; the horse excitedly standing on its hind legs, the girl floundering into the snow-drift which she had been at such pains to avoid.

"Whoa, Molly — quiet old girl." A firm touch of the hand, a firm tone of the voice, and Stephen was master of the horse.

"You might have looked where you were driving!" came an angry protest from the snowdrift. "I never saw such carelessness! It's inexcusable!"

As soon as he dared bring the mare to a stop, Stephen jumped out of the cutter, hastily hitched Molly to a tree, and ran back. A small figure in the middle of the pike was indignantly stamping cakes of snow from overshoes and leg gings, and shaking a flurry of white flakes from bedraggled skirts. "Madam, I regret exceedingly—" he panted.

"My dress-suit case is ruined!" she interrupted, streaking its tan leather with a dabbing handkerchief. "I'll report you to—to the authorities!" She lifted her bowed head that her eyes might flash their scorn at the man before her. "Stephen!" she cried, impulsively holding out both hands.

"Claire!" he exclaimed. "Where in the world did you come from?"

"I dropped from a holiday cloud," she laughed. "Ask Molly—she saw me come down. But you, sir," she pouted, "were in a trance."

Stephen shuddered. "If I'd run over you—"

"It would have been my own stupid fault! I was so busy picking my way I didn't look down the pike, and Molly's hoofs were snow-padded. To think that I didn't know the dear beast!"

"And that I didn't recognize your voice!"

"I'm glad you didn't! Wasn't I in a tantrum? I knew that the catastrophe was my own fault, and that always makes a woman unamiable!"

"You're not hurt? Come, you must be cold. Get into my cutter and let me bundle you up."

"It's so much nicer to be born lucky than wise," said Claire, contentedly, as Molly began her brisk trot again. "I'm a surprise package you know, and of course it never occurred to visionary little me that there might not be a delivery wagon at the station."

The old music of her voice sent the blood rapturously leaping through his whole being. He shyly peeped down at her, his dear little pumpkin lady, all in golden brown except a ragged yellow chrysanthemum at her breast, and the sunlit drift of her wind-swept hair. But what held his happy gaze was her sweet face; the low forehead; the luminous brown eyes, now mischievous, now wistful; the shapely little nose; the short upper lip; the flashing white teeth; the pretty dimpled chin.

"I think that we'll have more snow," he solemnly announced, with bashful inconsequence.

"I don't care if we have a blizzard now I'm here!" He felt the thrill of her eager hand upon his arm. "You've seen them lately? They're well — Mother, Daddy, Ben, Laura and her babies?"

"They're all fine." He gave her a reassuring smile. Careworn shadows that had deepened during the past ten months lifted, and his face was almost boyish.

"And your mother?" she tenderly added.

"Her active, uncomplaining self. Only

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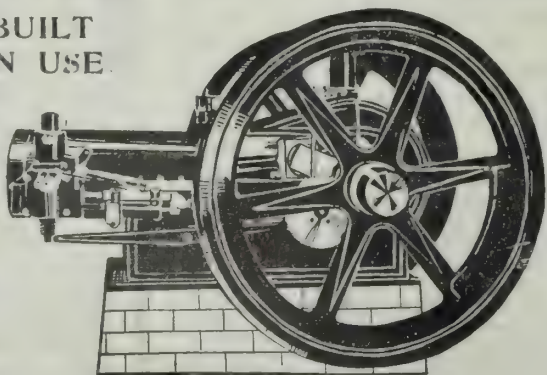
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it's been lonesome for her since her little neighbor has deserted her."

"It seems so strange how day-dreams come true," said Claire. "Do you remember when we were youngsters how we planned to run away to the city?"

"But we were always going to run together, Claire."

She turned aside her head, and the little hand suddenly conscious of having strayed, leaped back from his arm.

With quick unselfishness he buried his own hopes of the past in a sigh. "And does the big world spin as merrily as the little Claire dreamed?" he playfully asked.

"It's all ten times more jolly than her wildest expectations. The dear city life—I love every bustling inch of it!"

"And your work?"

"Doing famously! I wasn't just a conceited little fool, as I feared. I've talent, genius, will be a real live artist some fine day!" She spoke with the simple joy of a child relating school triumphs at home. Then face and manner changed, and the child was a passionate woman. "Oh," she cried, "out in the loneliness with God you can hear the voices calling, but to answer, to lead your forces to victory, to crown the ambition in your heart, you must have the country solitude and make your way into the royal city."

"I'm glad that you've succeeded, Claire."

"Honestly? You said—"

"Don't measure a man by his meanest moment, little girl. I was very sore that night, angry, jealous of the world stealing you from me. I've had time to—"

"Grow indifferent?" She gave him a mischievous glance and laughed, but under the cutter robe two small hands locked tight.

"Claire!" cried Stephen; only one little word, but the perfect, complete revelation of the height and depth of the strong man's love.

Through the mist of the enveloping white silence they drove on.

It was Stephen who spoke at last,

quietly, with a brave cheerfulness. "I can never be the successful business man I wished to be, that I might have been had father lived, had mother felt differently about leaving here." Involuntarily his gaze fell from the radiant, exuberant being by his side, to the dead level of the road, to the endless stretch of fields. "But I shall be as good a farmer as I know how. I don't want you ever to think that the man who loved you, who will love you always, could be a failure, Claire."

"Stephen," her voice fluttered, "I found out something when I was alone in the city." Her hand nervously fingered the chrysanthemum quivering at her breast. "You see it's such an original discovery for a woman to have made."

"Well?" he asked, with a smile.

Her golden lashes swept the deepening crimson of her cheeks. "I discovered," she faltered, "that I'd changed my mind."

"About what, Claire?" He eagerly bent over her. "What do you mean, little girl?"

She lifted her hand and blew a torn golden petal adrift upon the wind. "I mean," she shyly whispered, "that since we can't run away together, dear, I'd rather stay behind—with you!"

The clouds of the morning had drifted by, and the shining winter stars seemed to twinkle with smiles as they looked down upon the Homeville church, an illuminated doll house, stamping rosy patches of light from stained-glass windows upon the white snow. In the church's basement the big-hearted country folk were gathering, bringing their first fruits—wrested from the earth by toil of hand, in sweat of brow—to loan them unto the Lord that He might give them, sweet with the touch of a divine blessing to His little ones whose necessity was greater than theirs.

As the hands of the clock approached seven, partners were gayly chosen for the grand march. Grandpa Amos, in the brown corduroy suit he always wore on festive occasions, a white-haired, bent old man, led the procession with Baby Grace, a three year old fairy dressed in a cunning red frock, red stockings and little red slippers. And upon Grandpa Amos' shoulder rested a magnificent turkey, the sight of which would make the orphans' mouths water, while Baby Grace hugged one huge potato in both arms. Back of this dear pair came the others two by two; sometimes an old couple who had put their hands to the plow of a united living for many a season of seed-time and harvest; sometimes a bashful youth and maiden, their love glances as shy as the first white blossoms in the orchard; sometimes two lit-

tle children bubbling over with merriment like early morning hedges a-twitter with birds.

And the offerings the different ones carried ranged all the way from heavy sacks of barley, meal, flour, and dried beans down to dainty baskets filled with new-laid eggs. There were comical outbursts, too, for red-headed Pat McBready's whole costume bristled with carrots, and Madge Hollister, declaring her gift would move all to tears, laughingly exhibited an apron filled with onions.

"Last but not least," cried Gay Maynard as she and Griffith took their place at the end of the procession. She proudly glanced at her tray bearing golden rolls of butter made by her own pretty hands, then she coquettishly frowned at her escort. "Really, Mr. Griffith," she teased with an exaggerated sniff, "it was cruelty to animals to select me for your partner. I'm positive your pockets are filled with moth balls."

"I deny the soft impeachment!" laughed the young drug clerk. "I've nothing worse than camphor, ipecac, paregoric and peppermint lozenges! But I say," he continued, waving a lavender package toward a table, "isn't it a shame to leave that pumpkin there? It ought to be our standard, carried at the head of the procession. Queer idea of Steve's not to—!" He paused open-mouthed, for the door swung back and Stephen, with Claire on his arm, hastened into the room.

"You fraud!" laughed Griffith over his shoulder after the eager welcome to the little lady from town had subsided, and the two latest comers had taken their places behind Griffith and Gay. "You sold me completely this morning!"

"You're mistaken, old fellow," answered Stephen. "I was in dead earnest, but I changed my mind on the way home." His eyes merrily twinkled over the great golden pumpkin in his arms. "You see, Griff, a pumpkin with a sweetheart shut up inside is too heavy a burden for a man to carry, but when the pumpkin-lady steps out—"

The quick excited ring of a little bell cut him short. All stood attention. Alfie, the blind fiddler, bent lovingly over his violin. The "Star Spangled Banner" rose upon the air. The march had begun.

Round and round the room they walked in triumph, pausing now to listen to a short speech from some orator of the grange, now to sing a favorite husking song with a rollicking chorus. And the marching feet ticked the march of time until the hurrying hands of the little bell rung. The frolicsome notes of the violin died away, and a hush fell upon laughter and gay chatter as the doors leading to the church were thrown open, and down the stairs floated soft strains from the organ above.

"I didn't know I was ungrateful," whispered Stephen to Claire, "but never until tonight have I felt what a real Thanksgiving was!"

A little hand rested upon the arm encircling the pumpkin. "It is because," she whispered back, "our hearts are bearing the golden sheaf of God's harvest field." Her eyes shone with a beautiful light. "The gathering-in of love to give it out again in loving thought and word and deed to all about us."

The soft strains of the organ deepened and were answered by the violin's passionate cry of holy joy. Then as young and old reverently ascended the stairs to lay down their offerings in the chancel, all their voices were lifted in the processional hymn of praise—

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"Come, ye thankful people, come, Raise the song of harvest home. All is safely gathered in, Ere the winter storms begin; God, our Maker, doth provide For our wants to be supplied; Come to God's own temple, come, Raise the song of harvest-home."

"All the world is God's own field, Fruit unto His praise to yield; Wheat and tares together sown, Unto joy or sorrow grown; First the blade and then the ear, Then the full corn shall appear; Grant, Oh harvest Lord, that we Wholesome grain, and pure, may be."

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The above is the title of an admirable book of 128 pages, which has been prepared for distribution among the farmers of California by the International Harvester Company of America, Chicago. It is from first to last a farmer's book, most practical, and is of the highest authority on the eight subjects treated. These are the headings of the different chapters and every one was prepared by a well known specialist in his line: "Alfalfa Culture in America;" "Modern Corn Culture;" "Best Methods in Seeding;" "Small Grain Growing;" "Profitable Hay Making;" "Up-to-Date Dairying;" "Increasing Fertility;" and "Power on the Farm."

The preparation of this book meant an outlay on the part of the Harvester Company of several thousand dollars, but it is sent without cost, other than the postage for its mailing, to any farmer or land owner who is interested enough to write for it. We understand the edition is limited, and is being rapidly exhausted. It would be well to write for it at once. Give your name and address plainly, enclose three 2-cent stamps for the postage and send to the address given above.

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AGRICULTURAL REVIEW

Fresno.

LOSS OF BEES MUCH FEARED.—The Fresno Republican, Nov. 3: There is fear, according to Bee Inspector Bowen, of a great loss in the honey crop of next spring through starvation of the bees this winter. In his report to the Board of Supervisors yesterday, Mr. Bowen stated that there is a limited supply of honey to carry the stock of insects through the winter, and also reports that the spread of foul brood has been very well checked. There is still some narrow-minded attempt on the part of certain owners to prevent the destruction of diseased hives, and this month he found several bad ones that the owners had hidden.

Glenn.

ORANGES RIPENING.—The Orland Register, Oct. 27: T. F. Carr brought a fine large orange into this office last Tuesday which he had picked from one of his trees. It was a fine specimen and had turned the pretty golden color. Mr. Carr says he is going to have the first ripe oranges and that he expects to sell a carload. He is making an effort to form an association here and induce buyers to come and buy the fruit on the trees. This would, no doubt, be a wise plan, for notwithstanding that we produce as fine citrus fruits as any locality and should get top-notch prices by reason of them maturing nearly a month earlier here than in the southern part of the State, yet we are informed that many fine oranges are allowed to rot on the trees, because of no concerted action in marketing them.

Santa Clara.

COYOTES KILLING HOGS AND CALVES ON RANCHES.—The San Jose Herald, Oct. 30: Mail advices received today from Tres Pinos and Emmet, about sixty miles south of this city, state that the coyotes have multiplied so rapidly during the year and that on account of the scarcity of food they are raiding the stock ranches and killing hogs and calves every night. The country below Hollister is devoted almost entirely to cattle raising, and the immense ranges, traversed only by the cattlemen on the regular rodeos, form a safe home for the coyotes. Ordinarily the animals are great cowards and are afraid to come near the ranch buildings, but reports have been received saying they have made continued raids and that no little loss has resulted. The cattlemen a short time ago decided to wage a war of strychnine against the brutes, but with the perversity of fortune a great many of the best coyote dogs fell victims to the poison and left the ranches more unprotected than ever. If the attacks of the coyotes on calves and hogs continue a general hunt will be organized.

Tulare.

FIRST CAR OF ORANGES FROM TULARE COUNTY.—Riverside Press, Oct. 29: The Tulare County Citrus Fruit Exchange shipped its first car of oranges from here this morning to

Minneapolis. From now on shipments will be general.

Shasta County.

NO SEEDS IN PEARS FROM THIS TREE.—The Lemoore Leader, Oct. 27: C. H. Gillett, of Ashland, has a pear tree that for three or four years has borne three or four boxes of seedless fruit each season. A few of the very largest pears on the trees each year have seeds. The rest are all seedless, and when cut in half show a smooth surface from skin to center, where the seed cells are usually found. The seedless pears are slightly smaller than the average Bartlett, but they contain more clean fruit substance, and in taste are superior to the Bartlett, having a marked flavor resembling that of the little sekel pear. Experimentation will be begun to see if nursery stock of a seedless variety cannot be propagated. The tree that has distinguished itself by producing seedless pears almost exclusively is 10 years old.

Yuba County.

GROWERS BALING NEW WOOL AT COLUSA FOR SHIPMENT.—The Semi-weekly Democrat, Nov. 1: Campbell and Peterson and western Colusa county are baling their fall clip of wool at the Colusa warehouse, when the work is completed these gentlemen will have in the bale, something like two hundred thousand pounds of a remarkably good grade of wool, which will be shipped direct to Boston, now the principal wool market of the United States. The wool will be shipped through Messrs. Santana and Rosenberg, who are among the heaviest dealers in wool and sheep in the State, says the Colusa Sun.

Mr. Santana took a trip to Hamilton Friday and came back enthusiastic regarding the possibilities of that thriving little town, which ten months ago was almost a wilderness, and where now there are nearly six hundred men actively engaged in harvesting the beet crop and employed in the great mills turning the beets into as high a grade of sugar as was ever put upon the market. While at Hamilton Mr. Santana engaged almost the entire output of beet tops and other feed that comes from the beets after they have been milled. Messrs. Santana and Rosenberg will winter, probably ten thousand sheep in that vicinity.

CORRESPONDENCE

Apple Tests in Humboldt County.

To the Editor: Again I take pleasure in sending you samples of several promising varieties of apples from our experimental orchard of some 500 or 600 varieties. The goats, shuffled the metal labels on some 400 of these while they stood in the nursery so I am not in a position to vouch for the correctness of the name in some instances, but I believe these I am sending are correctly named as per tag they arrived under. As several of them are new to California apple growers a reference to them at this time ought to be interesting to the public in general.

Two of these are Nisson's Sweet and Swayzie Pomme Guise, scions of them having been received from Mr. W. S. Corwin, of Highland, Cal. The Nisson's Sweet is an apple of fine size and great beauty in its clean, golden complexion, and its quality was aptly described by our County Superintendent of Schools, Mr. Underwood, last Sunday, after sampling a specimen. Said he: "I never had any use for a sweet apple before, but this one really is good to eat."

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To prove our claims for the fire-resisting properties of Rex Flintkote Roofing, we will mail you on request a sample to test. Lay a red-hot coal on it and see what happens—or rather, see what doesn't happen. The coal dies out, but the roofing doesn't burn. Not only does this roofing successfully resist fire, but it makes an absolutely damp-proof roof, and will wear after other roofs are gone and forgotten. We are not trying experiments. Our firm has been in business since 1837.

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Send for Free Sample, nearest dealer's name and booklet on roofing. We make a special red paint for those who want a red Flintkote roof. Enclose with your letter 4c. in stamps and we will send a 32-page book—"Making Poultry Pay."

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OREGON.
COVERED WITH
REX FLINTKOTE ROOFING



The Swayzie Pomme Guise is an apple of the English Golden Russet type, but it is more russet, somewhat less acid, and the fruit smaller. The tree, although perfect in growth in this favored locality, would, I think, be tender in most parts. The truth of the climate here as observed in my orchard would indicate that it is well nigh perfect for the high development of the apple, for in my entire collection there is not a single variety that is not well nigh perfect in foliage. It is a high flavored apple and for those having a taste for the russet type it is worthy of consideration. It ought to make a very fine sweet cider, but it hasn't the first symptom of a cooking apple.

The "Tebbel Redflesh" is another tender variety. While it is of good quality as a dessert fruit, I suspect its chief attraction is its bright red flesh, which in appearance is just about the color of a table beet, while the outside peel is a pale yellow. Verily it would attract attention by uniqueness, like the man who would wear his coat inside out.

Another specimen is a large light red winter sweet apple, which I am told originated on the place of Mr. John Savarts, near Petralia, this county. You may tell the people what you think of it, for I haven't much of a taste for sweet apples, and I will introduce Scott Winter, a nice, red apple, of medium size and brisk acidity. It is a good variety in appearance, hardness, and productions, and for those having a taste for an extra sour apple it can be recommended.

Another apple that wears the original

label of "Holland Pippin" is, to my notion, an apple of the first quality. Of comfortable and uniform size and faultless shape for packing, it is so good it is blushing all over. Of characteristic high flavor, when eaten it tastes all the way down and makes one long for more. I am very favorably impressed with it and shall propagate it as much as possible the coming season by top grafting. It wears a suspiciously foreign name, but like some other good home productions I believe it is of American origin.

The last variety we will present at this time is the Wagener, an apple which I think ought to be included in every family orchard, and where space is limited it is deserving of first consideration, for it is an early and abundant bearer, of good foliage and close, compact, upright habit of growth. Hardly to be considered of desirable showiness, or of uniform good size as a desirable market apple for fancy trade, it is nevertheless a kitchen or canning apple that in my judgment has very few equals and the person who has partaken of only ordinary apple "sass" as it comes to the table, knows nothing of the delicacy of properly cooked Wagener apples, especially where grown to the perfection which they attain in these parts. They are likewise a good dessert apple and remain in prime condition for eating for a long time.

ALBERT F. ETTER,

Ettersburg, Humboldt county.

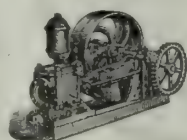
(Mr. Etter is doing very enterprising and valuable experimental work and it is kind of him to furnish such interesting accounts of his observations for publication. Ed.)

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THE LAWRENCE-WILLIAMS CO., Cleveland, O.

A MAP OF PLEASANTON

QUADRANGLE.

Well named is Pleasanton quadrangle California, of which the United States Geological Survey has recently published a topographical map. Although the same has been said of nearly every habitable part of California, there is in this statement nothing but pure, unadulterated truth that here is one of the most charming localities of a delightful State. The climate is equable and mild, the rainfall is sufficient to insure good crops without irrigation, and the large cities about San Francisco Bay provide a good market for practically everything that can be produced. Livermore, at the eastern edge of the quadrangle, is only two hours distant from San Francisco.

The area mapped by the Geological Survey comprises about 240 square miles. Most of it lies in Alameda county, though a small portion in the northwest corner of the quadrangle is included in Contra Costa county. It is an agricultural and stock-raising district of hills and valleys.

The way in which the steep side hills are cultivated is most interesting to a stranger. The hay that grows on these hills, together with the race track at Pleasanton, has made the locality famous among race-horse men. This hay would seem to have wonderful speed-producing qualities, and the race track, which is plainly shown on the map, is known to be one of the best anywhere. It was here that Lou Dillon, queen of trotting horses, was trained. Many followers of the track make a practice of wintering their racers here to give them the benefit of the hay and the track.

The hill country which is not farmed furnishes excellent pasturage. Cattle raising is carried on extensively, and because of the good grass, abundant water, and proximity to market is a remunerative business.

The Spring Valley Water Company, which furnishes San Francisco with water, has in recent years been compelled to seek more water than could be obtained in the mountains of the San Francisco peninsula, and has found here in the drainage area of Alameda Creek a valuable source of supply. The company has bought a large piece of land in the southeastern part of the quadrangle and made of it a great preserve.

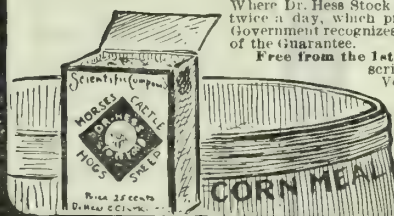
Beef Making As a Business

Beef is made very much like any manufactured article. The internal organs of the steer represent the machine and the feed is the raw material. To grow beef the raw material or feed must contain every element of the animal body—but by combining the different grains, fodders, etc. commonly raised on the farm, a perfect ration can be formed—after obtaining the proper ration your ingenuity should be exerted to see that this ration is properly digested and converted into profit.

DR HESS STOCK FOOD

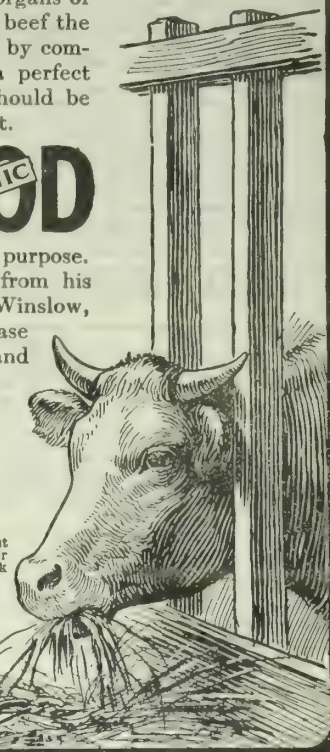
the prescription of Dr. Hess (M.D., D.V.S.) was designed for this particular purpose. Dr. Hess being a doctor of medicine and also veterinary surgery learned from his experience in the practice as well as from such authorities as Professors Winslow, Dun, Quitman and all the most noted writers that bitter tonics would increase digestion, iron would make rich, red blood, and that nitrates of soda and potassium would assist nature in throwing off the poisonous waste material from the system. These ingredients he combined with nature's roots, herbs, barks, seeds, etc. and this formula has become so successfully famous that every pound is *Sold on a Written Guarantee.*

100 lbs. \$7.00 25 lb. pail \$2.00
Smaller quantities at a slight advance.



Where Dr. Hess Stock Food differs in particular is in the dose—it's small and fed but twice a day, which proves it has the most digestive strength to the pound. Our Government recognizes Dr. Hess Stock Food as a medicinal tonic and this paper is back of the Guarantee.
Free from the 1st to 10th of each month.—Dr. Hess (M.D., D.V.S.) will prescribe for your ailing animals. You can have his 96 page Veterinary Book free any time for the asking. Mention this paper.

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Instant Louse Killer Kills Lice.
THE PETALUMA INCUBATOR CO., Petaluma, Cal.
PACIFIC COAST DISTRIBUTORS.



No pasturage being allowed, there is a heavy growth of grass which holds back the water about as effectually as forest and brush, and insures a comparatively steady flow of pure water, while the springs and creeks are at the same time saved from contamination by animal matter.

The special products of this region include fruits of all kinds, hops, sugar, beets, and garden truck. Many people, especially in the vicinity of Livermore, have chicken ranches. Livermore is also the center of the grape industry. Near here is Cresta Blanca Vineyard, famous for its wines.

Sunol is a beautiful resort, beloved by tired San Franciscans. The Alameda Canyon, between Sunol and Niles, is famous throughout the State for its beauty. Before the Spring Valley company acquired land and water rights

here, there have been as many as 15,000 nature-loving Californians encamped at one time between its walls.

Near Niles is a great nursery from which came many of the trees that have made California's reputation as a fruit producer, and all about it are orchards and gardens. The flat country, a real coastal plain, to the west of Irvington, slopes gently away to the southern end of San Francisco Bay, boasting great wheat ranches as well as orchards.

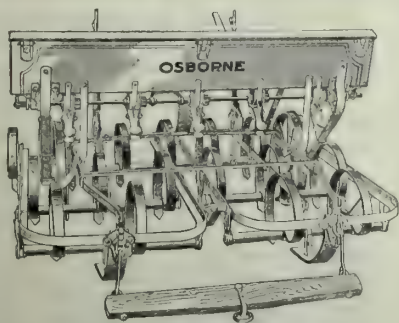
The Mission San Jose, shown in the southern part of the map, was establish-

ed by the Jesuits in the eighteenth century. The building is in a good state of preservation and the tuneful bells call the inhabitants, as of old, to morning and evening worship.

Study of this map shows that the trend of the ridges and valleys is northwest and southeast in conformity with the general rule in California, a rule of which the reading public was well reminded after the recent earthquake.

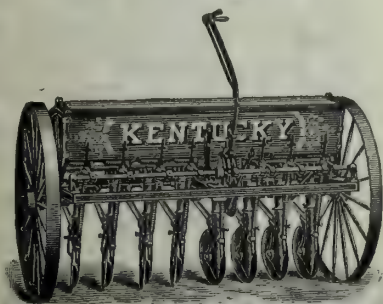
This map, which retails at five cents per copy, can be ordered from the U. S. Geological Survey, Washington, D. C.

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The Osborne Disc Harrows, Spring Tooth and Peg Tooth Harrows are Strong, Well-built and Reliable under all conditions.



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This great ranch runs up and down the west bank of the Sacramento River for fifteen miles. It is located in a region that has never lacked an ample rainfall and no irrigation is required.

The river is navigable at all seasons of the year and freight and trading boats make regular trips. The closest personal inspection of the land by proposed purchasers is invited. Parties desiring to look at the land should go to Willows, California, and inquire for P. O. Elbe.

For further particulars and for maps, showing the subdivisions and prices per acre, address personally or by letter

F. C. LUSK,

Agent of N. D. Rideout, Administrator of the estate of H. J. Glenn, at Chico, Butte County, Cal.

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Seed can be had of

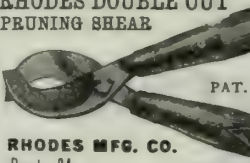
E Sierra Bros., Moss, Cal. S

STRAWBERRY PLANTS

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FRUITS THAT PAY.

We make a few suggestions concerning the planting of fruit, and being Fruit Growers and Fruit Shippers, as well as Nurserymen, we know whereof we speak.

The California fruit industry is growing and prosperous, even though a great many orchardists are not successful.

CHERRIES.—Where soil and location are suited there is no better investment. Pacific Coast cities consume them in large quantities at good prices. Canners buy them in bulk at a remunerative figure, while packed they sell at fabulous prices east and for several years shipments from various districts have sold averaging from \$2,500 to \$4,000 per car. California Cherries have no competitor. Being now intelligently distributed to a population of 80,000,000 people there is little danger of over-production.

PLUMS FOR MARKET.—Plums are grown in the east and south, but nowhere do they attain the size, the shipping quality, nor the degree of perfection of the California grown fruit. California Plums have little competition on the eastern market. They are rapidly growing in favor and will continue to be a profitable crop.

PEACHES.—For eastern shipment our peaches come into competition with others grown east and south. However, the long season, the large size, the superior flavor, and above all, the shipping quality of California

Peaches give to them throughout the season a wide range of territory not reached by peaches from other localities, and an intelligent selection of varieties will make them for eastern shipment a very safe and profitable investment. Canned and dried they command the world for their market. No other can compete with the California canned and dried production. Peaches for canning, drying or shipping, or both, are a very safe investment.

PEARS.—There are many Pears but only one "BARTLETT." Canned and dried or for market they are the "King of Pears," and will always pay well.

APPLES.—Apples are very profitable in California and they will continue to always "hold their own."

GRAPES.—California table grapes are a fruit distinct from their eastern competitors, and in the production of table grapes we have a permanent paying industry.

THERE ARE A GREAT MANY VARIETIES OF EACH OF THE ABOVE FRUITS, BUT THERE ARE ONLY A FEW OF THE BEST. YOUR SUCCESS IN FRUIT GROWING DEPENDS ON YOUR SELECTION OF THE BEST VARIETIES AND ONLY THOSE SUITED TO YOUR LOCATION.

We propagate only the profitable sorts and our trees are the best that good care can produce.

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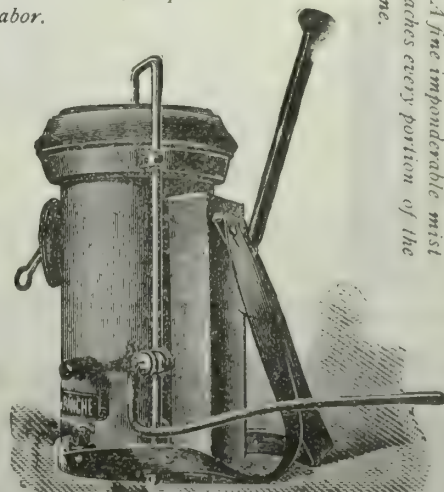
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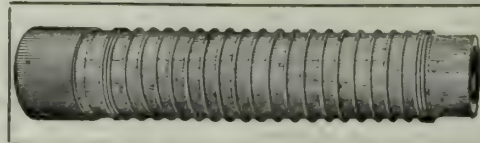
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LXXII. No. 20.

SAN FRANCISCO, SATURDAY, NOVEMBER 17, 1906

THIRTY-SIXTH YEAR

OBSERVATIONS IN MEXICO.

The leading pictures on this page are Mexican, with California bearings. We, for instance, who grow the eucalyptus so widely are naturally interested in this tree in a Mexican scene. In his sketches of Mexican travel, in the Mining and Scientific Press, Mr. T. A. Rickard writes appreciatively of the tree in such a situation. He notes the occurrence on the ridge adjacent to Pachuca of a fine grove of primeval oak, suggesting the forests which covered the plains and hills of Mexico before the Spanish conquest. A good purpose is shown in the young plantation of cedar and eucalyptus that has been started in this locality. Mexico has suffered enormously from de-forestation, and the laying out of trees ought to be one of the first duties of the Federal and State authorities, as well as of public-spirited citizens. A suggestion of the effect of new trees on the Mexican landscape is presented by Mr. Rickard to these words: "On leaving Real del Monte by the southern road, one obtains a good view of the surrounding country, by looking back. To the left is a rounded ridge clothed with groves of oak; to the right, a conical hill surmounted by a coppice of dark oak and cedars of Lebanon, and under their shade the white-walled English cemetery where many a Cornishman has gone underground for the last time. Between these flanking hillslopes, framing a picture, there are the white houses and red roofs of the town, surmounted by Moorish church-towers. Behind the town are green hillsides, and further back, after the interval that marks a deep barranca or gorge, there stands, outlined against the blue sky, the mountain which is crowned by the battlemented rocks of Zumate."



The Plaza at Pachuca Showing the Eucalyptus in Mexico.



Mexican Ox Outfit Once the Ruling Style in California.

The occurrence of the eucalyptus in the plaza at Pachuca, as shown in the picture, reminded Mr. Rickard of their interesting origin and properties. He writes: "In the plaza, among the graceful pepper trees, there are two eucalyptus, fifteen to twenty years old, whose dark blue foliage and ragged columns told of a land which was unknown to the civilized world for 250 years after the Spaniard invaded Mexico. The antiseptic odor of these gum trees recalled to me many a glorious day spent in the Australian Alps."

The pepper trees are the same which we grow under that name. In Pachuca they are called the Peruvian tree, having been introduced by one of the last of the Spanish viceroys, who brought them from Peru, where he had previously held office.

The picture showing the Mexican ox-team and wagon is very satisfactory from an artistic point of view. It was at one time a popular conveyance in California, but California has gone forward faster than Mexico and the vehicles which are still in use there have become to us mere relics of the pre-American era.

FERTILIZERS AGAIN

We recently instanced the building of a new fertilizer factory on Suisun bay as an indication of agricultural development in this State. The same is true of all good establishments in the same line—that is in furnishing crops something to grow with in addition to climate and the sooner growers realize that plants need food as well as climate the sooner they will get the proper rewards for farming. The shapely and capacious establishment pictured on this page belong to the Stauffer Chemical Co., which has recently expanded in this important line. One of their specialties will be superphosphate and they have secured extensive deposits of rock phosphate which with proper treatment will yield superphosphate having 17 to 18 per cent of available phosphoric acid, and the factory has the latest improvements for grinding and mixing capable of turning out 100 tons daily. As the picture shows, a spur track of the Southern Pacific Company runs along the factory and distant shipments are made easy.



New Fertilizer Factory of the Stauffer Chemical Co., Stege, Contra Costa County.

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THE WEEK

It is fair to presume that the railways have done the best they could do to move products to market during the last few months. It is good business to do so and the railways, nowadays at least, seem to be trying to operate upon business principles. Taking this for granted, it is an irresistible inference that present rail ways are inadequate for all the traffic and it is also justified to infer that our development and marketable products will increase faster than new lines of rail transportation will multiply. It becomes us therefore to give constant heed to supplementary means of transportation and our water-ways naturally suggest themselves as the great future reliance of the State. Comparatively very little is done with them at the present time in spite of all the boats which are running, and landings are few and far between and wretchedly poor when one thinks of the length of our navigable rivers and sloughs and bay shores. There is probably no one thing which lies so close to the future greatness and prosperity of the State as the improvement and extension of our water traffic.

Fortunately something is being continually done in this line of effort. A few weeks ago Congressman Joseph E. Ransdell, of Louisiana, a member of the Congressional Committee on Rivers and Harbors, made a trip down the Sacramento river with a committee of the Sacramento Chamber of Commerce, and then threaded the San Joaquin river to view the stream and necessary changes for the improvement of navigation. M. A. Nurse, engineer to the Commissioner of Public Works, and F. D. Ryan, Commissioner of Public Works, accompanied Mr. Ransdell. They also visited the upper Sacramento and some of the creeks on the north of San Francisco bay. This is a very important step to secure our share of the money which Congress expends for the improvement of rivers and harbors.

We understand that Mr. Nurse, the engineer aforesaid, will embody in his report to the coming legislature some specific recommendations for river work with particular reference to navigation and the State and the general government can co-operate in the work as has been frequently planned and urged. There will probably arise some very important issues in this regard during the next few months. As complementary to the interior river work stands the development and improvement of deep water harbors. We are glad to note that the California Promotion Committee is calling public attention to this matter. In a recently issued circular it very pertinently says: "California is particularly and peculiarly fortunate in her possession of good harbors, and were either one of the four, San Diego, San Pedro, San Francisco and Eureka, of which she is justly proud, situated anywhere along the parallel coast line on the Atlantic side of the country between Boston and Savannah it would be so fostered and developed by the State to which it belonged that it would attract the commerce of the world through its facilities for shipping. These harbors and numerous roadsteads have direct bearing and influence on the progress of the State as a whole. Each one is a tangible State asset, and belongs as much to the man who has a farm in the valleys and foothills of the Sierra, or him who has a mine in the heart of the high mountains, as it does to the one who has builded his home within sound of the waves which idly lap the sides of the vessels waiting to carry the products of the State to the marts of the world. The utility of the harbor, consequently, is dependent upon its tribu-

tary country, and the better the shipping facilities of a harbor, the better the opportunity for the country to reach a wider market, and to receive increased prices for its produce."

We are still short in California on the animal industry side. We have not as many breeders of registered animals of all kinds as we had a quarter of a century ago. We recently had to advise enquiring readers of the Rural Press that we could not tell them of any breeders of two popular breeds, one of sheep and another of cattle, in this State and that they would have to seek in Oregon. But both these breeds were represented in California two decades ago. The depression of the early nineties seem to have sent some breeding interests out of the State and they have not returned. This ought not to be so. It ought to be possible to find pure bred registered stock of every breed that is worth having in California. Again, on a broader view, the whole Pacific coast seems to be short of the meat the people need to eat. Here is a piece from the Breeders' Gazette which sketches the situation forcibly:

"What 'd you do with that bunch of good hogs you had?"

"Sold 'em to a Seattle man at six-forty. Looked better 'n shipping 'em myself. What 'd you do with yours?"

"Sent 'em to Chicago and got \$6.85."

"Ever try Denver?"

"Not yet, but I'm headed that way with the next bunch. Why, those Denver buyers are swarmin' around Grand Island and Kearney thicker 'n a lot of bees. They're doing better than Omaha prices."

This conversation between hog shippers residing not more than one hundred miles from Omaha indicates how the corn belt swine crop is being distributed—Nebraska and Kansas hogs headed for the Pacific coast by the train load, buyers from the mountain country competing almost to the gates of Omaha, with Texas draining Oklahoma and parts of Kansas. That there has been a decided increase in production in Missouri river territory is shown by the arrival of 200,000 more at Omaha and 300,000 at Kansas City compared with last year. Shipping demand at Chicago has recently put prices at that market above a parity with Missouri river points and yet field buyers from Colorado and States in the far Northwest have offered growers sufficient inducement to get their supplies.

Is it not a great mistake for States rich in wild feed and ready for any amount of alfalfa to take meat away from hungry people two thousand miles away?

California wool growers are trying hard to get what their product deserves but they are not doing it very effectively as yet. They probably cannot work with the audacity of the Montana wool growers, probably because they are so much less in numbers and scattered in area, but they may take a little heart from Montana's movement and take something else from it later. The Orange Judd Farmer says that a wool commission selling company has been organized by wool growers of Montana. The capital of the company is \$500,000 and the object is to endeavor next summer to market wool clips of Montana producers independent of Eastern buyers, because it is claimed that prices under the ruling ones were paid this year. Much apprehension has existed among Montana sheepmen who believe they were at the mercy of a combine of wool buyers. This resulted in a strong feeling developing, the outcome of which is the recently organized company to handle clips of the State. It is claimed if it is necessary to store future clips for a month or two in an effort to secure equitable prices, the company will be able to do so. If the grower desires to do so he may haul his wool to the nearest railroad depot, weigh it, and consign to the Eastern agent of the company. In this, however, the grower will be no longer acting as an individual, as the company will be behind him in securing buyers. Flock-masters throughout Montana and hopeful of the success of the new organization and the future operations of the company will be watched keenly by sheepmen in Idaho, Wyoming, Utah, and other States. Why cannot California take hold also and see if the present discouraging situation cannot be improved?

Some of the New York fruit merchants have queer notions of how California found herself in the lemon business. For example, one of them speaking to the Fruit Trade Journal about a receipt of Porto Rico lemons: "The fruit, while rather rough, shows up well considering the fact that it was grown on young trees. The lemons are of better quality than the first received from California when the State embarked in lemon growing and as the trees become older better fruit may be expected." There is of course a grain of horticultural truth in the smoother product from older trees but the inference that California lemons are better than they used to be simply because the trees are older is nonsense. The lemons are better because California has learned what varieties to grow and how to grow them and how to handle them after they are grown. It is the men behind the trees who make better lemons.

Those who wish to know all about denatured alcohol can soon get from the Department of Agriculture at Washington or from their congressman, two Farmers' Bulletin, No. 268 and 269, relating to the industrial alcohol, the former treating of its sources and manufacture and the latter of its uses and statistics. These bulletins have been prepared by Dr. H. W. Wiley, Chief of the Bureau of Chemistry, and are designed to meet the popular demand for information. These bulletins define in a proper way what denatured alcohol is, the sources from which it is obtained, the processes and appliances used in its manufacture, the cost of manufacturing, the uses to which it may be applied, and the officials of the government charged with the enforcement of the law.

QUERIES AND REPLIES.

GRASSES FOR COAST HILLSIDES.

To the Editor: Since the forest fire we have had here recently, I am having the hillside cleared off, and want to make a pasture for cattle. Will you kindly let me know the best kind of grass seed to sow? I want it for paturage only and would like something that would keep green the year through. Bush grass has been recommended, but I thought best to write you on the subject.—FARMER, Santa Cruz.

We do not know what is meant by "bush" grass. If it is bunch grass we can only say that there are several native grasses of that name but we do not know where you can get seed of them. Of those of which you can get seed the following grasses are worth trying for drouth resistance on coast lands: orchard grass, mesquite grass and Australian rye grass. We know no grass which will keep green all the year, but unless the land becomes too dry in summer, these will maintain life in the root and have thus far shown to be best for pasturage purposes, both in resistance to drouth and in their satisfactory winter growth. Seeds of these varieties can be had from all the large dealers.

FERTILIZER FOR OLIVES.

To the Editor: Have you any pamphlet on fertilizer for olives that you can send me? Or, failing that, can you inform me the best fertilizer to use to increase the size of the fruit? I am thinking of using Thomas's phosphate. Any suggestion you can offer will be greatly received.—GROWER, San Jacinto.

If your olive trees make good leaves and new growth there is nothing that can be done in the way of fertilizing to increase the size of the fruit. If the trees do not grow freely and look rather dry and distressed the probability is that they need irrigation water. If they are small sized and weak in growth in spite of sufficient moisture then a nitrogenous fertilizer is necessary to permit freer growth and larger fruit. You can try an experiment in your orchard in this direction by giving a few trees a good dressing with stable manure and comparing their behavior with others not so treated. You can also use on other trees applications of Thomas phosphate and make the same observation. There is no way to settle this matter by general advice. It all depends upon the condition of the trees, soil, moisture, etc., in any particular place.

THE ZANTE CURRANT IN CALIFORNIA.

To the Editor: What about the culture, etc., of Zante currants and their adaptability to the foothills? Also any advice and information that you may have at hand thereupon.—READER, Placer county.

There is no commercial product of Zante currants in California. The Zante currant, as you no doubt know, is a grape, and the Corinth vines grow and bear quite well in districts where other grapes succeed. The production of the larger, seedless raisins from the Sultana and Thompson Seedless are, however, in every respect more satisfactory and profitable, and for this reason Californians have undertaken very little of recent years with the inferior Corinth raisins. The vine is, perhaps, more subject to mildew than the Sultana and Thompson Seedless, but still is a good grower and producer in some parts of the State.

TAKING OUT CORK ELMS.

To the Editor: I want to cut out some cork-bark elms eight or ten inches in diameter which are planted along sidewalk. Is there any effectual way of treating the stumps by means of which a good part of the roots might be killed, so they will not cause so much trouble in sprouting up afterward. Could they be sawed off near the ground and some auger holes bored into them and treated with something to penetrate into the roots? What would you say to carbon bisulphide? Would this render the soil near them unfit to plant anything else for some time to come? Your opinion will be very greatly received.—SUBURBAN, Menlo Park.

Our observation leads us to distrust the efficacy of any application such as you propose. You can keep the stumps from sprouting by cleaning off the bark thoroughly with a hatchet or some such tool, and removing root suckers by grubbing out. If this is done for a time the whole outfit will die. Our experience is, however, that it is better to grub out the stumps with as many large roots as can be readily reached and then follow by grubbing out distant suckers and the roots to which they are attached, whenever they show disposition to grow. We have never seen anything easier or more satisfactory than this. Bisulphide would have no effect upon the stump or the soil. Salt, arsenic, and other active plant killers would prevent anything from growing for some time.

GRAIN AFTER SORGHUM.

To the Editor: I have a piece of rich loam land that has been yielding less wheat and barley each year for four years past. Last spring I had the ground plowed about seven inches deep and immediately after the hard rain in June I sowed it to Egyptian corn. This did well, made a heavy yield and of good quality. Some people have told me that this crop would decrease the following crop but after that the yields would grow heavier. My object in sowing the corn was to renew the soil, with the intention of following the corn with alfalfa. Now will you kindly tell me what grain would be best to sow on this piece of land following the corn that will best renew the soil?—FARMER, Dixon.

Probably the reason why sometimes a poor grain crop is secured after Egyptian corn is owing to the greater tendency of the soil to lose moisture by evaporation when it is loosened up so much by the roots and rubbish of the corn crop. This can be overcome to some extent by a deeper plowing and more thorough harrowing so as to settle the soil more and thus prevent too free entrance of dry air. If there is a good large rain-fall the season after the Egyptian corn is grown the effect upon the following grain crop would be very much reduced. There is nothing that you can do for the improvement of the soil, by growing any kind of grain. Nothing is better than putting in alfalfa, and with thorough preparation of the land and sowing alfalfa after the coldest, wettest weather of the winter is over you ought to get a very satisfactory stand.

LEGUMES FOR THE CENTRAL COAST REGION.

To the Editor: Will you be good enough to tell us the relative value of cow peas, alfalfa and Windsor or horse beans, to be turned under green as a fertilizer, and also tell us if you can whether cow peas have been

tried to any extent in this State? At what season could the last named be planted?—FARMER, Niles.

So far as we know no careful calculation has been made as to the relative value of the different beans which you mention as a fertilizer. The composition of their green growth may be taken to be approximately similar. The relative value would, then, depend upon the respective amounts of each which you can get to grow at the season favorable for plowing under. Cow peas, alfalfa and Windsor beans are not good growers in the winter season, even if they can stand such frosts as we have in the more strictly thermal situations. Horse beans are more hardy and our experience with them as winter growers is quite favorable. Of the four which you mention, the horse bean is, therefore, more liable to give a good amount of green herbage for plowing under early in the spring, which is usually the best time for plowing under, while moisture enough remains in the soil to secure the decomposition of the green crop. Cow peas are used to some extent for winter growth in the citrus districts at the south, but in the central part of the State they make their best growth in the summer on moist river bottoms, where some moisture is held both in soil and in air. Common field peas, Canadian peas, burr clover, and winter vetches are generally considered better plants for green manuring than any of those which you mention. The time for planting is in the autumn, as early as one can be sure of moisture enough to keep the plant growing after germination. Planting of cow peas must be made when you have reason to expect freedom from frost for some time afterward. Early fall sowing works well in some places, but generally they must be planted when things are right to plant corn or squashes.

WALNUT BLIGHT.

To the Editor: Will you kindly send me any information you may have relative to walnut blight, its cause and treatment. No one I have talked with in southern California has been able to give me any definite information about this blight, therefore I am communicating with you on the subject. — ENQUIRER, Chicago.

Perhaps the reason why you do not get any more satisfactory information concerning the walnut blight is that there is no very satisfactory information to give. The disease is known to be caused by a bacterium and no satisfactory way to arrest its work has yet been discovered. Investigations are still going on. Spraying with Bordeaux mixture just before the blossoms appear has been shown to save about one-half the crop, and this is the best that has been done in the matter so far.

ADOBE SOILS FOR FRUITS AND VEGETABLES.

To the Editor: I am anxious also to secure information on the nature and best methods of handling adobe soils for vineyard, small fruits, and gardening.—READER, Stockton.

Our book on "California Vegetables" treats in detail of the information of heavy clay soils for garden uses but nothing in particular has been published concerning the handling of adobe soils for vineyards, small fruits, and field crops of vegetables, because it is better to select better soils for such purposes. For garden crops they can be rendered much more available by the free use of stable manure well worked into the soil and by the use of air slaked lime, or finely ground gypsum, which make the heavy soil more friable. Nothing has ever been done for the amelioration of large acreages of adobe soils, excepting to plow in as much green stuff as possible and continually work the soil when it is in the best condition.

RED CLOVER ON UPLANDS.

To the Editor: For the successful growth of red clover, for hay, what are requisites of soil, cultivation, moisture? Would you put it on fair, rolling land, which has been cropped with oats for several years—the chief aim being to relieve the soil?—BEGINNER, Napa.

You will not get a satisfactory growth of red clover

unless you have irrigation water. The plant is not a good winter grower and it quickly gives out in the early summer unless artificially watered, except perhaps in some sections with moist air and moist land, like Humboldt county. We should not expect it to do anything worth while on your uplands. What you need is a winter growing legume, than which there is perhaps none better, or more easily seeded, than burr clover, although common field peas and vetches are also good. To plow in a good crop of such stuff early in the spring and fallow the land with some disking to loosen the surface and kill weeds would certainly be of much advantage in the following year's growth of hay.

LIPPIA FOR LAWN.

To the Editor: Our judgment is that a reprint in your columns of an article descriptive of Lippia Repens underestimates the value of this plant. We realized several years ago the possibilities of Lippia and have now a large area of it growing on our place. We plant it with roots; each root being a square turf of 1½ inch in diameter, with roots and soil adhering. We find that 12 inches is near enough to plant these roots, as they will cover the intervening space in a few months of summer growth. We have found by actual tests that Lippia needs but one tenth the water required by blue grass and about one third the care, making the cost of maintenance of a Lippia lawn about one sixth that of a corresponding area of bluegrass. It has none of the pest-like qualities of Bermuda grass and does not grow bunchy with time, as does Australian rye grass. We believe it will eventually displace to a great extent other forms of lawn in all of California except the summer fog belt.—JOHN SWETT & SON, Martinez.

This account is very interesting and will be assuring to those who want a green cover with a minimum of work and water.

WHAT WILL FLOODED ASPARAGUS DO?

To the Editor: I am desirous of obtaining some information regarding flooded asparagus. About the 8th of July last, our island flooded and it contained about 200 acres of asparagus three years old. It flooded at the time of cutting and the principal point is, will the roots rot and not produce new shoots? The land is still under water, but is expected to be pumped dry by the first of January. We know from experience that asparagus flooded after having attained its maturity will stand water for two years or more, but this is a new case for us. Any information you can give me will be greatly appreciated.—GROWER, Solano county.

We regret exceedingly that we have no information along the line of your letter. We are aware, as you are, of the endurance of asparagus flooded after maturity, but we have had no observation on the other condition and regret also that we do not know where such information could be had. If some reader can tell us what will happen to asparagus which is flooded before it has a chance to make a top growth and finish the season, we shall be glad.

EUCALYPTUS CUTTINGS AND GRAFTS.

To the Editor: I noticed in the Pacific Rural Press of November 3 a communication regarding eucalyptus from cuttings. I have, in years past, tried in every way to root at least half a dozen different species, but without any success. I do not believe either that they can even be grafted. About a dozen years ago I received an order from Billmore for several species which they wished to try and that were not to be obtained in the market. In order to get these I tried grafting the twigs from trees on half a dozen different stocks and half a dozen different scions, but without success. I tried these in varying temperatures and varying conditions, and while no doubt it is possible under some circumstances to obtain some degree of success in grafting it certainly is not practical from a commercial standpoint. — ERNEST BRAUNTON, Los Angeles, California.

We are grateful to Mr. Branton for this note, for he has wide knowledge of such matters, and we commend Mr. Branton's responsiveness to all readers. It does not take long to write a little note and the dissemination of such valuable little pieces of knowledge is important. Whenever you find that one of our answers to questions can be made more pointed or more correct give us a postal card or an extended communication, as you see fit.

HORTICULTURE.

A GLIMPSE AT THE ORNAMENTAL SIDE.

By C. N. Young, before Pacific Coast Association of Nurserymen, Tacoma.

It is right that the energies of man should be directed first to the task of providing for the necessities of himself and those depending upon him, then for their comfort, and finally for their pleasure and enjoyment, but in a new country such as ours the expenditure of time and money for the adornment of the home and home grounds has received too little attention. We Americans are only just beginning to learn that the adornment of our homes is an important element in the education of our children, and one that will do more toward the cultivation of morals and manners than all the admonitions of anxious parents, the enforcement of curfew laws or the maintenance of reformatory institutions.

A Teacher's Resolution.—A teacher in one of the slum districts of New York wrought a complete revolution in the habit and manners of her pupils by bringing them her school room living and growing flowers. One morning, just before Easter, she brought to the room a beautiful specimen of the Easter lily in order to make more forcible the lesson of purity which she had planned to impress upon her pupils. All gathered around her to admire the plant, talk of its beauty, and the virtues for which it stood as an emblem, when she noticed a little Italian girl, with dirty face and hands and a tangled mass of uncombed hair, standing sullenly aloof from the rest and looking with apparent disdain upon the flower and the group of children that surrounded it. The teacher spoke kindly and encouragingly to her, and urged her to come forward and enjoy the sight with the others, but the child turned and fled out of the door in great haste. As the forlorn little creature had often exhibited these spells of sullenness the teacher thought best to take no notice of her departure, so the lesson was continued without interruption. Just as the lesson was concluded little Italian Mary returned to the room with hands and face washed clean and hair smoothed as well as her tiny hands could perform the task, and with a smile of happiness and delight, she rushed forward to the lily and buried her face in one of the bells of the flower.

A Pleasure to All.—Every successful attempt to beautify any piece of ground designed to be the home of a family, whether it be a city lot, a suburban acre, or a larger area surrounding a farm house, has a valuable influence on the entire neighborhood in which it is located, and money appropriated by cities and villages in planting and beautifying parks is one of the best and safest investments that can possibly be made. Mark you, money thus expended is an investment from which profitable returns will be realized, and it should never be looked upon as an item of expense. It furnishes an object lesson which others will appreciate and attempt to follow, and a love for the beautiful in Nature is stimulated.

The beauty which is furnished by the planting of ornamental shrubbery on home grounds cannot be selfishly kept by the owner for his exclusive use and observation, but becomes a thing of beauty and a joy forever to every passerby, yet it is impossible for him to detract in the least from the enjoyment and pleasure of the owner, by his admiration and appreciation of the beautiful.

In the harmonious arrangement of trees, shrubs and herbaceous plants, and the adjustment of the same to the contour of the place, the architecture of the buildings, and the convenience of the walls and drives, lies the skill of the landscape gardener, and his ideal is to imitate nature as nearly as possible.

In the time allotted this paper, only a few of the underlying principles can be given, and I shall attempt to outline them as clearly and briefly as possible.

Every home, including the buildings, walks, drives, lawn, shrubbery, etc., should form one complete harmonious picture and the artist who designed it must be able to have the complete picture graven on his mind's eye before the first stroke is made in its development. The picture must have an appropriate foreground and background, as well as an appropriate arrangement of parts.

Curved Walks Effective.—Having settled upon the location of the buildings, the walks and drives should occupy the attention next. All walks and drives on small grounds should be straight, unless the contour of the surface is such as to render curves necessary. On larger grounds, where the grouping of shrubs becomes an important factor in the architecture of the place, curved walks are most pleasing and effective.

The lawn should be considered next. A perfect lawn, devoid of that mottled effect so often seen and composed of grasses whose colors of green blend so harmoniously, is the rarest possession of either the public or private grounds. On heavy clay soil where moisture is abundant the Kentucky blue grass is a superb covering; but on lighter sandy soils the white clover must be used to supplement it. Several species of grasses may be used in mixture, providing their habits of growth and coloring will harmonize.

Trees and Shrubs.—The location of the tall growing trees and shrubs should next be determined, and two things should be kept in mind in their arrangement. They should serve as a screen to unsightly buildings or objects while they should not obstruct the view, where the outlook is pleasing or beautiful, and they should serve as a background for the lower growing shrubs and plants, and vice versa, the lower growing shrubs and plants serve as a foreground and hide the bare trunks of the trees, the aim should be to so arrange the planting that the eye may pass from the green sward of the lawn to the tops of the trees and see foliage in mass, as it is viewed in Nature.

Shrubs should generally be planted in groups, instead of as single specimens, except upon very small grounds. Few shrubs possess sufficient beauty and grade to make them pleasing objects during the whole season, but when a number of shrubs, varying in habits, of growth, color of foliage, and time of flowering are grouped together the effect is most pleasing and satisfactory.

THE CASABA MELON.

To the Editor: Some months ago I read a communication in the RURAL PRESS from a gentleman whose name I have forgotten, concerning the history of the Casaba Melon in this country and if I rightly remember claimed to be the first grower of the melon in California. Having learned many years ago from the lips of Gen. John Bidwell that he was the first to introduce and grow the melon in this State, I was under strong impulse to write you and correct the impression conveyed by the article in question, but I was not able at that time to state from the record the exact date when General Bidwell began to cultivate the melon. I have since found that data as shown in the two following letters:

"Washington, D. C., Apr. 23, 1869.

"General Bidwell,

Dear Sir:

"Herewith I send you 8 papers melon seed, all rare. The Ionian Melon cost the Department \$120 a pound gold. So it should be very choice. I take the liberty of sending these seeds as I think it due to California that our farmers have some choice seeds and I thus avail myself of my position to supply them. "Though so late in the season that irrigation may be necessary yet 'better late than never.'

Respectfully yours,

S. DEAN."

"Please report result to the Commissioner."

On the back of this letter in General Bidwell's handwriting is endorsed: "S. Dean, transmitting Casaba Melon."

The other letter is as follows:

"Department of Agriculture

"Washington, D. C., May 20, 1869.

"Sir:

"I have the honor to inform you that I have this day sent to your address three varieties of melon seeds from Asia Minor received from the Governor General of Smyrna. They are sent for experiment. "Please report results. (Also please find two papers from the Ionian Islands). When received please acknowledge.

Respectfully Yours, &c.

HORACE CAPRON,

Commissioner."

On the back of this letter is endorsed in General Bidwell's handwriting: "H. Capron, transmitting Casaba Melon."

General Bidwell planted these seeds and one of the varieties resulting from such planting was the now well known Casaba and they have been raised and marketed from Rancho Chico in greater or less quantities ever since. If there is any earlier record than this let it be produced.

Chico, Nov. 6.

C. C. ROYCE.

(We are obliged to Col. Royce for bringing these documents to light. Our own recollection of the melon reaches back to 1875, when seed was distributed in this State from Gen. Bidwell's ranch and there was no doubt at that time about the originality of his introduction of it to the State.—Ed.)

THE IRRIGATOR

IRRIGATING SEDIMENTS AND THEIR EFFECTS UPON CROPS.

By Prof. R. H. Forbes, in Bulletin 53 of the Arizona Experiment Station.

Arid-region rivers in general, among them the irrigating streams of our own Southwest, carry, usually, large amounts of sediments, more particularly in times of flood. This is due to various factors. The physical character of many desert soils is such that they erode readily, being at the same time little protected by vegetal cover. In grazing region these conditions are often aggravated, particularly during dry seasons, by grazing animals, whose hoofs break and pulverize the soil surface, and which consume or destroy an already sparse vegetation.

In former times, before the advent of stockmen upon Southwestern ranges, and of miners and lumbermen in the mountains, the native cover of herbaceous vegetation, and of forest growth, greatly restricted runoff of storm-waters and erosion. This was especially true along stream-courses and in the bottoms of valleys where, by reason of moisture conditions, a heavier growth of perennial grasses, shrubs and trees developed which retarded and filtered storm-waters to such an extent that they caused little erosion and remained comparatively clear.

During the last thirty-five years, however, wood-cutters have made inroads upon the forests, grazing animals have depleted the grasses, and in many places wagons and cattle have worn deep roads and trails along lines of water-flow. From these now bared and broken desert surfaces, the rainfall gathers with great facility into heavy, cutting floods loaded with detritus.

In certain localities, also, large quantities of mine tailings are added to stream-flow, creating locally abnormal conditions of sedimentation.

Amounts of Sediments Carried by Southwestern Rivers.—A statement of the amounts of sediments carried by the Gila, Salt and Colorado rivers in the course of a year gives an idea of the erosive activity, under present conditions, of these streams. From determinations of the silt content of these rivers by the Arizona Experiment Station, and from data on flow offered by the U. S. Geological Survey, the following estimates are derived:

Calculating upon four feet of water a year required for irrigating, and upon the average silt per acre-foot of water, the sediments, annually, per acre of lands irrigated from these streams may be expressed as tons of solid material, or calculated to inches of soil as follows:

	Tons of sediment in four average acre-feet of water.	Thickness, in inches, of sediment in four average acre-feet of water, as agricultural soil.
Gila at Florence	76.94	.46
Salt at McDowell	4.79	.03
Colorado at Yuma	38.49	.23

By no means all of these sediments, however, are carried upon irrigated fields. With gentler gradients and slackening motion of the water, the heavier portions are soon dropped in canals and laterals, necessitating the never-ending work of ditch cleaning. The remaining lighter portions are carried upon irrigated ground where, with still further decrease in the movement of the water, the residual solids are deposited in large part near the point of diversion from the supply ditch.

In consideration the effects of sediments upon lands, therefore, it is necessary to allow for the manner in which they are distributed, this distribution being affected by the kind of crop, the method of irrigation, and the slope, as well as by the fineness of the sediments themselves.

While we calculate, therefore, that four average acre-feet of Colorado river water at Yuma carry sediment enough to make a layer of soil about one-fourth of an inch thick each year, the larger portion of this amount is actually concentrated upon, probably, much less than half of the ground irrigated.

Rising ditch banks and increasing gradients in irrigated fields under muddy streams attest the activity of this factor, and suggest that in this region in time to come, the disposal of ditch cleanings and field deposits may become a serious problem.

Composition and Fertilizing Value.—The composition, with reference to their fertilizing value, of sediments from our principal arid-region rivers, is shown in detail in Bulletin 44 of the Arizona Station. Of these constituents potash, according to conventional standards of fertility, is already contained in sufficiency in our desert soils; while phosphoric acid is present in adequate amount. Nitrogen however, and the organic matter with which it is usually associated, are the chief deficiencies.

cies of our desert soils, and it is a fortunate compensation of Nature that adds these substances to irrigated fields without expense to the farmer.

The amount of nitrogen in sediments varies enormously at different times and conditions of river flow. As low as none at all has been observed in low winter water sediments of the Colorado; while a Gila summer flood has been found to carry 172.3 pounds of nitrogen in the alluvium contained in an acre-foot of water. This last was rich with storm-sweepings from tributary grazing districts. The average amounts, the year around, of nitrogen in sediments ranged, for the time observed, from 4.8 lb. an acre-foot in the Colorado, to 5.5 lb. in the Salt and 28.1 lb. in the Gila. These amounts, with additional nitrogen dissolved in the water, contribute materially to crop requirements for this, in our region most needed element of plant nutrition.

These facts, however, merely serve to give definite form to the knowledge, as old as human history, that river irrigating sediments increase the productiveness of land. The varying values, shown above, in our Southwestern river sediments, call to mind the parallel fact, known in Egypt since ancient times, that the red Nile floods from Abyssinia are more valuable than those from other watersheds tributary to that river.

It appears, however, that while the material from the copper mines contains potash and phosphoric acid in amounts comparable to those existing in ordinary flood-water sediments, it is lacking in nitrogen and organic matter, most needed by our desert soils. Remembering that these soils are already rich in potash, and well supplied with phosphoric acid, it is evident that this detritus therefore contributes nothing of immediate value to plants, since it is known that an addition to the soil of a fertilizing constituent already present in sufficient amount, does not result in a corresponding increase in production. On the other hand this detritus does not supply nitrogen and organic matter, which are needed not only in this locality, but throughout arid regions in general. The question as to whether, and how, positive injury results from the addition of these materials to a cultivated soil.

Action of Sediment.—Observations made by different men in different ways and in widely separate localities consistently indicate that river sediments, deposited by irrigating waters upon the surface of the soil, act as a more or less impervious blanket, apparently lessening the penetration of water into the soil.

Inasmuch as the amount and distribution of irrigating water taken up by a soil of prime importance in crop production, the agency of silt-blankets in lessening the penetration of irrigating waters is worthy of careful consideration. The thickness and imperviousness of these blankets may be observed to vary greatly in different situations, chiefly according to the amount and character of the sediment itself, and to the length of time it is permitted to accumulate without disturbance in a given place.

Methods of culture employed with different crops also affect the silt-blanket. Where the soil is plowed or cultivated one or more times each year, and the silt-blanket incorporated with the soil, as in the case of orchards, grain and garden crops, blanketing effects are reduced to a minimum. But in the case of perennial alfalfa, the main crop of the region, the only culture practicable is to disc or harrow the surface, a procedure which at best does not thoroughly break up the blanket.

Alfalfa as Affected by Silt-blanket.—Desiring to observe accurately the effects of sedimentary accumulations in restricting production, the writer, during the summer of 1905, selected three alfalfa fields situated, respectively, under the Colorado river near Yuma, under the Salt river near Phoenix, and under the Gila river near Solomonville, Arizona. These fields were in each case typical for the locality in which they were situated. One or more lands, with the most uniform possible soil, were selected in each field, and divided into successive portions from the head to the foot of the field. The thickest accumulations of sediments were in all cases found at the tops of the lands near the point of diversion of the muddy water, from which point they lessened rapidly towards the lower parts of the fields.

The yield of hay was least at the two ends of the field, nearest the irrigating ditches. Notably the largest yield was obtained in the interior of the field where the sediment blanket was of less thickness, and where, after irrigating, the soil was noticeably more moist than in the end plots. The minimum yield, 1.59 tons, was associated with the maximum coating of 3 inches of sediment. On the basis of the largest yield, 1,829 tons per acre, the depreciation observed is 6.3 per cent for the whole field. Since over 2 inches of sediment was found on the most productive plots, however, the actual depreciation may have been more, but could not be calculated because no sediment-free plots were available for comparison.

Another field showed a steady increase both in height and in yield of alfalfa from the head to the foot of the lands, associated with a corresponding decrease in the thickness of sediments. On the basis of the heaviest yield, 1.48 tons, the depreciation in yield for all of the plots was 27.6 per cent. This is the heaviest depreciation in yield observed, and is manifestly due to the unusual quantity, and imperviousness of the sediments carried from the Gila watershed upon these lands.

The condition of the soil in these plots was evidently consequent upon this sedimentary covering. At the head of the field, where the covering was from 1½ to 3½ inches thick, the underlying soil was dust-dry; while at the foot of the field, 700 feet from the ditch, where but one-third to one-half an inch of sediment had accumulated, the soil was still moist and in good condition.

The fine, detrital material, consisting in large part of decomposed, kaolinized porphyry, has a chemical composition approaching that of clay. Being notably plastic in character, it forms an exceptionally impervious blanket, so effective that, at the heads of fields, even immediately after irrigation, the soil within the second six inches from the surface has in some instances been observed in a dust-dry condition; while at the lower ends of the same fields, with but little accumulation, the same irrigation has penetrated several feet.

Being thus partly shut away from the water supply, the roots of alfalfa fail to support vigorous growth, the tops are stunted, bloom prematurely, and sometimes wither before normal growth is ready for cutting. The ground under this scant covering, being comparatively unshaded, and therefore exposed to wind and sun, dries and cracks in hot weather, thus involving the soil and the crop in a destructive sequence of bad conditions, so that, notwithstanding the application of irrigating water, the crop actually suffers from drought.

Effect of Irrigating Sediments upon Other Crops.—While the adverse effects of sedimentation upon alfalfa, especially under the higher canals of the upper Gila water supply, are unmistakable, certain other crops observed at the same time have not been found in uniform or, at first sight, consistent condition. Corn, barley, and wheat produce in many instances apparently equally well and sometimes better at the upper edges of fields than below; while in other instances the condition of these same crops has shown marked depreciation next the head ditches.

These facts, however, are brought into harmony when it is remembered that sedimentary accumulations are necessarily complex in character, being composed of successive layers of detritus brought by the river and its tributaries from widely separated localities. It is sometimes possible, for instance, to distinguish within the same vertical inch of sediment the characteristic colors from three or four overlying watersheds.

But with such crops as wheat, barley, and corn, in which the ground is plowed, disced or cultivated in a manner impossible with alfalfa, the sediment-blanket is broken up, turned under and incorporated with the soil. In this situation not only is the blanketing effect lessened or done away with, but the sediments are free to exert a fertilizing influence, or otherwise, impossible so long as they lay upon the surface inaccessible to the roots of plants.

If, therefore, sediments of beneficial character preponderate in such a mixture the result of their incorporation with the soil will be favorable, and vice versa.

Summary.—1. Irrigating sediments may be beneficial or harmful to crops according to their composition and physical character, and their disposition in or upon the soil. Whether beneficial or harmful in composition, if they accumulate upon the surface of the soil in the form of silt-blankets more or less impervious to water and air, their influence, by limiting the supply of these essential substances to plant roots, is notably harmful. In certain localities where these irrigating sediments are very plastic in character and excessive in amount, the damage, particularly to alfalfa and other crops which cannot receive constant and thorough cultivation, is of an increasingly serious character.

Cultivation, where practicable, as deep and thorough as possible, is the best available means of handling these accumulations. Beneficial sediments are thus incorporated with the soil and their fertilizing properties made available to plant roots; while sediments of barren character are dispersed to the depth of cultivation through the soil. When, however, sediments of undesirable character predominate cultivation can only modify and not remedy resulting conditions.

Mining detritus, in the instances observed, is nearly or quite devoid of nitrogen and organic matter, most required by desert soils, and is probably without fertilizing value. The plastic character of this mining detritus and the excessive amounts in which it accumulates upon certain alfalfa lands result in an extreme instance of

deterioration in yield due to irrigation sediments.

2. In the region affected by mining detritus certain other agencies also operate to cause crop losses for which river sediments or mining detritus are not responsible. Chief among these are plant diseases, of which *Rhizoctonia solani* attacks potatoes, *Puccinia graminis* attacks wheat, and a species of *Fusarium* destroys melons, pumpkins, squash, and tomatoes.

In common with muddy streams throughout the Southwest the turbid irrigating waters of this region facilitate the sunburning (?) of crops.

Alkaline salts, also, in a manner commonly to be observed in the region are to some extent a cause of loss.

3. The lessening of sediments in irrigating waters may be accomplished to a varying extent by administrative and engineering devices. Of these, settling basins are probably the most immediately available. With streams of limited magnitude reservoirs of small superficial extent have been observed to completely clarify waters heavily loaded with sediments of the finest and lightest character.

In consequence of these observations attention is called to the fact that many locations hitherto undeveloped, exist, where objectionable sediments may be found wholly or partly removable by means of suitably constructed settling basins. Works of this character are a notable feature in connection with certain irrigation enterprises on the Colorado and Gila rivers; and it is probable that, to an increasing extent, settling basins will be found a necessary adjunct to irrigating systems in the Southwest.

THE FIELD.

GROWING BERMUDA ONIONS IN TEXAS.

Experiments with Bermuda onions have not generally pleased California growers although trial of them can hardly be held to be conclusive as yet. While the subject is in this condition the experience of Texas growers will read with interest. Mr. E. O. Burton, of Bexar county, gives an account of it in the Orange Judd Farmer. Last year the crop amounted to about 100 cars. Among the points known as onion producers are Falfurrias, Karnes City, Cuero, Laredo, New Braunfels, and San Marcos.

Character of Soil.—Onions are grown on several different varieties of Texas soil, but thrive the best in the chocolate loam valley land or black sandy loam, and have done fairly well in the black waxy land. They have been most successful in the valleys along the San Marcos, Guadalupe, San Antonio, and Rio Grande rivers. The most successful varieties grown are the Bermuda, closely followed by the Silver Skin, and Crystal Wax. The Bermuda seed is imported from Teneriffe and the entire supply of genuine Bermuda seed is used each year.

Method of Culture.—The seed is sown in October in drill, 12 inches apart, so as to make about five plants to the inch. Irrigated land is used for Bermuda onions almost exclusively, and the crop cannot be classed as a sure one without control of the water supply. January is often a period of scanty rainfall in this section. By December the plants are large enough to transplant. Most of the growers prefer to have the ground in beds about 10 feet wide so that it may be flooded. Others plant the rows a little farther apart and practice furrow irrigation between the rows. A jigger is used which punches three rows of holes, usually 5 inches apart in the row and the rows 12 to 15 inches apart. Before transplanting the roots and tops are pruned. Mexican labor is used largely for this work, which costs from 50 cents to \$1 per day. One man will transplant from 8000 to 10,000 plants per day. From 75,000 to 125,000 plants are required to an acre. Little care is used in pressing the dirt around them, but, immediately after the plants are placed, the ground is flooded and the water sets the dirt firmly. The plants are cultivated after each irrigation with wheel hoes to get the ground loose and not allow a crust to form. Very often the rainfall is sufficient without irrigation, but an irrigation plant is necessary to make certain of a full crop.

Harvesting and Marketing.—The onions mature and are ready for market during April and May. They usually make an onion 3 to 5 inches in diameter, weighing 4 to eighteen ounces each. The best size for marketing is 3 to 4 inches, running 4 to 9 ounces each. When the onions have reached their growth, they are pulled and thrown in windrows to dry and are then taken to the packing sheds. The roots and tops are clipped and the onions packed in crates of 50 pounds each. They are shipped in ventilated cars without ice and if properly packed will keep for some time. They are not as good a keeper as the Creole and other varieties which are grown through the summer. Buyers from all the larger

cities come to Texas to contract for Bermuda onions, and many of them are sold f. o. b. shipping point.

The Texas Bermuda and other mild winter grown Texas onions are superior in looks and flavor to the imported onions and have now made such a name for themselves that Northern commission men advise the growers to mark their onions Texas Bermudas. These are becoming better known each year.

Profits.—Last year, owing to the success of the onion, growers in South Texas, many inexperienced growers went into the business. These used little care in grading and packing, and results were, in most cases, disastrous to them. Onions were shipped before they were properly cured. The heavy green stem being clipped off, the onions were very roughly handled in bulk, small and large were all piled in together, making a very bad looking package. Those who graded and-packed their onions properly secured large profits. From 2 to 3 cents per pound were realized in many cases. A yield of 18,700 pounds per acre has been made without fertilizer, and with heavy fertilization a yield of 40,500 pounds per acre has been attained. Fertilizers used are—a heavy dressing of stable manure plowed in before planting, the fertilizers put out especially for onions by the packing houses, in many cases a top-dressing of nitrate of soda, applied about six weeks before maturity to give a better quality and firmness to the onion.

Those who will use the necessary care at all stages of onion growing and marketing will find the business very profitable, but those using careless or slipshod methods will inevitably fail. To better control the market an association has been formed which will have charge of the marketing this year and which will control the bulk of the Texas onion crop. This will do away with the loss from consigning to snide commission men and each car will be inspected before shipment and a more uniform quality secured. Bermuda onion land can be purchased in its raw state at \$10 to \$20 per acre, and that already in cultivation at \$30 to \$100.

SPRAYING FOR POTATO BLIGHT.

Our correspondence indicates that fighting potato blight is becoming more and more necessary in this State because of increasing losses from this disease. Mr. W. A. Orton prepares an interesting account of the way to treat the disease and notes of its occurrence in the coast regions of the States north of us, for the Northwest Horticulturist:

The late blight fungus of the potato requires for its best development a moist or humid climate and a comparatively low temperature. It is for this reason that it is widely prevalent in the regions mentioned while it does not occur to any great extent in southern districts. Losses due to blight are often not realized by farmers. These losses are of a two-fold nature. In the first place the crop is reduced by the premature destruction of the vines, and in the second place there is frequently considerable decay during storage due to the same fungus which attacked the vines. It is estimated by reliable authorities that the average loss per acre throughout the principal potato growing sections of the country amounts to 60 bushels per acre in seasons when the blight is prevalent, making a total loss of many millions of dollars, nearly all of which could have been prevented.

Potato blight can be effectually prevented by spraying with Bordeaux mixture, and this treatment has become an established farm practice in many sections of the country. This should also be the case in the Coast country, and a few careful trials will soon convince the skeptical potato grower of the profits to be made in this manner.

It is advised that spraying be begun the latter part of June, as it is important to make the first application before the blight appears. Once the disease has gained headway in field it is much more difficult to check it. Additional sprayings should be made at intervals of two weeks in dry weather or more frequently toward the end of the season if the weather is rainy and the disease spreading rapidly in neighboring fields.

Formula; How Prepared and Applied.—Bordeaux mixture for potatoes should contain 6 pounds of bluestone and 4 pounds slaked stone lime to 40 or 50 gallons of water. Briefly stated, it is recommended that whenever any considerable area of potatoes has to be sprayed preparation should be made for making the mixture quickly on a large scale through the employment of stock solutions and a mixing platform. The stock solution of bluestone is usually made by weighing out two pounds to each gallon of water, and suspending the same in a loose sack near the top of the water. A few hours will suffice to dissolve the bluestone. The lime should be slaked with care, and sufficient water added to bring the paste to a concentration of two pounds per gallon. To prepare a barrel of mixture 3 gallons of the stock bluestone solution are

taken and diluted in a separate barrel to make 20 gallons. Two gallons of the lime milk well stirred and diluted in another barrel to make 20 gallons and both poured together into the spray tank, or allowed to empty into it from an elevated platform. The mixture should be made fresh before using.

The application should be as thorough as possible. Some form of spray pump is essential, and as a matter of economy, in fields of several acres a geared or power spray is best, provided the machine possesses sufficient capacity to thoroughly cover the potato foliage. Many sprayers now on the market are deficient in this respect and require to be run twice or three times over the field to thoroughly cover the foliage. For well-grown potato vines 150 to 200 gallons per acre will be needed, although great gains in yield are often reported from the use of much smaller quantities.

Highly Satisfactory Results.—The effect of Bordeaux mixture on potatoes is very marked, even in seasons when the blight is not especially prevalent and it has been shown beyond question by many years of experience that it is profitable to spray every year. Experiments made at the Puyallup station by Mr. David A. Brodie showed an average increase in a yield of marketable potatoes in the sprayed rows over that of the unsprayed rows of nearly 37 per cent. Results still more striking have been reported from trials in Vermont and New York. In the latter State five spraying at the experimental station at Geneva increased the yield 23 bushels per acre and three sprayings increased it 191 bushels per acre.

"In fourteen farmers' business experiments, including 180 acres, the average gain due to spraying was 62½ bushels per acre; the average total cost for spraying, \$4.98 per acre; the average cost for each spraying 93 cents per acre; and the average net profit, based on the market price of potatoes at digging time, \$24.86 per acre.

"In 41 farmers' volunteer experiments, including 363½ acres, the average gain due to spraying was 58½ bushels per acre. In 23 of these experiments the average total cost of spraying was \$3.91 per acre, the average cost for each spraying, 90½ cents; and the average net profit, based on the market price of potatoes at digging time, \$22.02 per acre."

BERMUDA, JOHNSON AND GLORY.

To the Editor: In your issue of October 13-27 and November 3 appears enquiries about Bermuda, morning glory, and Johnson grass. As there are so many enquiries, and continue to be about these so-called pests, I should think it would be a relief to your columns to keep a condensed article in one corner of the PRESS for enquirers to refer to.

What is Bermuda Grass.—The first that I ever heard or saw of it was brought from Honolulu in the early sixties by a lady and planted in her front yard on N street, between Sixth and Seventh, Sacramento. Bermuda grass does not have tap roots like alfalfa, but a mass of fibrous roots, like threads. It is propagated by cutting up the sods into small pieces and sowing over the ground and rolling in. When it is young and has plenty of room it propagates itself by throwing out runners, and at every two or three inches are joints that throw out roots to form plants of its own. It will not make much feed until the ground is completely sodded. It starts late in spring, does not like frost, and turns white in winter. It is the only grass that I know of that likes abuse, for the more you tramp it the better it flourishes. There is a salt or alkali grass that is frequently mistaken one for the other. Bermuda grass is easily killed by two or three plowings in June, July, and August, by turning the roots up to the hot sun. There is no need of losing a year's crop on a Bermuda field. Put in the disc harrow and cut up well and sow oats or barley and after harvest put the plows to work. I am propagating it in a pasture for horses, cattle, sheep, and hogs, and I find they do well on it. Animals that have teeth only on one jaw (cows and sheep) do not like it when too rank. Horses will do well on it and work and drive much better than on alfalfa. Animals are like children, they want to eat the best first. Bermuda grass, like all others, when rank is not as palatable as it is when short, sweet, and green, and the tops will be eaten first and stubble last.

Do not plant it except where it can be used as pasture and the land is not desirable for cultivating purposes. It will not pay to cut for hay or seed.

If anyone wants plants they can get all they want in Sacramento, for it is in all public and private grounds.

I have one hundred acres on the right bank of the American river covered mostly with wood and brush, and there are not over 15 acres of it cleared, and in Bermuda grass, and I keep from five to ten head of horses nearly all year round, except during high water, and they keep fat and look well. I intend to clear up more

land and plant Bermuda grass this winter

To kill morning glory plow and harrow often in hot weather.

To kill Johnson grass plow it, put hog fence around it, and put in hogs without rings. I am propagating Johnson grass in my pasture, and it makes good feed and lots of it when young.

Sacramento.

DANIEL FLINT.

THE VETERINARIAN

ACTINOMYCOSIS, OR LUMPY JAW.

The following description of the disease named above, its cause and treatment, is taken from circular No. 96, issued by the Bureau of Animal Industry, U. S. Department of Agriculture:

"Actinomycosis, also known as lumpy jaw, big jaw, wooden tongue, etc., is a chronic infectious disease characterized by the formation of peculiar tumors in various regions of the body, more particularly the head, and due to that specific action of a certain fungus (actinomyces). This fungus is an organism which occurs in the tissues in the form of rosettes, and it has therefore been termed the 'ray fungus.' The disease is not directly transmitted from one animal to another, but it seems apparent that the fungus is conveyed into the tissues by various food stuffs through slight wounds of the mucous membrane of the mouth, decayed teeth, or during the shedding of milk teeth. The ray fungus is found in nature vegetated on grasses, on the awns of barley, the spears of oats, and on other grains. Quantities of the fungi have been found between vegetable fibers of barley which had penetrated the gums of cattle and on the awns of grain embedded in the tongues of cows.

The quite unanimous view of all observers is that animals become infected from the food. The fungus is lodged upon the plants and in some way enters the tissues of the head, the lungs, and the digestive tract, where it sets up its peculiar activity. It is likewise generally believed that the fungus is, as it were, inoculated into the affected part. This inoculation is performed by the sharp and pointed parts of plants which penetrate the mucous membrane and carry with them fungus. The disease is therefore inoculable rather than contagious. The mere presence of the diseased animal will not give rise to disease in healthy animals unless the actinomyces grains pass directly from the diseased into some wound or abrasion of the healthy or else drop upon the food which is consumed by the healthy, and, therefore, its removal from the herd is necessary to prevent infection.

The course of the disease is quite slow. As the tumors grow they may interfere with the natural functions of the body. According to their situation, mastication, rumination, or breathing may be interfered with and in this way the animal may become emaciated. A very small proportion of the cases may recover spontaneously, the tumors being encysted or undergoing calcification. In most cases the disease yields readily to proper treatment, and about 75 per cent of the affected animals may be cured.

In cattle the disease process may be located both externally, where it is readily detected, and in internal organs. Its preferred seat is on the bones of the lower and upper jaw, in the parotid salivary gland in the angle of the jaw, and in the region of the throat. It may also appear under the skin in different parts of the body. Internally it may attack the tongue and appear in the form of a tumor in the mouth, pharynx, and larynx. It may cause extensive disease of the lungs, more rarely of the digestive tract.

It appears, furthermore, that in certain districts or counties the disease seems to attack, by preference, certain parts. When the disease attacks the soft parts of the head a rather firm swelling appears, in which are formed one or more smaller projecting tumors, varying from the size of a nut to that of an egg. These push their way outward and finally break through the skin as small, reddish, funguslike bodies covered with thin sloughs. Or the original swelling, in place of enlarging in the manner described, may become transformed in an abscess which finally bursts to discharge creamy pus. The abscess cavity, however, does not disappear, but is soon filled with funguslike growths which force their way outward through the opening. When the tumors are situated within the cavity of the pharynx they have broken through from some gland, perhaps beneath the mucous membrane, where the disease first appeared, and hang or project into the cavity of the pharynx either as pendulous masses with a slender stem, or as tumors with a broad base. Their position may be such as to interfere with breathing. In either case serious symptoms will soon appear.

The disease has been successfully treated as follows: Iodide of potassium is given in doses of 1½ to 2½

drams once a day, dissolved in water, and administered as a drench. The dose should vary somewhat with the size of the animal and with the effects that are produced. If the dose is sufficiently large there appear signs of iodism in the course of a week or ten days. The skin becomes scurfy, there is a weeping from the eyes, catarrh of the nose, and loss of appetite. When these symptoms appear the medicine may be suspended for a few days and afterwards resumed in the same dose. The cure requires from three to six weeks' treatment. Some animals do not improve under treatment with iodide of potassium, and these are generally the ones which show no signs of iodism.

If there is no sign of improvement after the animals have been treated four or five weeks, and the medicine has been given in as large doses as appear desirable, it is an indication that the particular animal is not susceptible to the curative effects of the drug, and the treatment may, therefore, be abandoned.

It is not advisable to administer iodide of potassium to milch cows, as it will considerably reduce the milk secretion or stop it altogether. Furthermore, a great part of the drug is excreted through the milk, making the milk unfit for use. It should not be given to animals in advanced pregnancy, as there is danger of producing abortion.

The many tests to which this treatment has been subjected have proved with few exceptions its specific curative value. In addition to this the tumor should be painted externally with tincture of iodine or Lugol's solution, or one of these solutions should be injected subcutaneously into the tumor.

Mr. Godbille has given as much as 4 drams of potassium iodide in one day to a steer, decreasing the dose one-fourth dram each day until the dose was 1¼ drams, which was maintained until the twelfth day of treatment, when the steer appeared entirely cured. M. No-card gave the first day 1½ drams in one dose to a cow; the second and third succeeding days a dose of one dram in the morning and evening, in each case before feeding. The treatment was continued for ten days, when the animal was cured."

FARM LIFE.

By Mrs. Kate E. Baldwin, at the University Farmers' Institute in Scott Valley, Siskiyou County, Cal.

When asked to write a paper on "Farm Life" for the Farmers' Institute, I thought, "What can I say?" But when I require of my boys and girls a story on a given subject, I expect a result; thus I have been dutiful, and being assigned this topic by the committee, have done what I could in the short time for preparation.

In taking up this question of Farm Life or Farm Homes, I shall not deal with the scientific side at all, but with the aesthetic or ideal side.

We all know there is no better place to go than back to the dear old farm home.

Ever in song and verse has it been a leading theme, and our dearly loved poets have based many of their most beautiful poems on the old farm home. Whittier has idealized his home in Snowbound, where even the fowls and cattle are mentioned in fond remembrance. Burns, who gilded every simple farm duty with a touch of gold, sung of the rural home in all its beauty. Read "The Cotter's Saturday Night," and who of us but think Farm Life and Home the best.

Then, too, it brings to our souls a sweet sense of higher thoughts to go with Phoebe Cary back to "the Old Brown Homestead."

"Our old brown homestead reared its walls
From the wayside dust aloof,
Where the apple boughs could almost cast
Their fruit upon its roof;
And the cherry tree so near it grew
That when awake I've lain
In the lonesome nights,
I've heard the limbs
As they creaked against the pane
And those orchard trees, oh, those orchard trees!
I've seen my little brothers rocked
In their tops by the summer breeze.
The sweet-brier under the window-sill,
Which the early birds made glad,
And the damask rose by the garden fence,
Were all the flowers we had.
I've looked at many a flower since then,
Exotics, rich and rare,
That to other eyes were lovelier,
But not to me so fair;

For those roses bright, oh, those roses bright!
I have twined them in my sister's locks
That are hid in the dust from sight.
We had a well, a deep old well,
Where the spring was never dry,
And the cool drops down from the mossy stones
Were falling constantly;
And there never was water half so sweet
As the draught which filled my cup,
Drawn up to the curb by the rude old sweep
That my father's hand set up.
And that deep old well, oh, that deep old well!
I remember now the splashing sound
Of the bucket as it fell.

Our homestead had an ample hearth,
Where at night we loved to meet,
There my mother's voice was always kind
And her smile was always sweet;
And there I've sat on my father's knee,
And watched his thoughtful brow,
With my childish hands in his raven hair,—
That hair is silver now!
But that broad hearth's light, oh, that broad hearth's
light!
And my father's look, and my mother's smile,
They are in my heart tonight."

What then is the greatest problem facing the Farm Home today? This, to me, seems paramount.—How shall we keep our boys and girls on the farms?

In this stirring busy age youth soon catches the spirit of doing, and then comes the rush to the city. In our Eastern States, where cities are nearer together, it is safe to say that the rural districts are losing two-thirds of their youth each year. One remedy seems this, and I'm happy to state that California is realizing its importance when such a text book as "Agriculture For Beginners" is placed in our schools; I believe if our boys and girls may be taught that their farm home, the grass, grain and soil have a meaning above that of mere existence, then we may hope to keep the boys on the farm.—That is, to make my meaning clear, when the truth of simple things shall unfold to them, and they feel it is as worth doing as entering a clerkship or driving a delivery wagon. Then, and not till then, may we expect to keep them.

All through our beautiful valley we have peaceful homes,—and boys and girls of Scott Valley, yours is a princely heritage, with God's hidden treasures lying in the rich fields about you! Seek the best education along these lines that is possible for you, and take that best back to the Farm Life and then, the Farm Home will mean to you what it did to Burns and Whittier
Greenview, Cal.

DAMAGE FROM SMUT.

The grain smuts in California cause an annual loss in the crops of the State that may be conservatively estimated at ten per cent. Not only does this direct loss occur, but there is a further loss through a lowering of the commercial grades, which is occasioned by the presence of even a small quantity of smut on the grain. Farmers doubtless do not realize the large loss which occurs annually from this trouble. The widespread occurrence of this trouble is the more to be deplored since the methods which can be employed are both easy of application and extremely effective. While it is not the province of this article to deal in detail with the grain smuts, yet the great prevalence of the disease and the lack of proper precaution and the resulting heavy loss to farmers makes it pertinent to introduce a brief discussion of them here.

The smuts of grain are caused by the growth of minute parasitic plants that live within the tissues of the grain plants and are nourished by the juices of the growing grain. These fungi or smuts reproduce their kind by the production of spores, which are bodies corresponding to the seeds produced by ordinary plants, and one capable under the proper conditions of germinating and growing. Owing to the fact that the fungus growth giving rise to the diseased conditions are very closely connected with the tissue of the affected plants, and because the fungi themselves are very tenacious of life, any treatment with power enough to destroy it will at the same time injure the growing plant. Hence the remedy must be one of prevention rather than cure. While there are certain minor ways in which the disease may infect a field, yet the major amount of the disease in every case enters by way of the seed, hence the greatest care should be taken to so select, care for, and treat the seed as to prevent sowing living smut spores with the seed grain.

There are two quite distinct classes of the so-called

smuts, one known as loose or black smut, and the other striking smut, or bunt of wheat, both of which affect grain crops. The former is characterized by an accumulation of loose, black, smutty matter from the parasite whose filaments penetrate the growing grain.

The striking smut or bunt of wheat, is wholly confined to the wheat plant, and is the cause of much greater loss than the loose smut. On account of the fact that the spores may remain entirely enclosed in the wheat grain and of the very disagreeable odor, it not only is capable of seriously reducing the yield, but also damages the quality of the associated sound grain when milled by imparting a disagreeable odor to the flour.

While in the case of loose smut disease the black accumulation of smut spores are always evident; in the case of bunt spores they form and often remain within the wheat kernel, and the latter remains in its normal position in the head, so that it is only by close observation that one will detect it in the growing grains. When the grains are removed from the head, however, they present an enlarged appearance, and are somewhat shorter than healthy grain, and when crushed it is found filled with the black smutty mass of spores which emit a foetid odor.

Since the major source of infection is through the medium of the seed, it necessitates the treatment of all seed sown by such a process as will kill the smut spores adhering to the grain without injury to the latter.

WHAT STATE AGRICULTURAL SOCIETIES ARE DOING.

J. A. Filcher, Secretary of the State Agricultural Society, recently appointed by Governor Pardee a delegate to the Farmers' National Congress, which held its session last month in the City of Rock Island, Illinois, improved the opportunity while East to visit the officers and grounds of a number of agricultural societies in the Middle Western States, and he comes back with many ideas of practical utility, which he thinks can be applied to advantage in the work of building up the Agricultural Society of California.

The societies visited by Mr. Filcher were those of the States of Minnesota, Iowa, Illinois, Indiana, Ohio, Kansas, and Nebraska. In all of these States the annual fairs are looked forward to as the farmers' great holiday season, where they not only obtain diversion, but rest and visit and get acquainted and learn much from one another, as well as from the exhibits of the latest and best of the things in which they are interested, and as a result, the balance sheet of these societies each year shows a surplus. This surplus, re-enforced with such amounts as may be appropriated by the State from time to time, is used in extending their field of usefulness or in the erection of new and modern fire proof exhibition buildings. In Minnesota a new fire proof amphi-theatre for judging live stock, with seating capacity for 7,500 people, has just been completed, at a cost of \$100,000, and in Ohio the old wooden grand stand is being torn down to make room for one to be built of steel and concrete at a cost of \$50,000.

Kansas, Ohio, Illinois and others have efficient statistical departments, and profiting by the information obtained, Mr. Filcher proposes right now to inaugurate a systematic method of collecting data for reliable crop reports and other industrial subjects, and thus try to put into practical operation this heretofore much neglected feature of the California State Agricultural Society's work.

To begin with, he wants an intelligent and reliable correspondent in each political township of every county in the State, and the supervisors of the respective counties have been asked to suggest the names for this correspondence army. They will no doubt do this gladly, and those honored by selection will doubtless accept the task of occasionally reporting the crop and other industrial conditions of their respective townships, and from such direct sources we can readily understand how much reliable data may be collected from time to time of great value to the State at large and to all our people.

The manager of a large canning establishment says that the tomato crop of the West suffered severely from excessive wet weather, and the output of the pack is uncertain. As to Western corn, he says the pack will naturally be much smaller this season, as the acreage was reduced fully 50 per cent. A large quantity of corn was carried over last year. The low prices that have been made in certain sections, he says, has been done to get rid of the stock carried over before the national pure food law goes into effect on January 1. After that date much of this carried over stock could not be disposed of, as it was not put up in accordance with requirements of that law.

THE MARKETS

Wheat.

The wheat market is uninteresting locally this week, as the price is not what the speculator likes to see. A good many sales have been made, however, within a large range of prices and although the crop is generally of good quality, there are some very inferior grades in the market. Some few sales have been made at as high a figure as \$1.37½, but this is paid only for the best of white milling wheat and the market is not at all steady at such a figure. It is almost impossible for the dealers to give a general quotation that will just about average up the price. The figures show a range of from \$1.15 to \$1.37½. At these figures the spot trade is slow. There has, however, been a good deal of dealing in futures at figures pretty close to \$1.25. Local houses are now seeing the necessity for more store room as the season advances. The wheat situation north is in much the same condition as here, with very little buying and a fairly steady market. It is reported from Portland that the entire holdings now in the hands of the farmers will not reach tide water until much later, as it has now been stored and farmers will not move it soon unless they realize a substantial advance. No immediate change is looked for in the matter of prices.

Flour.

The flour situation is not attracting any particular attention at present, though the movement is fairly large in immediate supplies and as the number of dealers is strictly limited the volume of business done by the individual houses is fairly large. The receipts are quite large, running probably about 7000 quarter sacks per day. The price has not been changed materially during the week, but the market is firmer in proportion than is the wheat market. Dealers quote, net cash, family extras, \$4.65 to \$5.10 per barrel; bakers' extra, \$4.50 to \$4.60; Oregon and Washington, \$3.50 to \$4.00.

Barley.

Number one feed is bringing \$1.10 to \$1.12½ per cental, with some sales being made for extra fancy grades at as high as \$1.13½. Common to fair is worth from 97½ cents to \$1.07, brewing and shipping \$1.15 to \$1.17. The local demand is about normal and the price is kept firm by the large and constant demand. Chevalier is selling considerably above the ordinary quotations and is fairly firm. Generally speaking the situation is good and the market is expected to at least hold its own.

Oats.

The oat crop throughout the State has not proved to be so great as was at one time expected, but the price is good compared with other grains. A number of growers sold early as they were strongly convinced that the market was then at the top and as a consequence there is very little holdover in the hands of the farmers. Eastern markets are as a rule firm and the transactions are quite large. Locally the situation has not been altered during the week. The demand is still brisk for good seed oats and prices are fair. Dealers quote: White, \$1.32½ to \$1.45; red, \$1.20 to \$1.42½; black, \$1.60 to \$2.10.

Millstuffs.

The market is steady for almost every variety of millstuffs in this city. A good deal is being used here and this is an added factor of strength to the local situation. The demand is more brisk for rolled barley and oats than for other lines, as these constitute the chief feed. Bran is worth from \$18 to \$20 per ton, with a fair demand; middlings are held now at \$26 to \$29; ground barley at \$23.50 to \$25; feed corn, choice, at \$31.50 to \$32.50 and cracked corn at \$32 to \$33.

Corn.

The demand for corn is fair and the price is firm. Very little is, however, reaching this point and the demand is only particularly satisfied. There is some prospect that corn will be more plentiful later on as the Eastern crop has proved to be immense.

Beans.

Limas have continued steady at top prices since last week. It is estimated that two-thirds of the crop has left the hands of the growers and shipments made and orders forward will amount to about one-half of the year's crop. The general opinion is that if the present rush continues, there will not be more than 300,000 sacks left in the State by the first of January and this will just about suffice for home consumption. The price, in view of this outlook is not expected to decline and many are of the opinion that an advance in price is only a matter of time. Shipments of other varieties

in the shape of mixed and straight cars are going out in good volume. The crop on the river has turned out only fair and the supply from river points will not be as great as was expected. The harvest weather was excellent up to last week and the slightest rainfall at that time did not do any material damage. Outside of pink beans, there is very little left to be harvested. Prices for large whites and pinks are low and considerable speculation is being done in these. Bayos have declined and red kidneys have gone up.

Potatoes.

There has been no great change in the potato market except that Salinas are no longer going up and are now ruling at from \$1.75 to \$1.90. Rivers are about the same as last week. Receipts have been about normal this week, with a slight increase in the arrivals of Salinas.

Onions.

Onions are quoted at from 65 to 70 cents and the market is slightly weaker than it was a week ago. The supply almost amounts to a surplus and a still further decline would not come as a surprise.

Seeds.

Seeds are bringing paying prices nowadays, and the trade here is pretty well satisfied with the situation. There have been no new developments since last week and prices are unchanged.

Hops.

Desirable grades of California 1906 hops are bringing 15 cents with an occasional sale at 16 cents. Not much is being done locally, but reports from the hop districts show that there is some little interest there. It is estimated that about one-half of the unsold portion of the crop will in the end go to England, where the shortage seems to have been as great as was reported a few weeks ago.

Hay.

Receipts of hay for the week have amounted to 4677 tons, or about the same as last week. Quite a percentage of these arrivals has been of the better classes and grades of hay, from the Livermore valley. As a result the market on these grades is somewhat easier. In fact, the market has eased a trifle all the way through. Local trade continues active, as the supply is by no means equal to the demand. Transportation is still the pivot on which the whole situation turns. Water shipments are quite satisfactory, but there is a scarcity of cars which the railroad does not seem to be able to overcome. Arrivals of alfalfa have been heavy, and while the price has not gone off, sales are dragging very much.

Wool.

The Red Bluff country is the center of attraction this week in wool transactions. A few days ago the big wool growers of that section met the buyers and a thousand bales changed hands. The prices received were in the neighborhood of 11 and 13 cents, which is about one-half cent more than was offered two weeks ago. Nearly all of the big clips were sold, and what is left is expected to go within a week or two.

Poultry.

The demand for large, fat stock is going wild and the price has been forced up. Turkeys are in fair supply and are bringing good prices. Dealers quote live turkeys at from 20 to 22 cents. Large hens are bringing up to \$6.50 and some extra large fat stock has brought as high as \$8.

Butter.

Butter has gone up another notch this week and is now worth 31 cents. The supply continues small and the demand for the best is good, even at the extreme prices.

Cheese.

Cheese is firmly held at 14½ cents, and the demand is still strong for all desirable lots. The poorer grades continue plentiful.

Eggs.

Eggs continue scarce, but the market has apparently reached the limit. The best ranch eggs are now quoted at 50 cents.

Vegetables.

The supply of all seasonable fruits is good and the demand has not suffered any decline. Dealers are inclined to look for a good steady call for most lines for some time to come. Some interest is taken in tomatoes, as these are expected to go off the market when the first killing frost comes. There is believed to be a fair

storage supply of most summer vegetables, so that frost will not bring so sudden a change in the market as it would otherwise. Prices for the ordinary run of vegetables show only slight variations.

Dried Fruits.

Packers here are beginning to realize that their space is limited now that the fruit is coming in in considerable quantities. Local houses are well filled at present and if arrivals continue they will have to be stacked outside. The price is firm for nearly every variety and sales are being made in fair volume. Apricots are bringing 15 to 18 cents; evaporated apples, 5½ to 7 cents; sun dried apples, 2½ to 3½ cents; peaches, 10 to 12½; pears, 9 to 12½; prunes, 2¼ to 2½ for small sizes and 3 to 3½ for large sizes.

Fresh Fruits.

The market is not well stocked at present with fresh fruits, although some of the seasonable varieties are plentiful. The United States apple crop has proved to be one of the largest on record and this is weakening the demand for California stock in the East. Grapes are still on hand, but some varieties are beginning to run short. Apples are plentiful and are selling at from 85 cents to \$1.40 for fancy.

Citrus Fruits.

Oranges are a little more plentiful this week, but the price has not been altered materially. Lemons and limes are about as before. Grape fruit is unchanged.

Nuts.

Nuts are beginning to come in now and prices are at last becoming more stable. All arrivals are quickly disposed of at the prevailing prices. Prices are: Walnuts, soft shell, 11½ for No. 1; hard shell, 11 for No. 1; almonds from 13 to 17, according to quality.

Raisins.

Raisins in the central part of the State are pretty well bought up, and very few of the 1906 crop are still left in the hands of the grower. A large part of the crop is shipped, and if the present rate of shipment continues very few raisins will be left for next year.

TRUE TO ITS KIND.

Everybody knows that when a scion is inserted in a tree the fruit which it produces is that of the scion and not of the stock. There have always been some who believed, on general principles, that the stock had some influence on the fruit even if it could not be perceived. An imperceptible influence is hardly worth inquiring into, but some study has been given by competent observers, whose conclusion is that the root systems of some stocks were better purveyors of nutriment than others so that scions grafted into them might produce more or larger fruit than when grafted into other stocks with which equally good unions were made. But the curiosity of modern investigators is insatiable, and some people have been trying to find out how it is that a quince root, for example, will produce a pear, or an almond root a plum. Some have thought it was the leaves which did the trick, which was a rather natural theory, because the sap is digested and the nutriment assimilated in the leaves. To determine this point, says an exchange, scions of the yellow transparent apple were inserted into branches of the wild crab. After fruit spurs were formed all leaves were removed from the graft and none allowed to form during the season, so that all of the sap was elaborated by the leaves of the wild crab. At the same time another scion of the same yellow transparent tree was inserted into a twig of the same branch and allowed to form its own leaves. Both of these grafts bore fruit this season, and the general verdict is, that no difference either in size, color, or flavor can be detected. In both instances the fruit is clearly yellow transparent. This experiment would seem to indicate that it makes no difference from whence the sap comes, the fruit will remain true to its kind.

A dispatch from Michigan says that the beet sugar product of that State this year will be unprecedented. In 1904 5½ tons was the average production per acre. In 1905 it rose to 7 tons, but the crop was very short. This year the average production will be 10 tons per acre, 1 ton in excess of the standard of a good year. There are under contract this year between 85,000 and 90,000 acres, as compared with 78,600 last year. The beet sugar manufacturers expect a production this year of 200,000,000 pounds against 143,100,000 pounds last year.

THE DAIRY.

THE CREAMERY CONVENTION.

The annual convention of the California Creamery Operators' Association will be held at Stockton on the 7th and 8th of December, 1906. The Stockton Chamber of Commerce has assured a splendid entertainment. There will be other attractions including the public scoring of butter.

All butter entered for this year's contest must be taken from the regular churnings and packed into "cubes," which will be furnished free by the association upon application to the secretary. Full instructions will accompany each package. Owing to the fact that the funds of the association are limited it has been decided that all butter entered shall become the property of the association, which will sell them after scoring and turn the proceeds into the prize fund.

The program, which is soon to be sent out, is as follows:

FRIDAY, 9 a. m.

Address of welcome, Hon. M. J. Gardener, Mayor of Stockton.

Response, A. B. Evans, Fresno.

President's address, J. H. Severin, Oakland.

"Creamery and Dairy Sanitary Deficiencies," H. J. Faulkner, Inspector, State Dairy Bureau.

"Over-run as Related to Quality in Butter," A. L. Peterson, Kingsburg. Appointing of committees.

FRIDAY 1:30 p. m.

"Making Prize Winning Butter," Geo. G. Knox, Sacramento.

"Centralized Creameries," H. P. Glasier, Oakland.

"Dairy Observations in the East," H. F. Lyons, Berkeley.

"Vital Questions in California Dairying," A. Jensen, Eureka.

"Dairy Education," E. W. Major, University of California, Berkeley.

Address, Wm. H. Saylor, Secretary State Dairy Bureau, San Francisco.

FRIDAY 8 p. m.

Address, Prof. Leroy Anderson, California Polytechnic School, San Luis Obispo.

Address, Hon. E. H. Webster, Chief of U. S. Dairy Division, Washington, D. C.

Address, Hon. Peter J. Shields, Sacramento.

SATURDAY 8 a. m.

Excursion on San Joaquin river to Riverside Farm as guests of Stockton Chamber of Commerce.

SATURDAY 1:30 p. m.

Scoring butter entries at Convention hall, E. H. Webster, W. H. Roussel, Judges.

Report of secretary-treasurer, W. H. Roussel, reports of committees, election of officers.

SATURDAY 7:30 p. m.

Annual banquet as guests of the Stockton Chamber of Commerce, W. H. Roussel toastmaster.

Announcing results of butter contest.

The following announcement will be mailed with the program by Secretary Roussel:

THE SMALL SILO QUESTION.

How small a silo is practical is a question discussed in recent numbers of the Rural New Yorker and one writer says: "My nearest neighbor, who keeps two cows, built one against the southeast end of his barn outside, which was six feet in diameter and 30 feet deep. He filled it with corn which was well matured, having large nice ears, past the boiling stage, and it fed those two cows all winter, with a nice quantity left for the summer's use. Too many get over-anxious for a big crop, put in too much seed corn and have a lot of immature stuff which they put in the silo and call it silage. I should say gauge the diameter of your silo by the size of your dairy, and that greater height is very desirable, as the silage will have more pressure and be less liable to spoil. Then with well-matured corn, and a proper grain ration, the cow will not only smile at you, but put some good milk in your pail, and look 'slick' beside."

SCIENCE OF MILKING COWS CLEAN.

Prof. J. L. Hills, of the Vermont Experimental Station writes for the Orange Judd Farmer as follows: It is well known that the average milker gets less milk than he who does a thorough job, that incomplete milking means not only direct but indirect loss, not only an immediate lessening of the fat yield, but tends toward drying the cow. A Danish scientist has recently developed a special system of udder manipulation, a sort of massage of the mammary gland, as it were, which it is claimed augments the flow. The Hegelund method, as it is called, involves three manipulations, each thrice repeated or until no more milk is obtained. First, the pressure of the quarter on each side against each other thrice repeated, followed by removal of the milk; second, the pressure of the glands together on each side, the fore quarter being first manipulated and then the hind quarters, followed by removal of the milk; and third, the fore quarters are pressed between hand and body, the hands holding the teats loosely, then the hind quarters also, followed by milking.

Trials of the scheme made at the Wisconsin and New York stations afforded a daily average increase per cow of a pound of milk and two ounces of butter. The after milk was very rich in fat, testing above 10 per cent. This after milking takes not to exceed five minutes' time, often only two or three minutes.

The two ounces of butter may be held at a low estimate to be worth two cents. This would be a fair pay for five minutes' work, 24 cents an hour and the skim milk thrown in. Not only is more milk and butter made, but the secretion is stimulated and the lactation period prolonged. It may be remarked, however, that the differences in milk and butter yields between this method and careful stripping are not great. This Danish method emphasizes more perhaps than has hitherto been done, the actual and potential losses due to incomplete milking.

PATRONS of HUSBANDRY

TULARE GRANGE MEETING.

To the Editor: Tulare Grange convened in regular session on Saturday the 3rd. The third and fourth degrees were conferred in an impressive manner on a class. A communication from J. J. Steadman, Esq., was read and he was requested to address the Grange on the subject of good roads.

The subject of the day, "Do farmers send their boys to the agricultural college as generally as they ought to do, and if not, why?" was taken up and very generally discussed.

It was admitted, that considering the great competition, in production and marketing of farming products, success can be attained only by scientific work and a careful education and training therein. That, therefore, farmers, as a rule, have not sent their boys and girls to the College of Agriculture, but there has been excusable reasons for not doing so. It was admitted that they are, now, doing so to a greater extent than ever before and that numbers of students in the College of Agriculture will increase as educational methods and facilities in agricultural education improve and increase. Heretofore, the farmers of the land have had few and rare opportunities of education, on scientific lines, in their calling, they are, now, realizing the disadvantages they have to labor under by reason of the lack of that education. The farmers educational facilities have, however, greatly increased within the past few years, and are still improving, as fast, perhaps, as our educators can devise methods and get the facilities and the means therefor.

It was stated that Prof. E. J. Wickson, Dean of the College of Agriculture of California, is arranging to have instruction, in entomology and irrigation given to classes at Grange meetings. This will be a step in the right direction and will undoubtedly be productive of good

Clean Skimming Means Good Living

The hog trough is no place to put butter.

Wide awake farmers want the cream separator that skims the cleanest. It means more profit—better living. That separator is the Sharples Dairy Tubular—the separator that's different.

Sharples Dairy Tubulars have twice the skimming force of any other



separators—skim twice as clean.

Prof. J. L. Thomas, instructor in dairying at the agricultural college of one of the greatest states in the Union, says: "I have just completed a test of your separator. The skimming is the closest I have ever seen—just a trace of fat. I believe the loss to be no greater than one thousandth of one per cent."

That is one reason why you should insist upon having the Tubular. Tubulars are different, in every way, from other separators, and every difference is to your advantage. Write for catalog S-131 and valuable free book, "Business Dairying."

The Sharples Separator Co.,
West Chester, Pa.
Toronto, Can. Chicago, Ill.

educational results. Instruction will not stop with the subjects mentioned, but will extend, as requirements come, to all other educational lines of agricultural education. This will bring the college to the farm and will bring the farmer, his wife, and their children to the college.

Tulare Grange, P. of H., has for many years known Prof. Wickson's worth, in agricultural lines, both in the class room and farmers' institutes. It appreciates his worth therein. It hopes the Regents of the University of California will appoint him, permanently, Director of Agriculture and Dean of the College. His education and training, exceptionally well, qualifies him for the work.

A new application, to the Insurance Commission, for permission to organize a county co-operative fire insurance society was signed by all having property to insure. It is now in circulation and should be signed by all who desire to insure their farm property. This is a work in which every farmer should take an interest and assist in promoting.

J. L.

TRY THE DE LAVAL BEFORE YOU BUY A SEPARATOR

Surely there is no reasonable excuse why everyone who thinks of buying a cream separator should not try a DE LAVAL machine before buying. By simply making the request you may have a DE LAVAL machine set up at your home without any trouble or expense whatever. If, after you have tried and tested the machine, you do not wish to keep it, you need not feel under obligations to us nor think that you have asked a favor. We won't expect you to buy unless you choose. Furthermore, should you wish to buy a separator at once but do not feel able to spare the ready cash, you may buy a DE LAVAL machine upon such liberal terms that it will earn its cost while you are paying for it. In view of these facts, and considering that the DE LAVAL is today the standard by which all separator manufacturers gauge the value of their machines, it would seem that every intending buyer of a separator is doing himself an injustice if he does not at least ask for a free trial of a DE LAVAL before buying. By so doing he can lose nothing, and he may save a great deal. A DE LAVAL catalogue, sent free upon request, helps to make separator differences plain. Write for it today.

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TIME IS THE TEST

of durability in a high-speed machine like the cream separator. No other machine a farmer uses has harder use. Run twice every day, winter and summer, it must not only do thorough work, but to be permanently profitable, it must be durable.

U.S. CREAM SEPARATORS

are built for long service. A solid, low frame encloses entirely all the operating parts, protecting them from dirt and danger of injury. The parts are few, simple and easy to get at. Ball bearings at high speed points, combined with automatic oiling reduce wear as well as insure the easiest operation. Such careful and thorough construction is what enables the U. S. to better

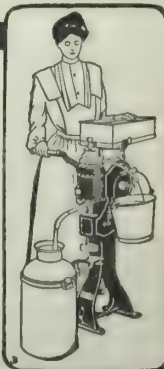
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than any other separator. You don't have to buy a new one every year or two. And remember: the U. S. does the cleanest skimming all the time. Look into this. Write today for a copy of our handsome, new separator catalogue. Ask for number 148. It is finely illustrated and tells all about the U. S. Address

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HOME CIRCLE

KING OF A GOOD SULKY PLOW.

Let other men boast of the glories,
Which wealth and ambition can give,
I crave but the quiet contentment
Which makes life a pleasure to live.
It may be there's a joy in position,
A bliss only rulers can know,
Yet I ask no change of position,
I'm king of a good sulky plow.

With three handsome steeds for my subjects
I rule with a lenient hand,
And whistle a rollicking measure
While turning the rich prairie land.
The loam glistens bright from the mold board
And smiles me a greeting somehow,
As if it were bowing in homage
To the king of a good sulky plow.

The soft zephyrs haste to caress me,
The birds shout a peon of joy,
The grasses are nodding a welcome,
Such gladness, unmixed with alloy.
O, could you but know of its beauties,
I'm certain you'd haste to allow
That the ruler whom freemen should envy
Is the king of a good sulky plow.

Before me Dame Nature is spreading
Such views as no artist can paint,
Fair landscapes with backgrounds of woodland;
Clouds, white as the robe of a saint.
A lake glistens bright in the distance,
I can see the wild fowl sporting there now,
O, sing not the charms of a city,
I'm king of a good sulky plow.

Good tools have made farming a pleasure,
The farmer no longer a slave,
What wonder he's cheerful, contented,
His lot one a king well might crave.
Good food and pure air give him vigor,
And cares seldom wrinkle his brow,
O, I'm such a merry old monarch,
I'm king of a good sulky plow.

FRAGRANCE.

Written for the Pacific Rural Press by
Aaron W. Frederick.

Clouds will visit you with showers,
Sun will warm you, fragile flowers,
O, so like these hearts of ours!

Fragrance waft upon the air,
Breathe it, blossoms, everywhere—
Subtle essence! secret prayer!

Raymond, Cal.

THE TONE OF THE NEIGHBORHOOD.

By W. Crawford Sherlock.

"It's simply outrageous," declared Mrs. Bagby emphatically. "To think that such people should have moved to West Park is just awful!"

"It's worse when you live opposite them," moaned Mrs. Pratt. "I saw that detestable man sitting on his porch last night in his shirt sleeves, smoking a miserable clay pipe."

"That isn't all," chimed in Mrs. Waters, who managed to gain more information about her neighbors' doings than any one else in West Park. "His wife actually scrubbed the porch this afternoon in full view of every one. I saw this Mr. Smith—I believe that's his name grooming his own horse this morning. They're just common people, that's all they are, not to have servants to do such things."

"I wish Mr. Elder had not sold them his cottage," deplored Mrs. Bagby. "I didn't think he would let any but nice people have it. It's a shame to ruin our property this way."

"Much Mr. Elder cared," retorted Mrs. Waters, scornfully. "He got his price for the cottage; that's all he wanted. Something must be done or the tone of the neighborhood will be lowered."

Mrs. Pratt and Mrs. Bagby were of the same opinion, but they could make no suggestion as to how relief could be afforded. At this moment the topic of conversation, James Smith, who had recently occupied a cottage in the fashionable suburb of West Park, drove past the house of Mrs. Bagby in a runabout. He was a short, stout, red faced man, wearing an exceedingly loud suit of clothes and an air of indifference to the opinion of the world.

"He looks like a gambler," sniffed Mrs. Waters contemptuously. "He'll have all sorts of low companions down here, and West Park will be exclusive no longer."

"I'll tell you what we'll do," remarked Mrs. Pratt, who, on account of her proximity to the objectionable neighbor, was more anxious for his removal from West Park. "We'll buy the Elder cottage from this man and sell it to some desirable person. We will have to pay more than it's worth and sell it at a loss, but it's better to lose a little than to have our homes ruined. We'll ask some of the other residents to join with us, and the snare of each will not be much."

"But it will take a great deal of money," objected Mrs. Waters. "Who will advance such a sum?"

"I will," declared Mrs. Pratt, who was a widow of ample means. "All I want is for every one to stand by me and pay a proportion of whatever loss we have. It won't be much if it is divided among so many. The men shan't have anything to do with it. They'd get some one to

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WESTERN MEAT COMPANY

SOUTH SAN FRANCISCO,

San Mateo County

buy the cottage who wouldn't be any better than this Smith is."

Having been promised the required support, Mrs. Pratt, accompanied by Mrs. Bagby and Mrs. Waters, waited upon Mr. James Smith with the purpose of purchasing the Elder cottage. As the ladies approached the house Mr. Smith, who was sitting upon the porch in his shirt sleeves, arose and greeted them cordially as he knocked the ashes from his clay pipe.

"Just take seats on the porch. It's cooler out here. Wait a minute, and I'll call Marthy."

"Horrid creature," murmured Mrs. Waters as Mr. Smith disappeared in search of his wife. "He thinks we have come to pay a social call."

Marthy, in response to her husband's vigorous calls, speedily made her appearance, and the party were soon comfortably seated upon the porch.

"Ahem! Mr. Smith," began Mrs. Pratt somewhat awkwardly, after politely declining Mrs. Smith's urgent request for the removal of the visitors' hats, "we've come upon a matter of business."

"Jim'll be glad to do anything he can for you," observed Marthy assuringly. "He's the most accommodatingest man in the world. Always likes to be friendly-like."

"That's so, mem," assented Mr. Smith affably. "Let's hear what your business is, mem."

"You're very comfortably fixed here, Mr. Smith," continued Mrs. Pratt, "and I don't know just how to tell you. There are some people very anxious to buy this house, and they would be willing to pay you something over what was paid for it. It won't make much difference to you, as you have no children and one place is as good as another."

"As to children, mem," responded Mr. Smith thoughtfully, "there will be five of them down here next week. 'Twasn't right to bring 'em till we got things fixed up a bit."

Consternation reigned in the breasts of the visitors. Five little Smiths running wild in West Park! There would not be a whole pane of glass in the place in two weeks. The necessity for getting rid of the Smith family was greater than before.

"We will give you \$250 more than you paid for the property," offered Mrs. Pratt in a businesslike tone. "That will be a good profit in so short a time. Will you take it?"

"Couldn't think of it, mem," returned the affable Mr. Smith. "'Twouldn't pay for the expense of moving both ways."

"Will you take \$500?"

Mr. Smith had never moved in good society, but he was nevertheless a man of

keen judgment. A faint smile appeared around the corners of his rather large mouth and his grey eyes twinkled merrily.

"This place was for sale a long time before Mr. Elder sold it, warn't it, mem?" he questioned, eyeing Mrs. Pratt closely. "It's a pity your folks didn't buy then."

"They didn't want the house then," replied Mrs. Pratt evasively. "Will you take the \$500, Mr. Smith?"

"Then there's two or three houses in West Park just as good as this one, that can be bought for the price this 'ere cottage cost," continued Mr. Smith, not heeding Mrs. Pratt's question. "I can't quite make it out, mem, unless—"

"Unless what?" demanded Mrs. Pratt not relishing the searching glance Mr. Smith fixed upon her.

"Unless, mem," continued Mr. Smith slowly, "you don't sorter think me and Marthy good enough for West Park and want to get rid of us."

"Oh, Mr. Smith!" demurred the three visitors in chorus, but the telltale flushes on their cheeks betrayed the consternation that had been wrought by the unexpected words. "What makes you think such a thing?"

"Well, ladies," returned Mr. Smith, without the slightest trace of ill feeling, "I saw one of you pass the other evening when I was a-settin' here in my shirt sleeves, and that one's nose was turned up so far that I was 'fraid it would get out of j'int. Then, when another of you folks saw Marthy a-washin' off this 'ere porch, that one's mouth got all puckered up as if she had been eatin' persimmons. I guess you think we ain't good enough for you, don't you?"

"We look at it this way, Mr. Smith," stammered Mrs. Pratt nervously, feeling devoutly sorry that she had undertaken the plan of purchasing the cottage, "We

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Improved Construction, designed to use cheapest fuel. Produces the greatest power at smallest cost.

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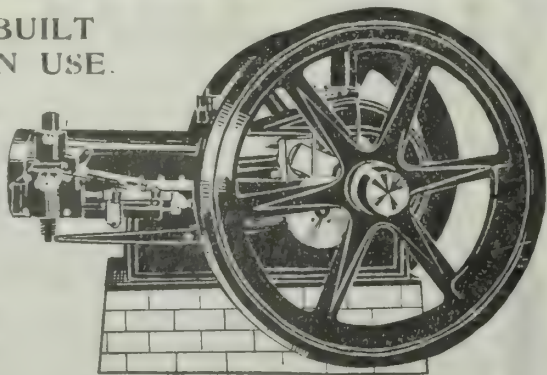
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ANTHRAX AND
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If you only knew how much comfort can be derived from a PERFECTION Oil Heater—how simple and economical its operation, you would not be without it another day.

You can quickly make warm and cozy any cold room or hallway—no matter in what part of the house. You can heat water, and do many other things with the

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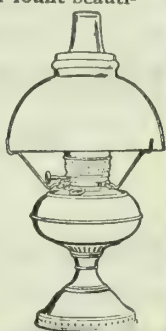
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Made in two finishes—nickel and japan. Brass oil fountain beautifully embossed. Holds 4 quarts of oil and burns 9 hours. Every heater warranted. If you cannot get heater or information from your dealer, write to nearest agency for descriptive circular.

THE Rayo Lamp cannot be equalled for its bright and steady light, simple construction and absolute safety. Equipped with latest improved burner. Made of brass throughout and nickel plated. An ornament to any room whether library, dining-room, parlor or bedroom. Every lamp warranted. Write to nearest agency if not at your dealer's.

STANDARD OIL COMPANY



don't think you are—ahem—well, accustomed to such society as there is in West Park. We don't mean any disrespect, Mr. Smith, but every one likes to mingle with those who are congenial. You don't keep any servants and you won't enjoy it down here, so we thought we'd make you this offer. What do you say?"

"It's very kind of you to think of me," returned Mr. Smith, in no way offended. "I'm sorry, mem, but I must say that we're goin' to stay in West Park."

"Good evening," chorused the visitors, indignant at the failure of their plan and crestfallen at Mr. Smith's correct surmise of their view regarding him.

"One moment, ladies," called Mr. Smith as his visitors descended the steps. "Me and Marthy won't lower the tone of the neighborhood. We don't own this house—not much! Marthy she's the cook, and I'm the gardener. We just come down to fix up the place for Mr. Norwood, who's comin' down next week with his wife and children and three more servants."

The late Charles Bliss, the famous star of the Dan Rice circus—he was the original "human y"—imputed his success to thoroughness.

"Don't attempt a new trick," he said one day in Madison, "till you are a thorough master of it. The only way to succeed is to be so thorough in everything you undertake that failure is altogether an impossibility."

"If you are going, for instance, to be a stump speaker, if you are going to address a lot of farmers, don't talk farm unless you have studied it up."

"Don't be like a stump speaker I know who yelled at a cross-roads meeting:

"He who puts his hand to the plow must not turn back."

"Wot's he to do then when he gets to the end o' the furrer?" shouted a hired man in blue overalls."

DOMESTIC HINTS.

HONEY RECIPES.

Often when completely out of sugar the owner of a jar of strained honey and the "store in town" five miles away, can make quite a presentable array of cakes or cookies, and it will be a change not unpleasant to the palate of the most capricious.

Honey Drop Cakes—Two eggs well beaten, one cup of strained honey, one cup of sour cream, one-half teaspoonful salt, one-half teaspoonful vanilla, one-half teaspoonful of saleratus and flour enough to make a stiff batter. Drop in tablespoonsful into a pan.

Two Layer Honey Cake—One cup of honey, one-half cup of butter slightly warmed, yolks of three eggs all beaten together, one-half cup of sweet milk, one teaspoonful of essence of lemon, one-fourth teaspoonful of salt, two teaspoonsful of baking powder sifted into the flour, make stiff enough to stir, and the whites of two eggs whipped to a stiff froth folded in last. For the filling: The white of one egg whipped stiff, two tablespoonsful of honey and one small cup of chopped nuts and raisins.

Honey Gems—Two eggs well beaten in a cup and the cup filled to the brim with sweet cream, a pinch of salt and a spoonful of essence of banana or pineapple, one cup of honey, two teaspoonsful of baking powder stirred into flour enough to form a stiff batter. Drop into hot molds and bake.

To Make Good Cider—To make good cider the apples should be ripe and sound, and have a rich, juicy and somewhat acid taste. The apples should be cut in two so that if there are any worms in them they can be cut out. The new made cider should be placed in open-headed casks, set upright for the scum to rise and be skimmed off. If about a pint of strong wood ashes and the same amount of lime are put into 40-gallon barrels it will cause the pomace to rise to the top better. A deposit of fine pom-

ace will settle to the bottom. Care should be taken when drawing or dipping the cider not to disturb these settlements in the bottom of the cask. Barrels that have been used for whiskey or alcohol will make good cider barrels.

Cider can be kept from fermenting for some time by adding one pint of grated horseradish to forty gallons. Shake barrel well and add about one pint of mustard seed; cork and put in a cool place. Cider can be kept sweet for years by putting it up in cans as in canning fruit. Let fresh-made cider stand until settled; then rack or dip it off from the dregs, boil and skim until thoroughly clarified. While hot put into bottles or jugs, filling them as full as possible and corking tight; but do not seal. Set in dark, cool place. This cider will get better than when first made.

Escalloped Egg Plant.—Pare one large egg plant, cut in pieces, and drop in boiling salt water. Boil till tender, then drain and mash. Add one egg well beaten and mix well with egg plant, then put in baking pan, first a layer of egg plant, then cracker crumbs and dips of butter till pan is full. Bake one-half hour. An excellent dish.

Sauce for Fish.—Cucumber sauce with broiled fish is a popular item of one restaurant's bill of fare. The cucumbers are peeled and minced, squeezed dry from their own juice, seasoned with salt, paprika and vinegar, and folded into stiffly beaten whipped cream.

Egg Plant Fritters.—Boil the egg plant till tender in water having in it a little lemon juice and salt. When done, drain well and mash to a pulp. Add to it pepper and salt to taste, three beaten eggs and bread crumbs, if necessary, to make it of the right consistency to shape. Pat into flat cutlets, dip in egg and in crumbs, and fry in boiling fat.

Tapioca Soup With Tomatoes.—Have six ounces of tapioca and put into a saucepan with two quarts of fairly rich white stock. Let boil up for a minute, then simmer for two hours. In another saucepan, cook half a dozen large tomatoes, an onion, a small bay leaf, and salt and pepper. When the tomatoes are quite cooked, strain through a fine sieve and add to the tapioca. Strain all then through a sieve, set over the fire to re-heat and add two ounces of melted butter.

Black Pudding (No Eggs)—This quantity will make 4 puddings in baking powder cans, pound size, and in these steam the pudding three hours. Do not let the water cease boiling a minute. Pass through a sieve, together, three cups of flour, half a teaspoonful of salt, half a nutmeg grated and one teaspoonful of soda. Through these mix one cup of chopped suet, and, when well blended, add one cup of seeded raisins, one-fourth cup of bleached almonds, chopped fine, three or more figs, chopped fine, one cup of chopped apple and two ounces of citron chopped fine. Mix thoroughly, then stir to a dough with half a pint each of black molasses and sour cream. If these are to be kept some time, dry them in the oven fifteen minutes after cooking is finished, and when required steam half an hour or until heated through, before serving.

Escalloped Onions.—Fill an earthen baking dish with layers of bread crumbs and boiled onions pulled into small bits, each seasoned with salt, butter and pepper. Fill the dish with sweet milk and bake half an hour.

Salmon Mayonnaise Salad.—Boil eight eggs hard and throw into cold water to loosen the shells. Make a cup of mayonnaise and rub into it six slices of boiled or canned salmon. Slice the eggs, lay

It's not fair to your lamp to dwarf its light with a poor chimney. I manufacture lamp-chimneys that get the most out of lamp-light, and that won't break from heat.

I put MACBETH on every one, because it tells you how to get the best in lamp-chimneys.

My Index tells about these facts, and tells how to get the right size chimney for your lamp. It's free—let me send it to you.

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them among the lettuce leaves and pour over them the salmon mayonnaise.

Calf's Heart—Calf's heart is very delicate when properly prepared. Wash the heart, but do not let it soak or stand in the water. Fill it with a stuffing made of minced meat or bread, either one of them seasoned with onion, sage, thyme, salt and pepper, and an egg to bind it. Bake it for two hours, basting it frequently with water from the pan. When the heart is cooked, remove it and add to the pan a tablespoonful of flour, which should be stirred until brown. Strain this and pour over the heart.

Egg Plant Stuffed With Nuts.—Drop the egg plant (one large or two small) into boiling salted water to cover. Boil until tender—from 35 to 45 minutes, according to size. Cut into halves, scrape out the inside, mash well and add one cup chopped English walnuts, two tablespoons melted butter, one-half teaspoon salt, one-fourth teaspoon pepper. Mix well, fill the shells, put tiny bits of butter here and there, brown quick in oven.

To Color Ice Cream.—If you wish ice cream to be ornamental you may use beet juice for coloring. It will give you any shade of pink desired. Use spinach for green, or a little butter color will make it a deep cream. All are perfectly harmless.

Calgary, Canada, July 26, 1905.
The Lawrence-Williams Co., Cleveland, O.
The West, as you no doubt know, is a great horse country, and we have a large sale of GOMBAULT'S CAUSTIC BALSAM. We believe you have the best liniment on the market and, although the sale in this country is large, it could be greatly increased by a little advertising. JAS. FINDLAY.

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AGRICULTURAL REVIEW

Plumas.

EGG FAMINE.—The Evening Bee, Nov. 9: The egg famine is a stern reality in the intermountain country. Ranchmen of Indian valley have been selling off their poultry to the construction camps of the Western Pacific, and what few hens are left have pretty much gone on a strike. Eggs are not to be had in Greenville for love or money. It is now feared that unless poultry is brought in from the outside and there will be no turkey or rooster for Thanksgiving.

Riverside.

ELEVEN HUNDRED ACRE ORANGE GROVE.—Riverside Daily Press, Nov. 5: The Mentone Heights Orange Company is a new corporation, consisting of Riverside, San Bernardino and Redlands capitalists, of which the Oatmans, proprietors of the famous Sunny Mountain orchards, are among the chief promoters. J. B. Oatman is president; Judge F. F. Oster of San Bernardino, vice-president, and C. H. Raymond of Redlands, secretary. The company proposes developing a tract of orange land consisting of more than 1100 acres lying on a comparatively level mesa or bench above and to the eastward of the town of Mentone. The land is particularly suitable for growing high grade oranges, lays fairly and is considered to be in a strictly frostless locality. Valuable water-bearing ground, near the Edison Company's plant No. 2, has been secured. The company owns 130 inches of water already developed and experts think several hundred inches additional may be secured. The water is obtained by digging tunnels in the head of the Santa Ana river, the water flowing out by gravity. Three of these tunnels have already been constructed, one of which produces more than 175 inches. The property includes the Toby grove of 50 acres of oranges, and the company contemplates planting 200 acres additional the coming season, also ample nursery stock necessary to plant the remainder of the tract. Under the competent management of these experienced gentlemen Mentone Heights oranges will undoubtedly soon attain equal popularity with the Sunny Mountain ranch brand.

Sacramento.

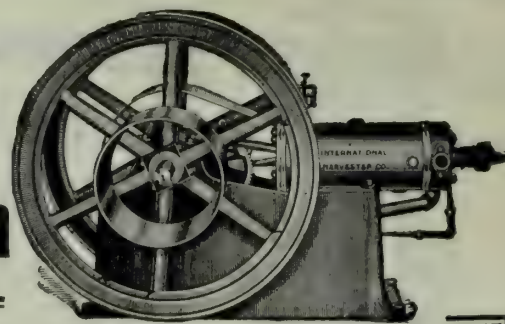
ORCHARDISTS TO GET TO WORK.—The Sacramento Union, Nov. 13: The members of the pear blight committee and interested pear growers met yesterday in the office of the state horticultural commission and discussed the problem that confronts the fruit men in

the elimination of the blight from the orchards before it has completely ruined the trees. The meeting was presided over by Lieutenant-Governor Anderson. William Smith, Grand Island orchardist, reported to the meeting that the blight was decidedly worse this year than last on the island. He says that the terrible disease has taken hold of almost all his older trees and the most hardy of them have been ruined. Mr. McKeon, who is in charge of the work of fighting the blight on the ranches in this county, reported that conditions are much better than last year, although in many cases the blight has taken a hold and has gained headway. In his districts, where the work of cutting out and burning the infected trees was thoroughly done, 95 per cent of the trees have been saved. In every case where the orchardist followed the instructions of Professor M. B. Waite of the United States Department of Agriculture, the disease has almost entirely disappeared. It is thought that these orchards can now be saved by being watched and as the blight makes an appearance the infected parts cut out. An interesting report was made by Professor Waite. He said that the orchards he has gone over he has found in far better shape than last year, when he was over the same ground. He made the suggestion that a board of inspectors be organized in the pear sections and that this board be given the power to go over the infected orchards and cull out the diseased trees so that the healthy ones can be protected from the blight. The inspectors would be instructed in the work of treating the disease by the experts that have been sent here from the Department of Agriculture at Washington. The committee was in favor of the proposition, as it appeared to them that that is the quickest method from which lasting results can be obtained. It is proposed to appoint twelve men to act in that capacity and they will work with and under the direction of Professor Waite and his corps of expert assistants. The men will be paid out of the fund recently created for the purpose of fighting the blight in this county. They will get \$2.50 a day and expenses. Professor Waite warned the committee and the fruit men that if they expected to do any good this year they must get to work right away, as there are but six weeks remaining in which the work can be done with any degree of success. If the orchardists delay but for a day they will lose valuable time and probably by next year they will have no trees to fight for. The committee adjourned and will meet at Smith's orchard on Grand Island Wednesday morning, when Professor M. B. Waite will give a practical demonstration of the methods used in culling out the infected parts of the pear trees infected with blight. All orchardists who are interested in the work should be on hand, for they will be instructed in the work by Professor Waite, who is the greatest authority on pear blight in the United States.

San Joaquin.

HOLDING THEIR HAY FOR HIGHER PRICES.—The Evening Bee, Nov. 9: The Stockton dealers are not shipping much hay these days, as they are not getting the prices they believe they are entitled to according to the figures sent out from the bay. Hay is selling here from \$8.50 to \$13 for the best, while at the bay it is quoted as high as \$21. This does not mean that the dealers there will begin to pay such prices, as they want to buy at much lower figures. They have absolute control of the situation in San Francisco, and outsiders have no chance of breaking in there.

Engines for Irrigation



Should be so simple that cheap and inexperienced help can operate them successfully, and require little attention to keep them in repairs and in effective service. Should be of high efficiency and of full rated horse power. Should supply the maximum of power at the minimum of cost for fuel, oil and accessories. Should sustain an even pressure and power exertion against a steady load—as is the case in pumping.

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The Pacific Guano & Fertilizer Co. 24th. & Indiana, San Francisco

All of the hay is under cover, and the warehouses are well filled.

Santa Cruz.

BUGS INCREASE.—The Pajaronian, Nov. 8: When the report of the State Horticultural Commission, now being prepared by Secretary John Isaac, is completed, it will be the most extensive one ever gotten out by the State Department. There will be 100 pages devoted to a description of every known scale bug in California. "Coccidae of California" is the title of the subject, and the author is E. K. Carnes. This is the first time in sixteen years that such a work has been undertaken, and it has required months of labor and years of research. The author states there are 126 different species of the scale bug in this State at present. The last time such a report was attempted, sixteen years ago, there were only twenty known scale bugs.

San Diego.

IMPERIAL GROWS FILIPINO WHEAT.—San Diego Weekly Union, Nov. 8: From the insular possessions of the United States there has come a

variety of grain which commends itself to the cereal grower. There is now on exhibition at the chamber of commerce samples of Filipino wheat, both in the head and threshed, that cannot fail to impress one familiar with the product. The heads are large and full and of a dark color, bordering on black. The kernel is much larger than the native product and is said to produce an unusually fine quality of flour. The sample shown was raised in Imperial valley, and the grower says that the grain is absolutely free from rust. This alone will commend it to the farmer, who has experienced so much trouble in the past. The experiment in Imperial valley has demonstrated the adaptability of the

9 CORDS IN 10 HOURS



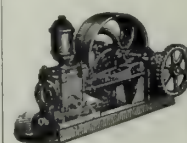
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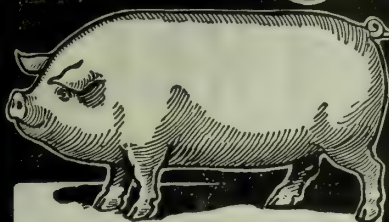
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grain to this soil, and it possessing the further quality of freedom from rust, the farmers will undoubtedly give it a preference over other varieties of grain.

San Bernardino.

EAST EAGER FOR OUR ORANGES.

—The Evening Index, Nov. 10: "Pros-

pects for the disposition of the California fruit crop this year were never better than at present," was the remark of A. Gregory, who returned yesterday from a trip east in the interests of the Mutual Orange Distributors of San Bernardino county. "The Florida crop will be as large this year as last, but the prospect for the disposal of our fruit at good prices is undiminished on account of the increasing demand everywhere in the east for California products and for fruit of all varieties. Not only is this condition true in the cities of the eastern state and in the middle west, but the same condition exists in Canada." But Mr. Gregory positively states that the California ranchers must limit their shipments to ripe fruit. No green fruit will sell, and if the green shipments earn states and in the middle west, but the market will be overcrowded, forcing down the price of ripe fruit.

Yuba.

INSTRUCTIONS ON IRRIGATION METHODS FREE.—The Semi-Weekly Democrat, Nov. 5: The Sacramento Valley Development Association is calling the attention of all parties in any way interested in irrigation to Farmer's Bulletin No. 263, on "Practical Information for Beginners in Irrigation" by Professor Samuel Fortier of the United States Department of Agriculture. This bulletin contains forty pages and is brim full of information and illustrations of great value to all farmers and orchardists who irrigate even a very small area of land. It tells how to build ditches, head gates, weir boxes, as well as how to prepare the soil, how much water to apply, etc. This bulletin is by one of the best informed men of the West on the subject and will be found exceedingly instructive and valuable to those who are irrigating at the present time or who contemplate irrigating their lands, for it tells the best ways to do it. This valuable treatise can be secured free of charge by

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addressing the United States Department of Agriculture at Washington, D. C., and asking for Farmers' Bulletin No. 263.

GRAIN FARMERS ADMIT THEIR LAND IS UNPROFITABLE.—The Semi-Weekly Democrat, Nov. 5: A dispatch from Willows says that Whyler Brothers, two of the most prominent farmers in that section, have decided that dry farming no longer brings in returns commensurate with the amount of work involved, and will discontinue farming. In years past they have farmed on an extensive scale, and were considered ex-

perts in the business. No one knew of their determination to give up their work until they made a sale of all their mules yesterday, selling their bunch of sixty-five animals to a Mr. Mendenhall, a buyer from San Francisco. The purchaser took every mule on the place, old and young, sound and crippled, and paid in the neighborhood of \$10,000 for the lot. Whyler Brothers will probably go into the stock business, but the unsettled state of the water question will keep them undecided as to future plans until some definite conclusion is reached by the canal company.

Protection

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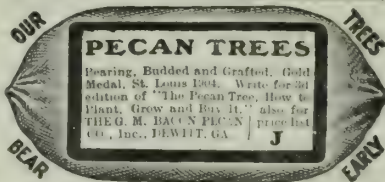
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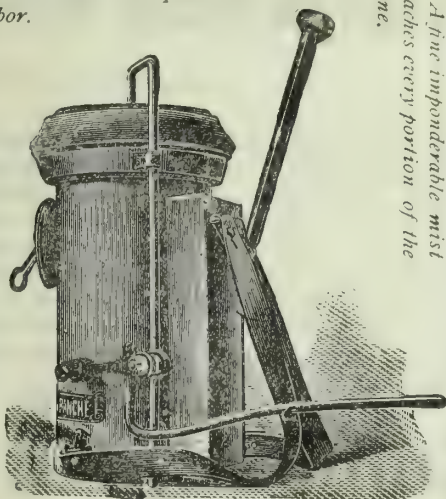
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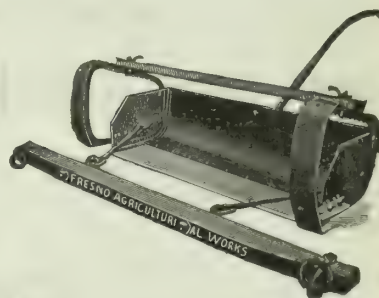
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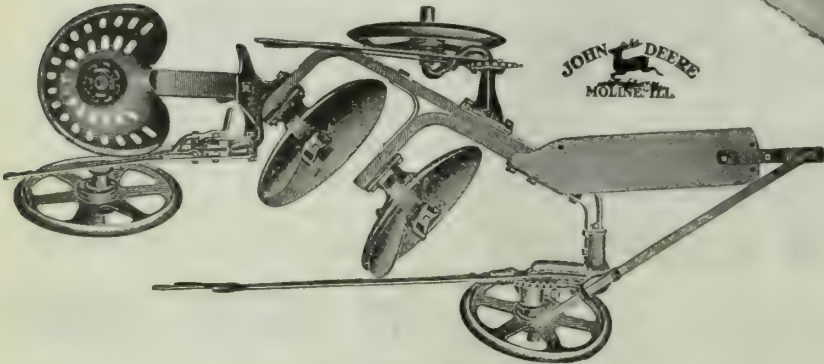
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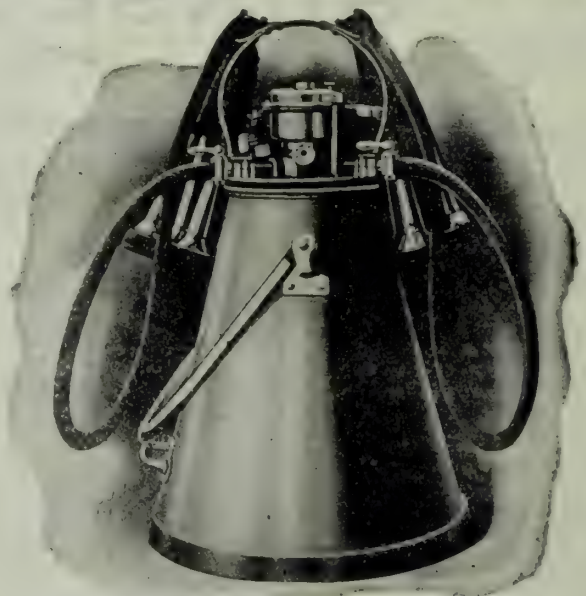
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THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

LXXII. No. 21.

SAN FRANCISCO, SATURDAY, NOVEMBER 24, 1906

THIRTY-SIXTH YEAR

FRUIT TREES IN GOOD PLACES.

In contrast with the pictures we gave two weeks ago of fruit trees in distress, we have on this page portraits of trees in good places showing how ready these are to establish themselves deeply when the soil is as they like it and to make ready for long life and production upon the basis of generous supply of plant food and moisture.

In exposition of the significance of these pictures we are fortunate in being able to draw upon the conclusions of Professor Hilgard, who recently prepared a circular giving suggestions regarding the examination of lands for publication by the University Experiment Station. From this summary of the results of his long study of California soils we take the following:

Extended investigation of our soils has shown that in California, far more than in the Eastern States, very few soil-materials exist that would not naturally produce good crops for some 18 or 20 years without fertilization, provided they are of sufficient depth and are adequately supplied with moisture. In many cases, forty or fifty years is a low estimate for the duration of profitable production. When, therefore, in orchard or vineyard, it is noticed that after growing well from three to five years, or even longer, the trees or vines begin to languish, and sometimes even to die, it is not as a rule reasonable to conclude that it is for want of any needful ingredient in the soil. This is especially true of the "die-back" in orchards—the dying of the tips of branches in the tree-tops, which, when not clearly due to scale insects or fungus attack, is nearly always caused by some defect in the subsoil, at or near the ends of the roots; such as hardpan, dry gravel layers, bottom water, or the like. Such defects cannot, of course, be cured by fertilization; and the farmer himself can, by the exercise of common sense and digging to the ends of the roots, satisfy himself very quickly of the existence or absence of such defects, which can often not be recognized when samples are sent to the Station, but must be observed on the spot.

In our dry climate, depth of the soil is of the first importance, since the roots of culture plants must go deep in order to be secure against the summer's drought. As the latter renders the surface soil, which in the humid region is the main source of supply to plants, practically unavailable during a large part of the



Prune Tree on Peach Root in Deep Soil.

season of growth, it is clear that here, more than anywhere, the depth and quality of the subsoil is of the greatest importance, and should be investigated in all cases by the intending purchaser of land before investing. The omission of this simple precaution has led to untold losses and disappointments, which have been the more frequent as the formation of a "hard-pan" at a depth corresponding more or less to the penetration of the annual rainfall, is of unusually frequent occurrence in this State. The richest surface soil may be utterly useless for general farming purposes if underlaid, at a depth varying, according to the nature of the soil, from one to four feet, by a hardpan or clay im-

pervious to the roots of plants. As a rule it is not practically feasible to maintain, even by irrigation, a proper supply of moisture in a light soil limited in depth by impervious hardpan at two or three feet, even in cases where the roots of the crop do not habitually penetrate beyond that depth; in the case of fruit trees and vines (the roots of which in certain lands are limited only by a depth beyond fifteen or twenty feet) the objection to such lands in their natural condition is insuperable, unless the difficulty can be overcome by dynamiting the tree-holes.

An equally fatal objection, so far as tree culture is concerned, lies against too close proximity of bottom water to the surface. The roots of culture plants will bear submergence only for a very limited time without injury (forty days is considered the extreme limit in the case of vines and orchard trees); hence lands periodically overflowed and not very perfectly drained are unsafe for the planting of trees, as the roots will decay where the air is excluded; and such injured roots will inevitably render the tree unproductive, if they do not kill it in the course of time. The same effects are, of course, produced wherever leaky irrigation ditches cause the rise of water to within a few feet of the surface. Drainage, not fertilization, is the effective remedy in such cases. Yet such lands may be well adapted to the growth of certain shallow-rooted crops, particularly if those having a short period of growth.

On the other hand, in some kinds of sandy lands, the breaking up of what might be considered a hardpan, as compared with the surface soil, may almost wholly destroy its cultural value by rendering it "leachy," so that neither irrigation water nor fertilizers will be sufficiently retained for the profitable growth of crops. It is therefore clearly necessary that not only the existence of such underground layers be definitely ascertained, but also that their particular nature be considered with respect to the kind of surface soil, and to the practically feasible or profitable uses to which the land is intended to be put.



Almond Tree Showing Root Penetration.

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THE WEEK

The bristling norther which rushed over California mountains and through our valleys for several days of last week was apparently our share of a continental weather disturbance which reached the bluster of a blizzard in the Rocky Mountain region and carried snow and hard freezing even as far south as Texas. We presume the woodchucks and other weather prophets have hung out their signs for a hard winter in places where they have winters, and if a snow storm which opened the Michigan winter on October 10 and knocked the green color out of everything deciduous did not cause a woodchuck to dig deeper than usual we have no respect for his weather wisdom. Good skating for Thanksgiving ought not to be hard to find in the Northeastern States this month, judging by the way things are going. As usual California caught only the fringe of the dark mantle and records nothing lower than 41 degrees in places where there are citrus fruits and trees to be injured. Growers enjoyed a scare, however, and writers have to deal in apprehensions in place of injuries. Everyone is ready now for a good rain and expecting it, on the old Spanish belief that the south wind always pays back all the force impressed upon it by a norther. It is late enough now for the start of active winter business and rain enough to enable the mules to earn their feed is the earnest desire through our broad valleys and upland slopes.

The rebuilding of San Francisco, which is now proceeding at an exceedingly rapid rate, is triking the agricultural interest at an unexpected point. It was anticipated, for instance, that the destruction of the old business part of the city would reduce drayage to such an extent that the demand for hay would be less and the price decline. As experience has proved the price has held up remarkably well, and then it was concluded that receipts must be small owing to difficulty of getting cars and the use of boats for other cargoes. The interesting fact, as brought to light in the circular of Somers & Co., is that after all we have been getting in more hay than usual at this time of the year and that the demand and high price is due to the increased appetite of horses doing rehabilitation work or to a greater horse census than the city had before the fire. The statement is that in spite of the fact that a great complaint has been made because the railways cannot furnish sufficient cars for hay, yet on comparing records it is seen that for the corresponding week of last year there were but 2950 tons of hay shipped here, while we received 3950 tons this year. On comparing last week's arrivals, we find that a year ago we had 1290 tons less for the week than this year. On the whole it would seem that the consumption of hay has materially increased here, and unless weather conditions will seriously interfere with construction work, Somers & Company believe we may expect an active demand throughout the winter. It is an interesting fact to note the report of the Government Bureau of Statistics shows about 19,000,000 horses in the United States in comparison with 14,000,000 nine years ago. The hay market would indicate that many of the increase are in San Francisco in spite of locomotives for hauling and automobiles for riding. It is all right, however; a quick and capacious hay market will help warm people.

If there is bogus olive oil sold in this country, and there seems no doubt of it, we have our own people and not rascally foreigners to blame for it. The olive oil exporters of Florence say they are too proud of their products and their reputation to debase them. This seems to be true, because Dr. Wiley, of the U. S. Department of Agriculture, who is the national apostle and policeman of purity, says that during the last two years he has found the olive oil imported was practically all pure. He has found, however, that labels are imported from France and Italy and attached to packages of oil partly or entirely manufactured in the United States, and in some instances foreign packages are imitated in the United States. We have to deal, then, with American adulterators and the new pure food law ought to take care of them.

We have had good high prices for grapes and hope they will continue, but really our prices look small compared with prices paid growers in the champagne district of France. The highest price this year was twenty-five cents for a kilo, or over eleven cents per pounds. This would be about \$220 per ton, but it takes a good deal of French vineyard to produce a ton of champagne grapes. People who indulge in champagne may be consoled for the cost of it to know that the price just named makes the grape juice necessary for the production of one quart of champagne cost about forty-seven cents this year, and it has cost in the past three times as much on one year. The cost of manufacturing by the most refined processes, and keeping the wine from three to five years before it is placed on the market, is very expensive, also.

There is going to be plenty of jute in India this year, so we ought not to pay too much for grain bags even if we get as good a grain year as we can possibly hope for. The government of India has made a final forecast for 1906 indicating an output of 8,883,868 bales of jute, against 8,088,930 last year. Private experts state that they believe the yield for this year will not fall far short of 900,000 bales in excess of the output of 1905. It must be stated, however, that it is expected that there will be a prompt demand for all that will be raised. The calculation is that it will take a great deal of burlaps to cover the general prosperity which the world is now enjoying.

Mexico, although apparently not as hard hit as anticipated by the heavy summer rains and floods, may still be quite shy on corn and beans and, if so, the government will knock off the duty as it did on another recent occasion. California may have some beans placed at a profit below the line.

Tendencies toward the practical in education continue to manifest themselves. The cultivation of rubber is now being taught in the schools of West Africa, writes Consul-General Guenther, from Frankford. Every village is obliged to plant a certain number of acres in rubber trees. In the Congo State Mr. Guenther says that 12,500,000 rubber trees have been planted. The advance of human sentiment among school authorities is also noticeable. It is so much kinder to teach the pupils to grow rubber trees than to send them out to gather birch rods, as in the olden time. One might say that darkest Africa is aflame with tender emotions.

But for the practical in education perhaps nothing is more concrete than another African undertaking. The Fruit Exporters' Association, of South Africa, has been urging the government to assist the fruit growers of the colony in exporting their fruit to the English market, and the Director of Agriculture says that a portion of the scheme will be adopted and carried out during the next fruit season. Expert fruit packers will be engaged at government expense to instruct the growers in the best methods of packing fruit for the London market. A government inspector will be ap-

pointed to inspect packages of fruit at the docks and a government stamp will be placed on all packages passed by this inspector, which it is expected will be a guaranty of the quality of the fruit and consequently raise its market value. It is also proposed to place an agent in England to teach people how to eat African fruit. This looks a good deal like excess of paternalism in government, but if it works well California may take notice. Such things have been agitated in this State, but private enterprise has accomplished what has been done so far.

The throng which we hope will attend the Fruit Growers' Convention at Hanford will not forget to take a day at the Citrus Fair at Porterville, which will open December 4 and continue until Saturday night following. Aside from citrus fruits there will be a general display of agricultural and horticultural products and brisk competition between adjacent counties and towns. Tulare county expects to ship 1800 carloads of oranges this year and this opportunity for a study of products should be sought by people from all parts of the State.

QUERIES AND REPLIES.

KILLING BERMUDA GRASS AT THE SOUTH.

To the Editor: You seem in your comments to be rather hopeless about killing out Bermuda grass. Cannot we learn something from the Southern States, where they have both Johnson grass and Bermuda grass, and yet they succeed in growing a lot of cotton, tobacco, etc. Why not ask Southern farmers to help you out with their advice?—READER, San Francisco.

Yes, they do have a good deal of Bermuda grass at the South and they have to fight, also. Your suggestion seems on the face of it very wise, but suppose we give you the favorite Alabama method of killing Bermuda grass. An Alabama farmer says this about it: "Bermuda grass, while one of the best pasture grasses we have in the South, is hard to kill out; in fact, it cannot be killed at all by plowing in the spring and summer, unless the ground is very dry; but my plan is to plow up in winter and let it freeze, and as soon as the ground thaws run a drag harrow over it, and let it freeze again, and as soon as the ground is dry enough cross plow, and let it freeze before harrowing. Do this three times and you will not have much grass left, if any. I always plow shallow in Bermuda sod, and it takes two good horses to pull a small plow through it the first time. I kill Johnson grass the same way, being careful not to allow any of it to seed the summer before, as the seed will lie in the ground all winter and come up the next spring. The ground must be plowed deep enough to turn out all the roots.

If we had good hard freezing ground in California we might kill these grasses as they do at the South, but to get that we must change the climate.

TOAD STOOLS AND FRUIT TREES.

To the Editor: Can you furnish me with information as to a remedy for the toad-stool fungus, as found around the roots of the peach and some prunes in this section? I enclose a little of the affected peach bark. Some of our orchardists are applying copperas to the surface of the ground.—ORCHARDIST, Los Gatos.

We have to acknowledge that the treatment of trees for toad-stool fungus is not yet very well developed. It is pretty clear that this fungus communicates itself from the rotting roots of oak trees which have been left in the ground when the land was cleared for fruit planting. Possibly the disease is also communicated by the roots of other trees which have not been satisfactorily cleared out. After a fruit tree has its roots pretty thoroughly infested with this fungus, and the toad-stool growth crops out through the bark, etc., it is rather hard to reclaim it; and if the injury has gone very far so that die-back of the limbs is appearing, probably the removal of the tree; digging out of decaying roots as far as one has the energy to pursue them.

filling in with new soil, and the planting of a new tree is the best recourse. For new infestation, removal of the ground from the main roots, removal of those which seem to be affected and the application of Bordeaux mixture, which should be allowed to dry well before replacing the soil, is the most rational treatment. It is true that copperas may have a very good effect, but it is less active as a fungicide than the Bordeaux mixture.

SNAIL-FLOWER BEANS.

To the Editor: Will you kindly tell me the name of the enclosed bean, and also if it is edible? It grows very luxuriantly here, forming a thick screen, if trained over wire netting; but if poisonous to chickens, I would rather root it out. I enclose a pod and a blossom, the latter, when fresh, being a vivid yellow scarlet.—GROWER, Santa Monica.

The bean is the "snail" flower, or "cork-screw" flower (*Phaseolus caracalla*). The flowers are very showy and fragrant and the plant when grown as a screen, as is common in California, sometimes runs up to a height of twenty feet. The plant is not poisonous in any way.

PECAN GROWING.

To the Editor: I understand that there is a project on foot to undertake the growing of the pecan in the San Joaquin valley. Have you any information on the proposed project, and if so will you kindly give me all information possible? Would such a project prove commercially profitable in rich, loamy, irrigated lands in the San Joaquin valley?—ENQUIRER, San Francisco.

We do not know of any particular object on foot to undertake the growing of pecans in the San Joaquin valley. We believe that undertakings of this nature on such land as you describe have a good show of success, both in the San Joaquin and the Sacramento valleys, but we are quite sure of two things; that in the coast region where frosts are light the pecan does not know how to behave itself, and on shallow uplands liable to drying out in the summer there is little hope of success. Deep, rich, moist, and still well drained soils, in places where frost reminds the tree that it is desirable to finish its growth and ripen its nuts, must be regarded as the proper places for such enterprises as you mention.

ALFALFA, ALKALI AND OVERFLOW.

To the Editor: Has experience demonstrated that alfalfa does as well on the heavy adobe soils as on the lighter soils? I notice that some writers seem to prefer the heavier soils where the alfalfa is to be pastured, but it is a question in my mind whether it will do well on these soils. I understand that the Sacramento river overflows in places and that a person would have to protect themselves by levees. The soil being alkali would not this leveed land be apt to be ruined in time by the seepage from this same water held back by your levees? Also would not the overflowed land become worthless after a while owing to the water standing on it for a month or so, getting the alkalies to the surface. In the Rio Grande valley in Texas, they ruined considerable land in three years by putting it in rice and keeping it flooded for sixty to seventy days, and it occurs to me that the same thing would happen to the land which was subject to overflow and on which the water stood any length of time. Of course, I am speaking of soils containing alkali, as all western soils do. Any information you may give me along these lines will be greatly appreciated.—ENQUIRER, Indiana.

Alfalfa is being grown to some extent on the heavier soils in California, but the chief part of our alfalfa acreage is on light, loam soils, deep and well drained. When irrigation is employed on shallow heavy soils containing alkali, as they are apt to do in some parts of the State, there is danger to the alfalfa plant and the stand is apt to be short lived. This, however, does not necessarily occur on the reclaimed lands. There is so much fresh water moving through these lands that the alkali difficulty is less than it is on some places on the plains. Alfalfa is apt to be short lived on reclaimed lands because of the proximity of ground water to the

surface, which prevents the development of such deep taproots as the alfalfa plant naturally makes. The seepage water on reclaimed lands is disposed of by pumping over the levees, and some of the most capacious pumps of the State are used for this line of drainage. A shallow, fibrous rooting clover, like the red clover, is preferable for land where water is near the surface, providing no excess of alkali is present, for red clover does not enjoy alkali any more than alfalfa does. Another reason why heavy land in the irrigated districts is not so good for alfalfa as light, deep land, is because of the danger of water standing on the surface from irrigation, which kills out the alfalfa by what is called "scalding". In growing alfalfa on heavy land one has to be sure not to use too much water and to irrigate more frequently, in less amounts.

PRUNING ELMS.

To the Editor: I have about eight English elms growing by the side of a driveway. The young branches at the top of the trees lean over towards the roadway, caused by the prevalence of westerly winds. Would you recommend me to cut the tops that lean over? I have noticed that these top branches as they grow older and stronger become more erect. Some of my neighbors say elms should be trimmed as little as possible as they are grown for shade. Others again say they should be trimmed like fruit trees. While some of the old pioneers of the valley tell me that the young branches at the top of the trees will assert their erect shape as they grow older and stronger, and that cutting them will do no good, that the young branches will lean over in a similar manner until they grow older. Would you advise me what to do in the matter, also as to the proper time to prune shade trees and grape vines?—FARMER, Glen Ellen.

As a rule the elm tree does ultimately take a form which is natural to it and which is very beautiful. It will usually assume this form without top pruning. If, however, owing to stress of wind or other outside influence, the branches should go astray some pruning can be done to advantage. Usually such a branch had better be removed entirely and another branch allowed to go up to take its proper position. It is certainly not right to treat the elm, or any other shade tree, as you do a fruit tree. Fruit trees are purposely held in restraint to secure fewer and larger fruits and to make the tree convenient for picking, spraying and other orchard operations. None of these conditions prevail in the growth of the shade or ornamental trees, which should, as a rule, be allowed to take the natural form, undercutting enough so that it may not interfere with roadway or sidewalk activities. Some branches which do droop too much when young will become more rigid and upright afterwards, but one cannot trust the branches which are too far out of the proper direction to do that; consequently some intelligent pruning is often desirable. You can prune deciduous shade trees and grape vines at any time during the dormant season.

EUCALYPTUS SEEDLINGS.

To the Editor: How can I successfully start and grow eucalyptus from the seed? Is a lath house the proper thing and how is it made (sash is too expensive)? Will a lath house keep off the frosts in this climate, and can sweet potato plants, tomato and others be started the same way? Is this too late to plant eucalyptus for spring setting?—ENQUIRER, Monterey county.

You can grow eucalyptus seedlings quite well in a lath-house, making the space between the laths equal to the width of the lath itself, and then in very frosty weather put brush or some sort of cloth covering over the lath to prevent freezing. The seedlings should be grown in shallow boxes in soil containing a good deal of sand, so that it will not bake, and then kept continually moist, but not wet. You cannot grow eucalyptus trees by starting now for planting out in the spring. So near the coast, except in the warmest parts of the State, it is better to start the seed after the heavy rains and low temperature are over and with such shade as you propose in the lath-house you will get a good growth of seedlings during the summer. The way one

can proceed in this matter depends, of course, somewhat on the local climate, and practice will differ in accordance with it. Seedlings of tomato, pepper, etc., can be started, with some protection, very successfully. Sweet potatoes generally need a higher heat to sprout well; consequently a moderately acting hot-bed is better in most parts of the State.

GYPSUM AND ALKALI.

To the Editor: I lately visited the Tulare Experiment Station and learned that there black alkali soil had been corrected and made fertile by use of gypsum. I have land showing considerable alkali (both black and white), which I wish to grow grapes on and want very much to learn all I can of the gypsum treatment: How much to apply; whether vines may be planted safely if gypsum is spread this winter; how to apply it—whether broadcast generally or put around vines; the different grades of gypsum and where I may secure the best, and any other information which will be of help to me along this line.—FARMER, Visalia.

You can get from the agricultural department of the University a publication concerning the nature of alkali soil and the gypsum treatment. After you have had an opportunity to study the statements in that publication we will try to answer such questions as we are justified in understanding. Of course, the amount of gypsum depends upon the strength of alkali. It has been found, in some cases at least, that vines can be saved from injury by using gypsum upon the soil immediately occupied by the cutting, and then if good cultivation is employed to prevent the rapid evaporation of the moisture from the surface and which causes the alkali to concentrate at that point, the gypsum seems to protect the vine. It can grow successfully if the alkali is well distributed over the whole mass of the soil, providing the total amount is not too great.

ROSE MILDEW

To the Editor: My roses have been very much troubled with a blight which I suppose is mildew. Would you kindly tell me its causes and what will remove it?—GROWER, Napa.

Mildew is a fungus plant which is parasitic on the rose. It can be checked by the use of sulphur as it is used to stop mildew on grape vines. Be sure you treat your roses generously with manure and water and protect them with sulphur. Some roses, however, are so weak that nothing can save them. Good, strong varieties, largely resistant of mildew, must be given their places.

PLANTING FRUIT TREES.

To the Editor: Please inform me whether it would be best, to plant some trees I just received from the east, now or, wait until next February?—NEWCOMER Turlock.

Plant now if the land has moisture enough to keep the tree from drying up, or if you can give it moisture by irrigating before planting. If not you had better heel them in near to water and plant out later when the ground comes into proper condition. It does not do to put even a dormant tree into dry ground. Some moisture is needed so that a few roots can be made to supply just enough moisture to meet the loss of evaporation through the bark.

SILAGE AND ALFALFA.

To the Editor: Can ensilage be used profitably in connection with alfalfa for a dairy? Is it profitable to raise corn for silage when alfalfa can be grown?—FARMER, Stockton.

Corn ensilage is being used to a considerable extent in California, both in the alfalfa districts and elsewhere. In connection with alfalfa hay, it forms a very desirable balanced ration.

HORTICULTURE.

ORANGE GROWING IN FLORIDA.

By Mr. J. H. Reed of Riverside in the California Cultivator.

First, allow me to say that you will find the following unsatisfactory because of the effort to consider so large a subject in such limited space. Nearly all the topics touched upon would take an entire paper to discuss intelligently, and I may say that I hope to take up in this way at some future time, believing that the orange growers of California should be better acquainted with the real condition of the industry in Florida. Of what I learned in studying the marketing of our oranges in the East I will but briefly speak of two or three things.

1st. Wherever I went I was told that sending green fruit was exceedingly bad policy. Though when colored in the curing room, it often made a good appearance and brought good prices, it was most unsatisfactory in the eating, and later on turned the trade against California fruit, customers taking in preference the less presentable but sweeter Florida oranges.

2nd. They insisted that it was a great mistake to ship fruit not fully up in every way to what it was represented to be. I saw enough in New York and other markets to convince me that this was being done to a much larger extent than is generally supposed, and it hurts California severely. The retailer often does not study the brands sufficiently to know the particular house that makes the deception, and charges it to California generally. This matter doubtless, sooner or later, will be regulated by law, as is now done in the apple trade in Canada and for which apple men are planning in this country.

3rd. That we must produce a larger proportion of fancy fruit.

4th. That we should ship more of our Valencias earlier in the season.

5th. That so soon as California produced lemons in sufficient quantity to supply the trade, Sicily lemons would drop out of the American markets as quickly and effectively as did the Mediterranean orange a few years ago.

Florida.—I spent a week with orange growers in Florida, and was exceedingly interested. I thought I was fairly intelligent as to the industry in that State, but found I knew little about it, and that that little was mostly wrong.

The soil, orchard condition and practices, manner of handling the fruit and the fruit itself, all differ materially from ours.

The orchards are widely scattered over the State. I traveled over a thousand miles to reach the points I desired to study.

The soil now chosen for the oranges is what is known as "hummock lands" on which the cabbage palmetto and oak grow. While a light soil comparatively, it is very different from the white sandy soil of the pine lands. The orchards are not only in widely separated sections of the State, but are generally isolated in the orange sections, not in aggregation as here. I was in one grape fruit orchard of 300 acres, solid, and in orange orchards of 100 and more acres, but so far as I saw most of the groves are small and scattered.

Orchard Treatment is widely different from ours. I had read of their slovenly methods. Was told in Boston and New York, "You will find nothing to learn in Florida. They are way behind growers in California." This general impression I am now satisfied, comes from superficial observation and careless reporting. I found some of the most intelligent orchardists there I ever met, men who know what they are doing and why. Their conditions are quite different from ours, calling for different methods of culture, etc.

In the winter, after the fruit is off, the orchards are plowed three or four inches deep, turning under the grass. The surface is kept thoroughly worked till the rains come in May or June. After this no cultivation is done till the plowing the next season. The grass and weeds are mowed twice a year. When a heavy crop, a part of it is taken off for feed, the balance left to go into the ground. This custom is general.

Fertilization.—I know in a general way that they used more fertilizers than we, but supposed it was because their soil was poorer. Orchards on the white sandy soil of the pine lands, require heavy feeding to produce any crop, but the "hummock" lands are fairly rich. One thing impressed me strongly. Here in California no two orchardists fertilize alike. There the fertilizer used is practically uniform as to its constituents. Nitrogen, 2½ to 4 per cent; phosphoric acid, 7 to 9 per cent; potash, 12 to 14 per cent. (But little

other than commercial fertilizers are used.)

Mr. Waite, manager of the Palmetto Fruit Co.'s orchards, among the largest in Florida, and he one of the best posted orange men I ever met, secretary of the State Horticultural society, and conversant with the industry throughout the State, told me that this formula was used by 90 per cent of the growers, differing mainly in amount and manner of applying. On the large, successful orchards I visited the amount even is quite uniform. Mr. Waite's practice is to use on his old orchards, about (30) thirty pounds of this mixture per tree, sown broadcast and plowed in with the crop of grass after the fruit has been gathered. During the balance of the year he adds about 50 pounds of the same material, with the proportion of potash somewhat reduced, putting on three or four applications. This amount rather astounded me. The cost, as near as I could learn, is not as much less than here, as I supposed, making an expense per acre of this heavy fertilizing of from \$125 to \$150. This practice of heavy fertilizing by successful growers, I found verified wherever I went.

The yield from some of these old orchards is enormous. I saw grape fruit trees that had over 50 packed boxes of fruit on, and many orange trees that will pack from 35 to 40 boxes each.

Varieties.—The bulk of Florida oranges are seedlings. The native stock produced the sour orange. The sweet orange came in from Spain in an early day. Nearly all plantations and truck farms bud orange trees in the home yards. When commercial planting commenced the more enterprising nurseryman naturally sought to propagate from trees producing the most desirable fruit, with the result that today they have several distinct varieties.

For years I have been preaching as best I could the importance of turning our attention to preserving the better qualities of our navel and regaining those already lost to a considerable degree. The practicability of this was most forcibly impressed upon me while studying the development of the favorite Florida varieties from the original seedlings. These varieties adapted to different conditions as well as of specially desirable qualities, are the result of selection during many years, and I believe more firmly than ever, that not only the deteriorated qualities of our navel may be restored by intelligent, persistent selection, but that by the same process other desirable qualities may be bred into it, and I believe that to accomplish this is the most important task before the California orange grower today.

I asked many of the principal handlers of our fruit in the East, "Does your market call for more varieties?" In every instance the reply was "No." "What we need is a larger proportion of first-class fruit, of the varieties you have." I think this should be one of the first things our new experiment station should undertake. In conversation with Dr. Webber, in charge of plant breeding investigations, of the Bureau of Plant Industry at Washington, I asked which he thought the most important for us to try to do first, seek for new varieties or improve what we have? You know he has been greatly interested for several years in producing new varieties of the orange, two of which, now coming into bearing, he thinks very promising, and I expected he would favor turning attention to this class of work. Instead, he promptly answered, "improve what you have by selection. It is perfectly practicable. Wonderful things can be done. If I can serve you in this in any way, let me know and I will be glad to." I dwell upon this because I believe it of tremendous importance to the future of our industry. Profs. Wickson and Smith I know wish for practical suggestions from growers as to the station work, and I hope our influential growers will urge this feature.

Marketing.—Florida oranges are mostly sold to local packers or direct to northern dealers, on the tree, either in lump for the crop, or so much a field box, which is supposed to make a packed box. Dealers told me that usually from 75 to 90 per cent of the crop was sold in this way before the crop began to move. This year it was claimed, not over 5 per cent of the crop had been sold when I was there late in September, dealers not being willing to meet the views of growers as to price. Last year they received about \$1.00 per box on the tree. This season dealers were not willing to pay that much. In the northern sections growers insist on their fruit being picked before the holidays to escape the frosts.

Packing.—In packing, after the culls are thrown out, all oranges are sorted into Brights and Russets. I confess not to have understood this very well before. The russet is an orange on which a species of mite has so

disturbed the surface as to discolor the skin, but apparently without affecting the growth or eating quality. Formerly great effort was made to get rid of what was considered a pest. At present the russets being rather favored in the markets it is not being disturbed. Their machinery is of the simplest character as a rule. I know of single California packing houses containing more machinery and equipment than all I saw in Florida put together. Their boxes are made of cut—not sawed—stuff, from their native pine. They are somewhat larger than ours, which with the fact that the fruit is heavier, makes a packed box of Florida considerably heavier than a box of California oranges. While the railroad takes them at 80 pounds the actual weight is over 90.

The cost of getting their fruit to market is not as much less than our own as I had supposed. They complain bitterly of the what they call partiality shown us by the railroad.

The Outlook.—A word in closing as to the outlook, as it seemed to me, after the week's investigations on the ground.

The frozen orchards of '95 are now nearly all bud-died over, most of them having grown up to sprouts from below the old bud, thus largely restoring the old acreage. The large new plantings are being made mostly in the southern districts. Their early varieties of seedlings are principally planted but considerable attention is now being given to what they call Hart's Tardiff, practically the same as our Valencia Late.

My own conclusions are: First, that Florida will eventually supply largely the early orange markets, competing with northern California.

It is to their interest to cultivate varieties that will ripen before their freezing weather. Even their green oranges are sweeter than ours and will be taken on the markets in preference because they are more edible.

Second, until some serious mishap occurs again, their increase will be rapid for some years. Last year they shipped 2,400,000 boxes. This season the crop is estimated at 3,500,000 by conservative men, and they expect an annual increase of 1,000,000 boxes till some serious reverse occurs.

Third, that in the near future at least, Florida will largely supply the markets with grape fruit (for reasons space does not allow me to go into here.)

I could easily have dwelt on the unfavorable features found in Florida, as is usually done, and what I might say along that line possibly would have interested you more, but I think it wiser for us to know the facts as nearly as possible, and look them square in the face.

MARLY SUBSOILS AND THE YELLOWING OF CITRUS TREES.

By E. W. Hilgard in Circular 27 of the University of California Experiment Station.

It was early ascertained by this Station, and has been repeatedly stated in its publications, that the great majority of California soils, in common with those of the arid regions generally, is calcareous in the sense of containing lime enough to produce all its advantageous effects. In the East, and in the humid region generally, these effects have very frequently to be brought about by artificial liming or "marling"; an operation which but very rarely is of practical use in this State.

It is also well known that "overliming", or the use of too much lime or marl, is very injurious to many culture plants. The case in point best known is probably that of the phylloxera-resistant grapevine stocks brought to France from the Northern United States. The soils in the grape-growing regions of France are very commonly marly, and the result was the chlorosis, or yellowing of the leaves, and general failure of the American stocks on soils whose lime-content would not affect the European vine injuriously at all. The latter is credited with enduring even as much as 40 per cent of lime carbonate in the soil, while some of the American resistants are injured by as little as 5 per cent of the same. Hence the mission, a number of years ago, of Professor Viala of Montpellier with a view to finding, in the strongly calcareous lands of Texas, a phylloxera-resistant grapevine which would also resist chlorosis. Viala was successful in this quest, and the stocks and hybrids obtained from the Texas vines now form the main basis of "reconstituted" vineyards in France.

Marly or excessively limy soils are quite exceptional in California, so much so that until quite recently only one case of chlorosis resulting from that cause had come to the knowledge of the Station. The yellowing of orange and lemon leaves, not uncommonly observed at some points in southern California, has

throughout been due to other defects in the subsoil, which weakened the root-growth or gave rise to fungous disease.

Citrus orchards in the Great Valley have thus far been remarkably free from some of the troubles noted south of the Tehachapi; the chief complaints having been caused by the effects of water seepage from high lying ditches in the foothills. The soils themselves have not been found in fault except where it was attempted to plant orchards on heavy clay subsoils, or hardpan; emphasizing the need of a careful examination of the substrata of any land designed for tree culture.

Quite lately, however, complaints of yellowing and languishing of citrus trees grown in apparently the best quality of loam soil in the Porterville region have come to the Station. Portions of young orchards planted on low ridgy land were found to become diseased, their leaves yellowing and dropping; while those located in lower ground continued to grow thriftily. The samples of soil and subsoil (the latter taken to the depth of from 3 to 5½ feet in accordance with the directions given from the Station) showed that while in the lower ground where the trees were in good condition, the subsoil at 3 feet contained only 12 per cent of lime carbonate, on the higher land it was full of white lime-nodules in the third foot; and that the fine earth around them, in which the roots vegetated, contained from 22 to 39 per cent of lime carbonate. This evidently exceeds the tolerance of citrus roots, hence the yellowing of the leaves. In another similar case, examination showed that even where the trees were doing finely (the soil being very rich), the calcareous layer was reached at from 4½ to 5½ feet. It is probable that so soon as with progressive growth the roots reach the above depth they will here also be affected by the excess of lime.

This is a condition which perhaps cannot be remedied by any applications made to the land. When lands have been injured by artificial over-liming or excessive marling, the effects can be neutralized by the use of organic matter, usually applied in the form of stable manure, a procedure already prescribed in the classic treatise on Marling, by Ruffin of Virginia, early in the last century. But it is clearly impossible to apply this remedy in the case of lands naturally underlaid by marl; at least in the arid region, where roots penetrate to depths unknown east of the Mississippi. No vegetable material could be artificially applied at depths of several feet. Inquiry has been made whether it would not be possible to neutralize the lime by some acid; but this, even if financially possible, would surcharge the upper layers with a substance more injurious than the excess of lime itself. Possibly an antidote may be found in some soluble compound of magnesia.

Such lands should simply be given to some other culture than citrus trees; and among these, grape vines on their own roots, or upon some of the lime-resistant varieties developed in France, will be found available wherever the loose soil extends to 4 or 5 feet depth. Other cultures resistant to marly soils are the fig, stone fruits on Myrobalan or Chickasaw-plum roots, and the quince; also most legumes.

It should be kept in mind that calcareous geological formations extend along the Sierra foothills from the Merced river south through Fresno and at least northern Tulare county, and can be observed in the bluffs of the streams as they emerge from the foothills. It is perfectly easy for any one to test these whitish materials for lime, and to recognize the lime hardpan in subsoils, by a few drops of muriatic or nitric acid, or even strong vinegar; which will cause them to "effervesce" or "fizz" from gas bubbles driven off by the acid. A bit of chalk or limestone can be used for comparison, thus gaining some idea of the liminess of the material. Long low ridges extending valley-ward from the foothills may be suspected of being marly, and should be examined as to the nature of their subsoil before planting. Entirely similar conditions exist locally in portions of the Santa Clara River Valley, and on some other Coast range streams in the south. Also at a few points in the Santa Cruz range.

Practical Suggestions.—The matters discussed above emphasize from an additional point of view the need of subsoil examination in the arid region especially, because of the deep rooting of all plants and particularly of trees. It seems desirable to call attention to another and very obvious mode of recognizing any unusual conditions of soils and subsoils, viz., the native vegetation. I have elsewhere ("Soils," MacMillan Co., 1906.) discussed somewhat elaborately the importance of the observation of native growth by landseekers and farmers. It may be said in brief that the native vegetation is ordinarily the outcome of centuries and

millennia of "natural selection," which results in the predominance of the species of plants best adapted to the surroundings as a whole, and to the soil in particular. Hence such native growth must be presumed to express the same facts and adaptations which we subsequently find out laboriously by the successes and failures of various crops. What we need is to be able to interpret correctly the indications presented to us by the native growth.

To some extent this has been and is daily done by farmers all over the world, who buy wild land in accordance with the indications of the tree growth where such exists. In many Eastern States the official assessment of lands is habitually based upon the natural tree-growth, and the judgment of experienced men on this basis is rarely at fault, and has even excited the envy of agricultural chemists.

In the Eastern United States and in the humid region generally, the presence or absence of an adequate supply of lime in the soil is largely the determining factor of the vegetative character; more so even than the moisture conditions, which are commonly credited with being the chief governing condition.

In the arid regions, where lime is almost universally present in soils to the needful and useful extent, moisture is undoubtedly the dominant factor causing differences in native vegetation. We are therefore deprived to a large extent of the signs by which good lands are recognized by the Eastern settler, the more as forest growth is not abundant in the arid region. We must, in order to utilize the indications of the soil-character by native vegetation, observe not merely the kinds and development of trees on the ground, but also the shrubbery and herbaceous growth; noting not only the presence but also the absence of plants prevailing in the neighborhood, from certain portions of the area.

Every one in California knows the "alkali weeds," which tell him that the land on which they grow is more or less impregnated with salts; many have even now learned which of these plants indicate land which under present conditions it will not pay to try to reclaim. Now just as some plants will resist a greater or less amount of alkali salts than others, so some plants are tolerant of an excess of lime in the soil, while others will refuse to grow, or at least will not naturally be found occupying ground containing more than the limited amount of lime, which is in all cases desirable.

The infrequent occurrence of marly lands in California, already referred to, has been the cause of the fewness of observations made in regard to the distinctive natural vegetation of such tracts. It is evidently very desirable that such observations should be made for the benefit of future planters of orange orchards; and the marly ridges of the Porterville region afford a good opportunity for this purpose. Undoubtedly some of the shrubs and herbaceous plants prevailing elsewhere in that region will be found wanting on the marly ridges or belts. Among these will doubtless be the Lupins, which are very prevalent in the foothill and plains region of Fresno and Merced. Lupins require about one-half of 1 per cent of lime, and some will resist as much as 2 per cent; but marly soils such as those referred to above will certainly not bear any native Lupins. I doubt that even the gray sage will grow on land thus heavily impregnated. That, however, is a question of fact which those living on the spot should readily determine. If any such will send samples of the plants naturally growing on such lands to the Station, they would aid in the settlement of these questions.

"Did you get any refreshments at Miss Delight's party?"

"No; but her dog offered me a bite."

Boggs.—"Did he hurt himself when he fell down stairs?"

Fogg.—"I think not. He died without making a sound."

The teacher was asking questions — teachers are quite apt to ask questions, and they often receive curious answers. This question was as follows:

"Now, pupils, how many months have twenty-eight days?"

"All of them, teacher," replied the boy on the front seat.

POULTRY YARD.

THE SQUAB BUSINESS.

No doubt some have entered upon squab production with greater anticipations than they have realized, from one cause or another. It seems to be a good time to consider the business and if what we shall print below suggests discussion to others we shall be glad to hear from them. Mr. Howard Butcher writes for the Farm Journal what seems a temperate outline of the business from an eastern point of view:

Squab farming has developed in the last ten years into an industry of considerable importance, and so far there is no "trust" connected with it.

It is important, before going into the industry, that a fair statement be made of what the financial returns may be. For a while the work among the birds may to many people be the most delightful and fascinating of all rural occupations, still serious disappointment will be met if only the glowing promises of the boomers are read.

Much of the squab farming literature disseminated by those having breeding birds to sell would indicate that to obtain one of their beautifully illustrated booklets and to buy some birds from them, is all that is required to assure complete success and large profits. That is very far from the truth.

If one is fond enough of the work really to give the closest attention to his birds until he knows they are properly mated (and this requires a great deal of time and patience even from the most experienced), and then will daily continue to give them the most careful attention and see that all their requirements are met (and this is essential),—such a one will run a good chance of raising an average of three to five pairs of marketable squabs per pair of breeders per annum in the northern state. He will, however, raise three to four pairs very much oftener than five.

Presuming that the flock consists of Homers, the squabs produced should be mostly eight pounds to the dozen. There might be a few weighing nine pounds to the dozen, and an occasional one a little heavier; but there will also be a few weighing as low as six to seven pounds to the dozen, and once in a while a cull. Anybody in the last twelve months who obtained an average of \$3 per dozen for squabs from such a flock, got about the highest wholesale market price. It must be borne in mind that while squabs command fancy prices in winter, that season is the time when comparatively few are produced; the greatest production is in the summer when the prices are the lowest. There is an opportunity sometimes to sell young birds for breeding purposes and thus get a better price for them than by killing for squabs, but, as a rule, squab farmers have to depend upon sending the birds to market.

If an average of four pairs of squabs is obtained from each pair of breeders, that would, at \$3 per dozen or fifty cents per pair, yield an income of \$2 per pair of breeders. From this must be deducted all expenses. The feed, nesting materials, etc., of a pair of breeders, for a year, costs at least ninety cents to \$1. This includes the feed to the squabs until they reach a marketable age—four or five weeks. Then there is the cost of barrels or boxes and express; and in warm weather ice must be used. These items average about half a cent per squab where the express does not exceed fifty to sixty cents per 100 pounds. The general charge for picking and dressing squabs is one and one-half to two cents each.

Another item to be considered, is the mortality among the breeding stock. It may be anywhere from one to ten per cent, but the general experience is that the mortality among healthy breeders, from one to three or four years old is not usually more than three or four per cent,—increasing somewhat as age increases.

The most productive period of a pigeon's life is between the ages of one and six or seven years. The writer has had pigeons eighteen years old, but they, of course, had outlived their usefulness. But even if five pigeons died a year out of every hundred breeders, those 100 birds or fifty pairs would probably produce three or four pairs each, or 300 to 400 birds, from which to select five birds to replenish the stock. So this item is not a large one; but it counts in a large flock.

Then count the items of interest on the investment, wear and tear and depreciation on plant, and labor.

A fair estimate for housing pigeons without artificial heat, is \$2 per pair for lots of 100 pairs or over, divided into pens with wired flying pens to accommodate twenty pairs per pen. The depreciation on plant is rather hard to determine. Of course, pigeon houses or any other buildings erected for a special purpose would be worth only a nominal part of their cost if not continually used

for the purpose for which they were built. But if in continual use for that purpose, ten per cent deduction each year would be a fair allowance.

As to labor, one strong capable man could do the work connected with the care of 2,000 pairs of pigeons, —if the houses are properly arranged.

If, therefore, one pair of breeding pigeons produce a gross income of \$2, we might figure this way:

Feed	\$.95
Picking and dressing four pairs of squabs at 4c .....	.16
Package, ice and express .....	.04
Cost of housing one pair	\$2.00
Cost of one pair pigeons	1.75
<hr/>	
	\$3.75
Interest at six per cent on \$3.75 .....	.22½
Mortality of breeders, five per cent .....	.08½
Depreciation on buildings, ten per cent....	.20
<hr/>	
	\$1.66
Gross income	\$2.00
Expense	1.66
<hr/>	
Net balance	\$.34

This leaves just thirty-four cents profit per pair of breeders, and no account has been taken of labor except for picking and dressing. On small plants the owner, besides doing all the labor, may also be able to do the picking. Many farmers count nothing for interest on the investment, and allow nothing for depreciation on plant, or else do the work themselves to maintain the plant in order.

Many of them would estimate as follows:

Income from one pair of breeders	\$2.00
Feed	\$.95
Package, ice and express .....	.04
Mortality among breeders .....	.08
<hr/>	
	\$1.07
<hr/>	
	\$.93

They would estimate on this basis that they made a net profit of ninety-three cents per pair on an investment of \$3.75 for birds and housing, or about twenty-five per cent.

It is not the writer's desire to prevent beginners from going into this most enjoyable and fascinating occupation; he simply wants them to do so understandingly.

FORESTRY

SUGAR PINE AND WESTERN YELLOW PINE IN CALIFORNIA.

(By A. W. Cooper, M. F., in Bulletin 69 of the U. S. Forest Service, in co-operation with the State of California.)

[Fourth Paper.]

Yellow Pine.—The western yellow pine (*Pinus ponderosa*) belongs to the group of pitch pines known as the *ponderosae*, of which *P. contorta* and *P. arizonica* are examples. It is a three-needle pine, though sometimes there are but two needles in a sheath. The needles are 3 to 6 or 8 inches in length and grow in thick clusters at the ends of the small branches. They usually persist until the third season. The cones from the first summer and mature the second, the seed being shed during the second fall, while the cones persist until the following winter or spring. They are from 3 to 6 inches long and are often borne in clusters.

The yellow pine has several varieties and closely allied species; of the latter by far the most important in California is the Jeffrey pine (*Pinus jeffreyi*). This so closely resembles the yellow pine that it is sometimes considered simply a variety. It grows almost entirely at high elevations, usually entering the forest where the yellow pine stops.

Yellow pine assumes a wide variety of forms, which depend largely upon the character of the situation in which it occurs. Under the best conditions it is a tall, rather full-boled tree, and has a height, when mature, of from 175 to 200 feet, and a maximum diameter of from 6 to 7 feet. A very noticeable feature in the development of the tree is its persistent height growth; that is, it never runs to limbs even when grown in the open. The limbs persist well toward the ground in such cases, but usually remain small. The mature trees have a very heavy, yellowish bark, with rather smooth, large, irregular plates. The bark is often from 2 to 3 inches thick.

The root system of the yellow pine is somewhat deeper than that of the sugar pine, although the mature trees have very little, if any, taproot. The young seed-

lings, however, develop a long taproot, especially in dry situations. In such places the growth below ground during the first year will sometimes be two or three times that above ground. Later, however, the tree develops a strong lateral root system which renders it very wind firm.

Yellow pine is not fastidious in its demands upon soil moisture. Its remarkable ability to stand drought and to occupy unfavorable locations are factors which largely explain its wide range. It does best, however, on a rather loose, sandy loam or gravelly loam soil that is well watered and well drained. In the Sierras such conditions are found on the beds of the old filled-in lakes. Often yellow pine will be found growing well on very dry soil, such as the glacial drift of the Shasta Plateau, but it is probable that the subsoil is well watered there and that the depth of the tree's root system renders accessible a good supply of moisture.

The yellow pine is decidedly a light-loving tree; even a slight degree of shade perceptibly retards its growth. But the hardy nature of the species seems to permit it to survive for a longer period under shade than some trees no less tolerant. If not shaded too long it will recover, but shade-grown trees are always more spindling in form and show a decided suppression in height growth. The ability of yellow pine to withstand drought makes it capable of enjoying full sunlight from the start. In the scale of tolerance it ranks next to sugar pine at the end of the list.

Next to incense cedar yellow pine is the most prolific seed bearer of the Sierra conifers. Moreover, there seems to be a large degree of regularity in the occurrence of seed years. Heavy seed years occur about once every three or four years. Unlike the sugar pine, however, yellow pine bears very little seed during the intermediate years.

The seed of the yellow pine is well scattered, and a single tree is often able to seed up a considerable area. The trees begin bearing seed at a much earlier age than sugar pines, but trees under 12 to 14 inches in diameter seldom bear very heavily.

The seed is shed in the fall and usually germinates the same season. Yellow pine is not very particular about seed bed and may be found germinating on the bare mineral soils, but the germination is much better where the seed bed contains more moisture. Often on lumbered areas within the virgin forest it will be found that young seedlings are much more abundant on the patches of squaw carpet (*Ceanothus prostratus*) than elsewhere. This is undoubtedly due to the moisture-retaining qualities of this form of ground cover. Yellow pine seed has a fairly high percentage of germination. Tests made by the Forest Service place it at about 70 per cent.

As might be expected from the seeding capacity and hardy character of the species, reproduction and second growth are abundant wherever light is plentiful and seed trees present, provided, of course, fire is absent. Yellow pine may be found reproducing even under the heavy virgin stands, but lack of light prevents its surviving beyond the first few years. Under partial shade the yellow pine will hang on in a suppressed condition much longer, but it is the large openings made by lumbering or fire that reproduction is at its best. The full light to which the species is partial and its ability to withstand drought, combined with its rapid height growth, render it particularly adapted to occupy such areas, oftentimes to the exclusion of almost all other species. It is this fact that either has entirely changed or is changing the character of the stand on areas where lumbering is carried on, so that the relative amount of yellow pine in the future Sierra forests bids fair to greatly exceed that in the present virgin stand.

In its power to resist fire, yellow pine surpasses all its associates. The young trees, as in the case of other species, are easily killed or permanently injured by fire, but with the larger and mature trees the thickness of the bark is an excellent protection against ground fires, and even after the bark has been burned through on one side the tree usually continues to thrive. Mature trees are sometimes killed by fire, or sufficiently injured by it to fall victims to insect attacks, but this is the case only when the fire is excessively hot and the crown is more or less affected.

While not so free from injury by natural enemies as the sugar pine, yellow pine does not, as a rule, suffer greatly in this way. Wind does very little damage to the species. Wind-shake is not common, and, outside of a few very exposed ridges, the total effect of wind on the tree is so slight as to scarcely deserve mention. Yellow pine often suffers, however, from fungus diseases. Among the mature trees conk, or red heart, is fairly common, and very old trees which have been injured by fire will almost invariably be found to be

more or less affected by red heart, which is due to a fungus (*Trametes pini*). Generally, however, the yellow pine, except overmature trees and those that have suffered from some other form of injury, seems to be exceptionally free from fungus diseases within its California range.

Like the other Sierra conifers, the yellow pine is a host plant for the parasite *Arceuthobium occidentale*. It is more subject to it than sugar pine, though less so than cedar or fir. Most of the damage done is to the limbs, which become crooked and gnarled and eventually die.

Yellow pine suffers from insect attacks probably more than any other western conifer. Doctor Hopkins says of it in his report on his western trip:

It has in *Dendroctonus brevicornis* a most pernicious enemy, which penetrates and excavates winding galleries through the living bark of the finest trees, speedily causing their death. Very many trees have died and are dying from this cause, and the dead ones are contributing to the spread of forest fires. Its next greatest enemy is the pine butterfly, which has from time to time defoliated and caused the death of much of the best yellow-pine timber in eastern Washington and in Idaho. There are many secondary enemies of greater or lesser importance, which contribute to the death of trees primarily injured by defoliating and other insects, fire, and other causes.

The *Dendroctonus* mentioned by Doctor Hopkins has already done considerable damage in the neighborhood of McCloud, Cal., and has commenced its depredations in the Yosemite region. *Tomicus confusus*, the species which kills fire-injured young sugar pines, is also found in young thickets of yellow pine wherever fire has injured them.

It seems probable that in the near future the frequency of insect attacks on the yellow pine will become a very serious factor in dealing with the forests, since their relations to lumbering and fire is such that in many places the conditions are ripe for their increase. Yellow pine when growing pure seems in greater danger of widespread destruction than when mixed with other species, and the increasing number of pure yellow pine stands in an additional menace of danger from this source.

Aside from the three sources of injury already mentioned, yellow pine has few enemies, nor does it suffer much from grazing or the like. An injury, the cause of which has ceased but the effect of which is still visible in Butte and Tehama counties, is that caused by boxing. During the civil war most of the yellow pine in the region was boxed for turpentine, the high price of which made this a profitable undertaking. After the war, when the price for turpentine was again normal, it ceased to be profitable to exploit the western yellow pine for this purpose. The quality of the timber cut from these boxed trees, however, has been greatly lowered, owing to this early boxing.

Growth.—Sugar pine is rather slow in both height and diameter growth up to the fortieth year, when both increase rapidly and continue for the next hundred years. This is due to the fact that most of the sugar pines have been shaded more or less in their early youth. For this reason it is believed that, under a suitable system of management, the sugar pine will have a much more rapid growth.

Yellow pine has a much more rapid height and diameter growth than sugar pine, but this growth begins to fall off more rapidly, and at the age of one hundred years or more it is surpassed by the sugar pine, which maintains its growth much longer and attains a greater maximum height and diameter.

The relation between height and diameter for both sugar pine and yellow pine is remarkably close, though the sugar pine tends to be slightly taller in proportion to its diameter than the yellow pine.

WOOD.

Sugar Pine.—The wood of sugar pine is soft, straight grained, and easily worked. It is very resinous, and the resin ducts are large and conspicuous. The heartwood is light brown in color, while the sapwood is yellowish white. When finished, the wood has a satiny luster that renders it excellent for interior finishings.

The specific gravity of the dry timber is 0.3684, and rough dry timber averages about 2.5 pounds to the board foot.

In contact with the soil sugar pine shows moderately durable qualities, although this might prove less apparent in a climate not so dry as that of California. In brief, sugar pine closely approaches the eastern white pine in its physical characteristics.

These two woods are very close, though the eastern

white pine is a trifle the stronger. On the whole, it seems safe to say that sugar pine is slightly inferior to white pine in quality as well as in strength, for it is more brittle, and its large, conspicuous resin ducts are somewhat of a detraction.

Sugar pine timber has an almost endless variety of uses. It is used extensively for doors, blinds, sashes, and interior finish. In pattern work sugar pine is largely replacing white pine, as it is cheaper and its softness and straight grain render it an excellent substitute. Its freedom from odor or taste causes the wood to be much used in the manufacture of druggists' drawers.

Other common uses are for oars, moldings, ship work, chain boards, bakery work, cooperage, and woodenware—in short, for almost any purpose for which white pine is used. The poorest grades are used extensively for boxes, especially fruit boxes, and for drying-tray slats.

The wood is still used for making shakes (a hewed shingle 36 inches by 6 inches), and its straight grain and the ease with which it splits have made this in the past almost the first use for which the tree was sought. Logs too knotty to cut uppers, but otherwise sound and straight grained, are sometimes turned into bolts for match wood.

Yellow Pine.—The wood of yellow pine varies as greatly as do the silvical characteristics of the tree. In one locality alone four kinds of trees are distinguished, the classification based largely on the character of the wood. The wood is rather heavy as compared with that of sugar pine, is hard and strong, sometimes brittle, and very resinous. The heartwood is reddish brown, and the sapwood yellowish white and often very thick. The sapwood from certain trees, when finished, has a beautiful satiny luster, is light and easily worked, and is equal to sugar pine for finishing purposes.

Yellow pine has a specific gravity when dry of 0.4715, and rough dry lumber weighs about 2.7 pounds per board foot. It is thus considerably heavier than sugar pine and is proportionately stronger.

Yellow pine has a great variety of uses, especially where a strong, durable wood is desired. It is extensively used for building materials, such as scantling, beams, flooring, ceiling, etc., railroad ties, door stock, and matches. Small trees 6 inches, 8 inches, and 10 inches in diameter are extensively used in some localities for mine props; in fact, the use of yellow pine for mining timber was one of its earliest uses.

THE GARDEN

CALIFORNIA PRIVET ABROAD.

This is a plant which is better known abroad than at home. A new Orleans writer for *Floral Life* says of it:

This fine hedge plant is now universally adopted. It grows so readily from cuttings and so rapidly attains graceful proportions that the slow growing evergreen hedge plants are scarcely in competition with it; then the soft and tender foliage of lovely light green is so luxuriant that the plants are beautiful and highly decorative at every stage of growth. It blooms profusely in April, May or June, according to climate. The blossoms are white, in long racemes, not unlike the astible Japonica.

After flowering the plants should be pruned. If in hedges, prune them as smooth and even as velvet, top and sides. Prune repeatedly, all summer. The illustration is of a hedge bordering the front of a residence in Pass Christian, Mississippi. It has two arches, over narrow sidewalks, and two plants in what gardeners call "topiary" form. It is not uncommon for arches of this privet to span broad walks, gates and front porches. These effects are easily obtained, as the plant naturally makes tall, slender growth. Pruning gives it bushy growth and body.

There is a convent in New Orleans with two tea pots, handle and spout distinctly defined, of California privet. Several parks have chairs, settees and benches, as beautiful as living green can be; ingenious and artistic.

Isolated plants are rarely seen. Hedges are the principle forms; then, as described, many ingenious and unique forms are the result of training and pruning. Hedges are easily made by cuttings planted in a trench where the hedge is to grow. It is not necessary to root the cuttings in cold-frames or on cutting benches and then transplant them to hedge rows. The plants are hardy in Central Park, New York City, but are de-

ciduous in northern climates. In the South, except in the most northern limit, they are evergreen.

Ligustrum ovatifolium is the only popular plant of its class. The old *L. vulgaris* and *L. Japonicum* are coarse compared to *L. ovatifolium*, and have been discarded from flower gardens, more or less, in all sections.

SHEEP AND WOOL.

THE CHANGE IN STYLE IN MERINOS.

California has shared in the confusion in types of Merinos during the last decade. It is an interesting historical fact that California was breeding the two rival types, each true to its kind, for a quarter of a century before the change came in popular favor and furnished the first animals of the French type for export to Australia and Argentina when the fashion turned to that type. Since that time, however, California has done less in the breeding of pure Merinos of either kind, though a few breeders have greatly enlarged their operations. The following comments made by Mr. Roscoe Wood in the American Sheep Breeder will have much local interest:

The importation of the von Homeyer World's Fair exhibit in 1893 was timely to American sheep breeders, if not to the profit of the Baron, for several causes had combined to operate to bring the heretofore popular Vermont type of Merino in public disfavor, and the majority of general sheep breeders were still desirous of breeding a Merino sheep, if they could secure the type they thought they wanted. Those who saw them admired these elephantine Merinos, as they were called at the time. Well do we remember our impressions and admiration of them, and our feelings were not different from many of the Merino breeders of that time, with a possible exception of a few of the old-time Vermont breeders, who absolutely disregarded them, and could see no value in them. They were great sheep, both as to size and fleece, and they were the ideal, or pretty near it, of what the average sheep grower wanted to produce. And at the same time they were far superior to anything the average sheepman had seen up to that time, especially with regard to quality and weight of fleece, combined with as much size.

Many of the Merino breeders, especially of the central states and farther west, would liked to have had that kind of rams to have used to produce the kind of Merino their customers were calling for; but they did not buy these rams when they were offered for sale. Why, you ask, if they wanted them? Because it would put their Merino flocks beyond the pale of the registers, and their faith in the value of the produce, and the permanency of the demand for this type of Merino was not strong enough to force them to disregard, or rather revise, the requirements of the registers. So that instead of going to the head of the best Merino flocks, especially of those that were tending toward the B type of Merino, these wonderful, for they were unmistakably great, sheep were scattered, and, with a few notable exceptions, failed to receive the chance they deserved, to produce improvement.

It was a little too soon for those breeders of thick-fleeced pure-bred Vermont Merinos to take up with this idea of using, as they disparagingly called it, a "French ram," but many of them came to it within five years. For if there was any one time which we could specify as being the time when came the parting of the ways, for the breeders of Merino sheep in America, it was in 1893, and the place the World's Columbian Exposition. This was the first fair of any importance to take official cognizance of the leading types of Merinos, as distinct from each other, and give them a separate classification. Before this the Vermont type and the B type, as it has since been called, and many times the strictly Delaine type also, were all included in one class, and the winners were of the style which the individual judge happened to prefer. And the result for all concerned can easily be imagined.

The great influence in moving the average breeder toward a particular type, and modification of it, is unquestionably popular demand, either present or prospective, and with it the attendant profit, while a secondary influence of no little power is that of winning in the show ring, whether the exhibition be large or small. But this latter, to be of value, must have the competition between individuals of somewhat similar type, and not a competition of types, and is to a great extent the result of the former.

And after 1893, the different distinct types of the Merino were recognized as such by the more prominent

fair associations, while sheepmen generally made a distinction among themselves, when the term Merino was used. Heretofore Merino had meant the Vermont type, with the attendant wrinkles, gresae, and medium to small carcass, with wrinkles as the distinguishing feature, and even yet, some people who profess to call themselves well versed in sheep and the various attendants of the industry speak of Merinos as the "wrinkly skins," apparently ignorant of the fact that there exists such an animal as a large, smooth Merino. And from this ignorance, apparently willful and malicious in certain quarters, has come much of the prejudice against Merinos in the market, and among the general sheep growing public. For it must be remembered that, while there are still more wrinkly Merinos, the greater per cent of Merino sheep throughout the country at the present time are not wrinkly, but large, smooth sheep.

The three years following 1893 and the depression of the sheep industry as a whole should be too vividly impressed upon the minds of all our readers to need recalling, and if any one bore the brunt of these hard times, it was the breeder of the Vermont type of the Merino. For already declining in popular favor before the rapid and severe decline in the price of wool, the slow but sure rise of a mutton market and the industry of feeding and fattening lambs for mutton, and the moving of the range industry toward the northwest was a combination of the leading causes to push the Vermont Merino from the crest of public favor and general usefulness; and the same causes were creating a demand for the large, plain type, when a man wanted a Merino at all.

We have already seen how the leading Merino breeders, especially of Michigan and Ohio, were troubled to meet this demand, in securing such stock rams as they wanted. And it took them from two to five years before they could be convinced that this plainer type of Merino had come to stay, and they could be persuaded to use a Rambouillet ram, and then they were very particular; for you must remember that after these breeders had spent years studying and breeding for fleece and wool, they could not disregard the item of fleece altogether. And previous to the von Homeyer importations, the Rambouillets did not meet the views of these Merino breeders, in the matter of fleece, either as to quality or weight. To use the common expression of the Merino breeders of that time, "The Rambouillets did not have a Merino fleece." But with the advent of the von Homeyer sheep with their Merino fleeces began the movement of breeding these rams to the heavy fleeced flocks of Vermont ewes, to produce a ram that would meet the demand of the general sheep grower. And now that these breeders started on the way, they were not the men to turn back, nor fail to secure the benefits that belonged to them for their enterprise.

For the produce of these Rambouillet rams and Vermont ewes was not eligible to registry in any association, the older breeders who still clung to the old Vermont type refused to recognize this as being other than a grade, the same as the produce of an English mutton ram on a Merino ewe, they did not consider the Rambouillet a Merino sheep at all, in spite of his breeding, and they would not revise nor add to the old register in any way so as to permit of the registration of sheep so bred. What were these progressive breeders to do?

What they did was to form an association and establish a registry for the sole purpose of recording sheep which are "the pure descendants of the French Merino and American Merino strain intermingled," and called their association the Franco-American Merino Sheep Breeders' Association. And the sheep of such breeding are generally called Francos.

A REPORT ON PRUNES.

To the Editor: Our attention has been called to the remarkable yield of prunes in an orchard in this vicinity, and we thought it might be of interest to your readers. Mr. T. F. Stile, the Horticultural Inspector of Butte county has a block of 1200 French prune trees, situated about three miles north of Chico. The trees are now ten years old and Mr. Stile this year harvested one hundred tons of dried fruit from this block of prunes, or about 166 pounds of dried fruit to the tree. As it took about four pounds of green fruit to one of dried, the yield of green fruit to the tree would be about 665 pounds.

Mr. Stile realized an average of \$54 per ton for his prunes, which brought him \$5400 for the crop of prunes on this block of fifteen acres, or about \$360 per acre. How is this for Butte county?

Chico, Cal.

CHICO NURSERY CO.

THE MARKETS

Wheat.

The wheat trade is in a fairly satisfactory condition but buying and selling is not up to the usual volume at this time of the year. The best white milling wheat is selling slowly at \$1.37½ and other grades are selling about as slowly at lower prices. The receipts of wheat at this port are very limited now, even less than they were a month ago. All the warehouses are full and, as there is no wheat going for export, there is no call for any more in San Francisco. During the past week the receipts averaged but little more than 300 centals per day. In the northern markets there is but little change from previous conditions and the chief differences in the conditions there and here are due to the greater volume at the Sound and on the Columbia river. At both points a good volume is changing hands owing to the considerable surplus which must be sold for export. At both of the northern shipping points considerable tonnage has been booked and a number of cargoes are yet to depart. In futures but little has been doing in this city. On one or two days there were no transactions reported on 'Change and on the other days the transactions were not heavy.

Flour.

The flour market is a little firmer than is the wheat market, owing partly to the heavy demand locally and partly to an improvement in the demand for export purposes. There have been no marked changes in prices, however, and the earlier expectations of improved prices are not likely to be realized. The sudden drop of 25 cents per barrel two months ago has just about been recovered in the firming up of prices recently, but there is not much prospect of a further advance for some time. The average daily receipts are only about 300 sacks per day. These are just about equal to the city consumption and no surplus is piling up.

Barley.

Feed barley is assuming the leading place in the market locally and although sales are fairly numerous in this line the price is showing but little change. The best feed barley is bringing about \$1.12, with a few fancy lots selling at as high as \$1.13¾. Transactions in brewing barley are not very brisk but here again there is no notable change in prices. As a matter of fact most of the business in brewing grades is now done in the country and comparatively little finds its way to San Francisco. Receipts this week have been fairly large. The demand for barley for export continues good and export shipments promise to be large for some time to come.

Oats.

The most active demand for oats is for seeding purposes and some of the best seed oats are now selling as high as \$2.10 per cwt. According to reports, a good volume of trading in oats is being done in the interior and as in the case of other grains not demanded for export, only meager supplies are being kept here this year. There is a certain and quite steady demand for feed oats but this is not very large and is not likely to increase materially.

Feed Stuffs.

The demand for all kinds of feed stuffs continues good as far as the local consumption is concerned and in this there is not likely to be any change unless an unexpectedly severe winter should put a stop to the large amount of teaming now going on here. Rolled barley is in especially good request and there is also a fair demand for oats. The supply of both bran and shorts shows an increase this week and as the demand is steady, prices are being generally well maintained. Cracked corn is beginning to occupy a substantial place in the feedstuffs line and the receipts and the consumption are both larger than for some time.

Corn.

A slight increase in the demand for corn has caused some movement and on the whole the market may be said to have improved in tone, though there has been little or no fluctuation in prices.

Hops.

With the close of the harvest the chief interest in hops has passed. With the exception of the hops that are being held for shipment to England very little is now left in first hands and California dealers are apparently not attempting to buy at the present time. The export idea is generally looked upon as a good one and as one that has probably saved the price from sink-

ing to a considerably lower level than it has so far held. Some of the best sales made here recently have reached the 16 cent point, but as a rule the majority of sales do not run above 12 or 13 cents per pound. The market east is steady and the eastern situation is considered good.

Wool.

The wool market is quite steady all over the United States. The Boston market has a good tone and this is doing much to hold up the markets elsewhere. Sales have been made recently in various parts of California and as a rule the clips sold have brought better prices than were offered at earlier sales. The bulk of the California wools have now passed out of the growers' hands. Cable advices from Adelaide, Australia, show that 26,000 bales of wool were sold there on November 12th, this being the world's record for any one day's sales.

Beans.

The most interesting feature in the bean trade is that Limas remain so high when the supply is, or will be, larger than for some years past. A fair volume of business is being done in an export way, however, and this is tending to keep prices on the present high level. In the local market there is no great change since last week. Some of the best lots of Limas have brought \$4.45 and even \$4.50 this week.

Bags and Bagging.

The bag market is seasonably dull just now, except for the tolerably steady demand for cotton goods. The rush for bean bags is a thing of the past and while the price has not dropped as yet there is very little doing in this line.

Hay.

Arrivals during the week have amounted to 3911 tons, this being quite a bit less than for the week preceeding. Very little change is manifested in any of the conditions. The demand continues strong for the better grades and weak for the poorer grades, with a corresponding strength and weakness in the prices of these grades. Strong efforts are being made in every section to induce the railroad company to furnish more cars, and there are hopes that some results will be achieved. Alfalfa hay has been coming in a little more freely but prices are unchanged. Straw is in light supply with a strong demand.

Potatoes.

The supply of Salinas potatoes showed a further slight increase this week and the price has no tendency to advance further. A fair average quotation would probably be \$1.90. River potatoes are plentiful and are selling at unchanged prices.

Butter.

There have been several changes in the butter market this week. Early in the week the price reached the 31 cent mark but quickly dropped to 30 cents. The supply continues to be light and the demand is only partially satisfied. Dealers have quit guessing as to the time when conditions will be better and are now only waiting.

Cheese.

The cheese market is firm and the price is steadily coming up week by week. Fancy grades are now bringing as high as 14¼ cents. Even the poorer grades are firmer in common with the best but the demand is much easier to satisfy.

Eggs.

Eggs are still extremely scarce and the price is high. Some sales are made for as high as 53 cents, although the market is normally at 52½ for the best. The outlook for an improved supply is not of the best.

Poultry.

The poultry market is still brisk for large fat stock and is in a fair condition as far as others are concerned. The approach of Thanksgiving is naturally having some effect and turkeys have advanced somewhat, both in demand and price. Live turkeys are now held at from 22½ to 25 cents per pound.

Seeds.

The seed market continues in pretty good shape, though there have been no great alterations in any line. There has recently been some transactions in alfalfa seed, though the price has not been up to expectations. The exporting of radish seed continues, as does the shortage in onion seed.

Vegetables

A good big business is being done in onions and the price remains about at previous figures. Good supplies

are in sight and as there is no tendency to go lower in price trading is expected to be steady. Seasonable varieties of vegetables are about steady taken as a whole. At this season of the year many varieties are dropping out or are to be had only from cold storage.

Fresh Fruits.

Apples are now occupying the greater share of the attention of the fruit men. The crop in California has been phenomenally large and supplies plentiful. The quality has been falling off, however, and some very inferior grades have been reaching the local markets. Bananas are gradually increasing in supply and the showing made here is about up to the normal. Grapes are plentiful in the later varieties. The quality shows some improvement and some very attractive boxes are on sale.

Dried Fruits.

The local houses are now busy with the arrivals of this season's crop. Prunes are quite plentiful and the price, though better than it was some weeks ago, is not on a par with the high prices of other fruits. California dried fruits are in great demand in the eastern markets and advancing prices are reported almost everywhere. Dried peaches are especially scarce and the lots here are held at high figures.

Nuts.

Almonds are a little more plentiful here, although they are still scarce and very high. Owing to the light supply the California crop is not being figured on in the eastern markets. The walnut situation is about as before.

Citrus Fruits.

New oranges from northern California have been coming in a little more freely this week and the local houses are better able to supply the trade. Lemons are also more plentiful but they range so far apart in quality that no special price has been set.

Raisins.

Raisins, although quite active in and about Fresno, are not showing any great movement here. Prices are still held firmly at the previous high figures. The 1906 crop is now well out of the growers' hands and shipments east are going forward at a good rate. The demand for seeded raisins is good and all the large seedling plants are running full. It is expected that by the first of the year the entire crop will be cared for.

A REINFORCED CONCRETE TANK.

We gave last spring a detailed account, with drawings, for making a concrete tank on the ground surface. The following is another account as prepared by Mr. J. E. Wing for the Breeders' Gazette, in answer to this question: "My neighbors and I wish to build storage tanks for water, using stone, lime and cement. We intend to build 9 feet above ground, and 8 feet in the clear. What sized wall should we build? Also how deep should wall go in the ground? What proportion of lime, cement and sand should we use?"

The wall need not be more than 8 inches thick and a less thickness will serve, since the pressure of the water is not to be held at all by the concrete but by the metal reinforcement used. The foundation need not go far in the ground; just dig a narrow trench, as narrow as you can dig with post hole diggers, say, to a depth of 36 inches, and fill it with concrete to the surface and start your wall on that. Should it settle it will all settle together, but it will not settle if dug to solid earth and a thin wall requires little concrete. Better, by many times, a thin wall made good and right than a thick wall made poorly. After reaching the surface your wall may be 6 inches thick and at intervals of 12 inches lay in the thickness of the wall wire reinforcement made of No. 4 wire, passing clear around, lapping about 24 inches and the ends turned back. To use this wire, first stretch it hard by pulling with a team and lever so that it has no coil left in it, then cut it in lengths with a bolt cutter and use.

Use no lime in the concrete, but the best Portland cement and as much of that as will perfectly fill the voids in your gravel, whatever they may be. You can learn that by taking a measure, a tin bucket with straight sides will serve, filling it with the gravel, then from a like bucket pouring in water until it will take no more, and measuring to see how much water it has taken. This rule is safe if you will allow a little more cement than you used water, for you may leave a little air in the gravel, and you will not quite perfectly mix your cement and gravel. You understand that the two buckets must be exactly alike, with parallel sides (cans will serve) and each filled full, one with gravel, the other with water, and water transferred from the one to the other until it has absorbed as much as it will.

THE DAIRY.

WINTER DAIRYING IN CALIFORNIA.

I notice, writes Mr. Robert Asburner of Woodland in the Dairy Review, that there is complaint of great scarcity of good butter during the fall and early part of winter every year, in your paper. Dairymen who only milk their cows during the grass season make a great mistake by not having them calve so that they will be giving most milk when butter is selling for a better price than at any other time of the year. It is a well known fact that cows that calve about the months of September and October, and are well fed through the winter till grass is good, give a great deal more milk during the year than if they calved during the first months of the year.

Good butter can be made at any season of the year when cows are well fed, and along with all other things connected with the business, kept clean. There is also the advantage of having the cows in good condition at the end of the winter season, so that they will keep right on milking, nearly as much as if they had been poorly wintered and come in to calve when there is little more of them than "skin and bone," as the saying is. In that case it takes a cow some time to come to her milk, in proper quantity, while a cow that calves in good condition will be at her best in a week or so after calving, care being taken to feed sparingly of grain both before and after calving, for a few days, and there is nothing that I know of, in the way of concentrated food, so good and safe as bran and oil cake to use about calving time; for instance, a cow that I had calve at the State Fair grounds on the afternoon of the 24th of August last was giving 53 pounds of milk a day seven days after calving, but what would she have done if the right condition had not been there?

Now, as to making good, even choice butter in winter there is no difficulty whatever, you just get into the way of it, and keep on and have good, clean healthy cows, well fed, is one of the main points; it is certainly the first thing to consider, and I think that if some of our dairymen would practice better feeding than they do they might be a little surprised in finding more good cows in their herds than they ever thought they had.

I made butter for about thirty-five years at Baden, and for six years at Lakeville, Sonoma county, and for the last thirty years it went to the California market, in San Francisco, where it was always thought more of in winter when good butter was scarce, than in grass time, when the majority of dairymen made good butter. I used to have my cows calve so that I had fully as much milk, and something more in the early winter months than in the middle of summer when butter was at a comparatively low price.

FRUIT MARKETING

PACKING APPLES IN BOXES.

Mr. O. H. Barnhill of Flathead county, Montana, tells how they pack apples in boxes in his district in the Rural New Yorker. Although the leading apple districts of California may have nothing to learn about handling apples in boxes, even the most experienced may like to read something on the subject and the newer growers may learn something:

The first essential in packing apples in boxes is the right kind of a box. There are several kinds and sizes, but we believe the best is the one described below, which is the one generally used throughout the Pacific Northwest. The end pieces are $10\frac{1}{2} \times 11\frac{1}{4} \times \frac{3}{4}$ inches; surfaced on both sides. The side boards are $10\frac{1}{2} \times 19\frac{3}{4} \times \frac{3}{4}$. There are four top and bottom pieces, each $5\frac{1}{2} \times 19\frac{3}{4} \times \frac{1}{4}$, and four cleats $11\frac{1}{4} \times \frac{3}{4} \times \frac{3}{4}$. The latter are nailed on top of the bottom and top boards, which they help hold in place, and also serve to hold the boxes apart, so they will not press against the bulge when packed together. The top and side pieces may be surfaced on one or both sides. The latter may be made of two boards grooved together. Three-penny nails are used for putting the box together, four-penny for nailing the cleats. Material for these boxes retails at 10 cents each, but we get them at the sawmill for \$8 a hundred.

A good apple packer must be a good judge of form and size, able to estimate correctly the form and size of an apple at a glance. He must select apples instantly which will not vary one-eighth of an inch in length or width from what they should be, for if the apples are not exactly the right size they will not fit well in the box. There are a good many more ways of packing apples. Apples grow in such an infinite variety of sizes and shapes that it requires an equal variety of ways of placing them in the box in order to make them fit snugly. The fruit is usually placed blossom end down in the box, but sometimes the apples fit better when laid on their sides. This change gives just twice as many variations in packing. The number may be doubled again by placing the apples with the stem pointing crossways, instead of endways with the box. Additional variations may be made by placing one or two layers of apples on end and the other layers on their sides, or each layer may be packed entirely different. Sometimes it is necessary to vary the position of the apples in a single layer, placing one row on end, another on side—any way to make them "come out right." While it is allowable to vary the position of the apples in a layer or row it is not best to lay every individual apple the way it seems to fit best. Find out by trying

which is the best way to pack one kind of apples and then pack each box the same way, selecting apples of the same size for a given layer or row, or entire box, if possible. Keep the apples as level as possible in the box, so the cover boards will touch each apple on the top row. The apples in the middle should be slightly larger than those at the end, as the fruit will be held more firmly if the top and bottom boards are sprung out a little. This bulge should be about a half inch on bottom and top.

PATRONS of HUSBANDRY

TULARE GRANGE MEETING.

To the Editor: Tulare Grange, last Saturday, the 17th, convened in Odd Fellow's hall, its own hall being occupied by the King's Daughters, who were holding a church festival and fair therein. There was an average attendance.

During the session of the Grange Bro. E. C. Shoemaker telephoned from Orosi that Orosi Grange was then in session and had received a class of twelve. This was applauded by Tulare Grange, after which the subject of the day was taken up, it being lecturers' hours, on "How Best to Increase the Membership and Usefulness of the Grange." Many good suggestions were given by different members, the general expression being that there ought to be more young people in the order and a better attendance would be a great advantage.

It was held, too, that co-operative work should be a distinguishing feature of Grange work and that co-operation should, in every effort made therefor, be discussed in the Grange and if deserving should receive, and will receive, Grange support.

A committee consisting of Bros. Fowler and Watts and Sister Nelson was appointed to prepare a programme of discussion for the first six months of 1907.

J. T.

HOW FARMERS IN GERMANY OPERATE SMALL DISTILLERIES.

Representative E. J. Hill, of Connecticut, who assisted the Commissioner of Internal Revenue to formulate the rules under which the free alcohol law went into effect on October 1, spent most of the summer in Europe with Commissioner Yerkes in investigations on this subject. Mr. Hill states that Germany was the country in which the most progress was found to have been made in the direction of applying denatured alcohol for the development of industrial purposes. There are 70,000 farm distilleries in Germany, many of them being very small, and Mr. Hill was asked how the German government could afford to furnish an inspector to each of those distilleries. He replied:

"There is no difficulty in that respect. The stills have to be made in a certain way, which includes a tank that can be locked with a government lock and sealed with a government seal. The small farm distilleries do not operate all the year round. They operate in the winter when the farmer has leisure to do something other than straight farm work. The farmer has to give the government thirty days' notice as to the time he wants to begin to operate his still. Some time during the thirty days an inspector comes along and looks the

Lost Strayed or Stolen—One Cow

That is about what happens each year for the man who owns live cows and does not use a Tubular cream separator. He loses in cream more than the price of a good cow. The more cows he owns the greater the loss. This is a fact on which Agricultural Colleges, Dairy Experts and the best Dairymen all agree, and so do you if you use a Tubular. If not, it's high time you



did. You can't afford to lose the price of cream more cows each year. There's no reason why you should. Get a Tubular and get more and better cream out of the milk, save time and labor and have warm sweet skimmed milk for the calves. Don't buy some cheap rattle-trap thing called a separator; that won't do any good. You need a real skimmer that does perfect work, skims clean, thick or thin, hot or cold; runs easy; simple in construction; easily understood. That's the Tubular and the best of one Tubular, the Sharples Tubular. Don't you want our little book "Business Dairymen," and our Catalog A.131 both free? A postal will bring them.

The Sharples Separator Co.
West Chester, Pa.
Toronto, Can. Chicago, Ill.

still over to see that it is clean, etc., and then he locks and seals the tank, after which the still is ready for the farmer.

"He may go ahead and distill until the tank is full. Then he informs the person who is to buy the alcohol from him, after which he notifies the government, and an inspector comes and removes the seal, measures the contents of the tank, and collects the revenue. If the farmer wants to denature the alcohol on the spot he can do so in the presence of an inspector, when the amount of the tax will be returned to him. But generally the farmers sell through the great central selling agencies, which denature at a central point and in large quantities, and collect the rebate from the government in considerable sums. Thus the government agents are not required to spend any appreciable time at any one farm, and one inspector can cover a large territory. Meanwhile the central selling agency pays the farmer on the basis of beverage alcohol and rebates for all that is denatured. It is a good system and is not very expensive to the government."

TREAT YOUR OWN HORSE AILMENTS.

Many animal owners make a serious mistake in not being prepared to do for themselves many things upon which they habitually seek aid from others. If a horse goes lame or a shoe bolt develops, their first thought is of the veterinary. This means valuable time lost and is a waste of money. The commonest ailments of horses are not difficult to understand. With the aid of that matchless little book "A Treatise on the Horse and His Diseases," published by the Dr. B. J. Kendall company, Encinitas, Pa., there are but few ailments that every horse owner cannot understand. Then with the wonderful Kendall's Spavin Cure, which has been the foremost remedy for nearly two generations, he will be able to cure, absolutely, the great majority of injuries and ailments. It is the rarest thing that a Spavin or a ringbone, curb or splint, if treated in time, does not yield to this great remedy. If horse owners will keep it constantly on hand, they will be able to treat for themselves and to treat promptly upon the first appearance of the growth. They will be far more certain to effect an absolute cure than the veterinary will if treatment be delayed. It is the old cases that are stubborn. Veterinarians cannot certainly cure them. But when taken in time we doubt whether a single case can be produced where this old standard remedy will not effect its cure.

What is true of Spavins, Ringbones, Curbs and Splints, is doubly true of such casual ailments as cuts, wounds, ordinary lameness, etc. Kendall's Spavin Cure is a dependable remedy, and horse owners would do well to keep it always on the shelf.

Every Farmer Knows That The

DE LAVAL CREAM SEPARATORS

are in a class by themselves as the best separators. But many have the mistaken idea, which competitors help to magnify, that they are "expensive" and that something "cheaper" will do in their stead.

The Facts Are That The

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are not only the best but at the same time by far the cheapest—in proportion to the actual capacity and the actual life of the machine.

These are simple facts easily capable of proof to any buyer who will take the trouble to get at them and who need only to apply to the nearest DE LAVAL agent or send for a catalogue to do so.

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HOME CIRCLE

THANKSGIVING.

In the gloaming of November
 With its foliage of gold,
 Comes again the glad Thanksgiving
 With its customs dear and old;
 And beneath the starry banner
 As it floats from sea to sea,
 We a happy Nation gather,
 Fears at rest, for all are free.

Not a hand in all this Nation,
 In the East on in the West,
 Bars the mansion of the cottage
 To the kind Thanksgiving guest;
 From the balmy groves of Southland
 To the nodding pines of Maine,
 Nature, filled with joy and triumph,
 Spreads the yearly feast again.

We are thankful for the blessings
 That have crowned our cherished
 land—
 Fruitful orchards, golden harvests,
 Peace and love from strand to strand;
 'Neath November's robes of beauty
 Hidden lies the warrior's sword,
 And the olive branch is hanging
 O'er Columbia's festal board.

Aye, from mountain unto mountain,
 'Neath the Union's azure dome,
 To the feast we spread each autumn,
 Bid the absent welcome home.
 Round the board where all are merry
 Let the rarest sunlight play,
 With the love-key of Thanksgiving
 Open every heart today.

Heaping full are all our garner,
 And our rivers as they run
 Sing a matchless song of plenty
 To the distant seas of sun;
 As a people God has blessed us,
 Who are happier today?
 Let the land from mount to ocean
 Sing a sweet Thanksgiving lay.

Hail the hallowed Thanksgiving
 That the Pilgrim Fathers gave!
 'Tis their legacy forever
 On the land and on the wave;
 Then, as Freedom's chosen people,
 We our destiny fulfill,
 Let the future's glad Thanksgivings
 Find us grander, greater still.

JUST IN TIME.

Dressing herself all in white, as was her custom almost every afternoon, Molly White went to sit in the hammock to read and wait the return of her husband, who had gone to the next town on business. She had been reading some time, when suddenly she heard hoofbeats. Peering through the vines she saw a young scout, one of her husband's friends, come galloping up the road toward the house very much excited. She thought of her husband immediately and suspected that he was in danger.

"What's the matter?" she exclaimed seizing him by the arm.

"It's—it's Will," he answered, quite breathlessly.

"Is he hurt?" she cried, excitedly.

"No, but he's going to be," he answered softly, at the same time glancing around about to see whether or not he was telling this to more than one person.

"When? Where?" she cried, almost shouted.

"You know where Black Rock is, about ten miles from here, don't you? Well, that's where they're goin' to wait for him. You see, they found out that he'd gone to C—— and was going to bring back some cash and thought they'd give him a lift. Heard it from an old friend and thought—"

But Molly cared nothing for what he thought just then, and hailing the stable man, who was passing, she said in a low voice: "Jim, saddle King, mount four men and be ready to follow me in five minutes. Be sure the men are well armed." Jim hastened to execute his orders, and in five minutes he and his men were ready for further orders.

"You ain't goin' to try to head him off, are you?" the scout asked Molly, and not receiving an answer, continued, "It's too late, he'll be there before you can catch him."

"We'll see," said Molly, shortly.

Seizing her revolver from the table she hurried out to where her men were waiting, and bidding them follow her as rapidly as possible, she sprang into the saddle and was out in the road before anyone could remonstrate with her. The others mounted quickly and were soon following their mistress, but she was more than a match for them.

Her horse was a thoroughbred, the fastest on the ranch, and Molly thought that by urging him on to a quick run, she might yet be able to reach her husband in time to warn him of his danger. On, on she rode, now and then bending over King's neck, to whisper in his ear, and the good stead, seeming to understand, went faster and faster, until those who followed were just able to discern a white speck disappearing in front of them.

But not until the sound of horse's

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DOMESTIC HINTS.

Almond Cake.—Cream together three-quarters of a pound of butter and one pound of sugar, add eight eggs, yolks and whites beaten separately, one pound of flour sifted with two teaspoonsful of cream of tartar and one of soda, and one small teacupful of blanched almonds sliced very thin. Beat well, flavor with extract of almond and put an inch deep into pans; spread blanched almonds evenly over the top and sift powdered sugar to just cover them. Press evenly into the cake with a spoon and bake to a delicate brown.

Manhattan Salad.—To two teaspoonsful of flour add one and one-half teaspoonsful of pulverized sugar, one teaspoonful each of mustard and salt, a dash of cayenne pepper, one teaspoonful of melted butter, one egg yolk, and one-third cupful of vinegar. Mix well and cook over hot water until the mixture thickens, stirring constantly, then add one-third tablespoonful of granulated gelatine, previously soaked in a little cold water. Season one and one-half cupsful of cold, cooked, flaked halibut, haddock or cod with salt, cayenne, and lemon juice; cover and allow it to stand one-half hour. When the dressing is cool, add one-half cupful of cream whipped stiff, and the fish. Turn the mixture into individual molds and chill. Serve garnished with parsley.

Turkey au Gratin.—Cut the remnants of turkey meat in small pieces; there should be one and one-half cupsful. Cover the turkey bones and the skin with cold water, bringing slowly to boiling point, and let simmer until stock is reduced to one cupful. Melt two tablespoonsful of flour and pour on gradually, while stirring constantly, the hot stock. Season with one-fourth of a teaspoonful of salt and a few grains of pepper. Sprinkle the bottom of a buttered baking dish with half a cupful of seasoned cracker crumbs, add the turkey meat, pour over the sauce, cover with half a cupful of cracker crumbs and bake in a hot oven until the crumbs are brown. For seasoned cracker crumbs allow one-fourth of a cupful of melted butter, and a few grains of salt to each cupful of crumbs.

Pumpkin Pie.—Stew the pumpkin until dry and brown, then beat it until it is fine and smooth. For five cups of pumpkin use one quart of milk, one and one-half cups sugar, one teaspoon of ginger, half teaspoon cinnamon, one and one-half teaspoons salt and four eggs. Mix all together thoroughly and pour into pie plates lined with a thick rich crust. Bake in a slow oven to a rich brown. The above is enough for four large pies.

hoofbeats had become indistinct, did Molly realize the danger to which she had subjected herself in riding so far in advance of the others. She knew that if the highwaymen were at Black Rock first, and they probably would be, they would not let her, his wife, pass; but this thought did not cause her to lose courage nor to slacken speed. She turned around once more, and could just see four figures following at some distance, and hoped earnestly that they might not be far off when she should reach Black Rock.

By this time the moon had risen, lighting up the whole plain, and not a half mile off, she could see the huge rock loom up before her. She strained her eyes, and looked beyond, to see if there was a lone rider coming from that direction; but no one was in sight, and she knew then that her husband had not yet reached the spot.

As she came to within 100 yards of the place, a masked man stepped out from behind the rock, and shouted "Halt," at the same time leveling a revolver at her. But she had no thought of halting, and raising her own revolver, she fired. The man fell, and she galloped past him, but not before one of the wounded man's companions had fired and hit her with a bullet. She felt faint, and slipping the revolver into its holster, she placed her hand to her side. The palm at once grew warm with blood. She was now so weak that she could no longer manage the reins, so King of his own accord slowed down to a trot. There was no need of hastening now, for her own men had come upon the desperadoes, and after a sharp scuffle the latter were made prisoners.

Molly had not ridden far when on looking up she saw a man riding on a white horse, whom she knew to be her husband. She gave a sigh of relief, and tried to call out to him, but the sound was only a moan.

King, being no longer guided, stopped suddenly. The jolt caused Molly to reel in her seat, but instead of falling to the ground, she fell into a strong pair of arms. A voice was saying things she liked but could not hear, but she knew that voice only too well. She smiled, as she whispered, so low that he could scarcely hear, "Just — just in time, Will."

"In time? In time for what, dear?" he asked gently, wondering what she could mean.

But there was no answer. He turned her face in the moonlight. The quiet lips smiled still, and the beautiful face was almost as white as the dress she wore.

"Molly," he cried, "Molly."

But only a coyote barked from a knoll near by.—Boston Post.

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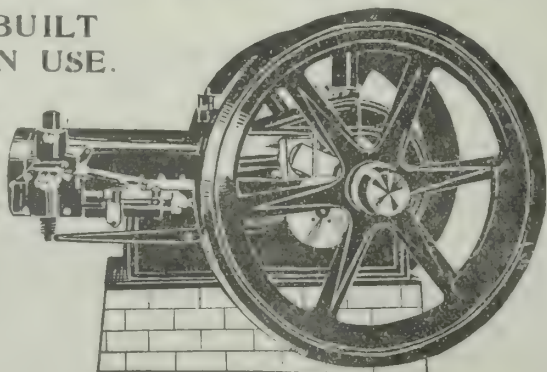
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Chocolate Cream. — The chocolate dainty makes an inexpensive cold dessert that usually finds popular favor. It is always a comfort to the housekeeper to know that the dessert is well out of the way long before serving time, therefore, in these simple lessons, I like to introduce a sweet course of this nature. Mix five tablespoonsful of corn starch, half a cupful of sugar and one-fourth of a teaspoonful of salt; then add gradually one-third of a cupful of cold milk. Pour the mixture into two cupsful of scalded milk (which is in the top of the double boiler), and stir constantly until thickened, afterward occasionally, cooking for ten minutes. Melt one and one-half squares of unsweetened, chocolate in a small saucepan of boiling water, and stir until smooth; then add to the cooked mixture. Remove from the range, add the whites of three eggs beaten stiff, and one teaspoonful of vanilla. Turn into a mold, first dipped into cold water, chill thoroughly, and serve with cream of a custard sauce made of the yolks of the eggs.

Rhubarb Refresher. — Chop three or four stalks of wine-red rhubarb, add three or four thin strips of lemon peel, two-thirds cup whitesugar. Pour over these one quart boiling water; when cold mess through sieve. Put a spoonful or two crushed ice in glasses and fill with mixture. If too strong add cold water.

Coffee Macaroons. — Blanch four ounces sweet almonds, pound to paste in a mortar, moistening with four teaspoons very strong black coffee. Add stiffly beaten whites of four eggs mixed with one pound white sugar. Shape into macaroons, arranging them in paper-lined cases. Bake 10 minutes in hot oven. Decorate with a crystalized cherry pressed lightly into top of each macaroon.

Milk Sponge Cake. — Into two cups of sugar whip four beaten eggs, a half teaspoonful of salt, the juice and rind of half a lemon, two cups of flour sifted with two level teaspoonsful of baking powder, and, last of all, a cup of boiling milk, added slowly. The batter is very thin, but do not add more flour.

HINTS TO HOUSEKEEPERS

TURNING OUT JELLIES.

The following method of turning jellies quite whole out of a mold will be found an excellent one and very useful when parties are to be given: Grease jelly molds with butter, and when the jelly is to be turned out plunge the mold into hot water and remove at once.

PLASTER ORNAMENTS.

Cover plaster of Paris ornaments that are intended to be cleaned with a thick coating of starch and allow it to become

perfectly dry, then it can be brushed off and the dirt with it.

Wooden breadboards should be scrubbed with sand or salt instead of soap. In order to be kept in good condition.

Clean grease or rust from plain iron or galvanized iron sinks with kerosene and wash them with boiling hot soapsuds.

In the case of a tiled floor, a little linseed oil rubbed in, and the tiles subsequently polished, brings up the colors wonderfully.

Flatiron holders, if lined with a layer of soft leather, like the top of a boot, will protect your hand from heat far better than if made in the ordinary way.

Eggs covered with boiling water and allowed to stand for five minutes are more nourishing and easier digested than eggs placed in boiling water and allowed to boil furiously for three and a half minutes.

A cheap disinfectant to use in scrubbing or washing utensils in a sick room is made by adding a teaspoonful of turpentine to every bucket of hot water. Turpentine is a powerful disinfectant, and will dispel all bad odors.

If a tin of paint has to be left open stir it thoroughly, so as to dissolve all of the oil, then fill up with water. When it becomes necessary to use the paint pour off the water and you will find it as fresh as when first opened.

One of the most soothing applications for a fire burn is raw potato scraped or grated and bound like a poultice on the injured surface.

"The cure for burnt skins or smarting eyes is always at hand," says a beauty specialist. "It is a cupful of milk heated to blood temperature and applied every morning. Afterwards a little toilet water should be used on the face."

Hot soda baths are recommended by some persons for rheumatism, and the way they are taken is this: Fill the tub half full of water as hot as can be borne, add half a pound of common baking soda, and immerse the body for at least twenty minutes, keeping up the temperature by the addition of hot water from time to time. Vaseline or cold cream should be rubbed into the skin after the latter has been dried, in order to replace the natural oils.

The fashion of small safes concealed in unlikely places is such a popular one that any piece of furniture may now be used to baffle burglars. The latest is a linen chest, a substantial thing of oak or cedar, which contrives to hide a safe. The safe is fire as well as burglar proof.

Cases for putting away silver knives and forks should always be made of unbleached goods. Sulphur is used in the bleaching and will tarnish the silver.

Flour, sugar and soda should always be sifted before measuring. The sifting livens the materials until they are almost double their usual bulk.

Linoleums and oilcloths that are laid down where the sun is likely to shine on them should have papers laid under them to prevent sticking to the floor.

FASHIONS

NEW COMBINATION IN FURS.

Chiffon and satin are both used in combination with such furs as ermine, sable and chinchilla in making up fancy neck-pieces and muffs to be worn with evening wraps. One muff recently imported and quite fit for our lady of millions, was made of white satin, with voluminous white chiffon frills. Around the muff was a band of ermine, which was tied effectively in bow-knot. This same bow-knot effect in fur was repeated in the neck-piece, which was also of white satin with chiffon frills.

Black satin and black chiffon also make an effective background for a set of this style where ermine is the fur used. Where money must be carefully considered, moleskin may be substituted for the ermine. The satin and the chiffon frills are then in a lighter shade of gray.—Grace Margaret Gould in Woman's Home Companion for November.

THE SEASON'S FURS.

Furs this year exhibit a new big novelty note. They are no longer sufficient unto themselves. It is the trimming that counts and that designates them the latest fashion. For instance, the Russian pony, which has been stripped of its hide, wouldn't even have the poor consolation of recognizing the costly garment made from it this year. And the little mink would shiver to death without the satisfaction of being able to tell his own pelt that has been taken from him.

Other years furs have been combined with contrasting furs, but not so this year. Now it is fur combined with cloth, with velvet, with chiffon, with lace, that is the rage, and of all trimmings braid is the most fashionable. Suede chamois are also used in combination with fur.

Long, full coats, many of them with cape effects, which broaden the shoulders, are used for evening wear. For the daytime the shorter coats are the mode. Pony jackets in different variations are worn, as well as Etons and boleros.—Grace Margaret Gould in Woman's Home Companion for November.

THE PONY COAT.

The pony coat of pony skin is the high novelty of the season. This good wearing fur is dyed in many colors and makes up a combination with cloth and braid. An imported novelty is a tan pony-skin coat, made in pony style. Around the bottom of the coat and up the front, as well as the sleeves, tan cloth the same shade is inserted. This cloth is trimmed with the narrowest of silk braid a shade darker, while outlining the joining of the fur and the cloth is an applied design of wider

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They cost less if you figure by the year instead of by the chimney. MACBETH lamp-chimneys add to the brilliancy of the lamp, and it is taken care of with half the bother when fitted with a MACBETH chimney.

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silk braid three or four shades darker than the cloth and fur. This same style coat is also seen in gray caracul with the cloth in light blue, but almost entirely covered by rows of narrow gray silk braid. Hercules braid in a darker shade of gray defines the edge of the cloth.—Grace Margaret Gould in Woman's Home Companion for November.

Little golden tassels finish the short dangling ends of new girdles—narrow affairs of satin, crushed as of yore. A fringe of tiniest gold or steel beads is another of the season's features and a fringe made of tiny silk balls that match the costume, is also seen. Panquin has shown an especial predilection to fringes of all sorts, provided they don't exceed an inch in depth—that is, at the present writing.

At Panquin's, by the way, they cling to the short waist, although the other houses are united in adopting the perfectly round but normal waist line, which dips neither in back nor front.—Chicago Record-Herald.

AWARDS FOR BUFF ORPINGTONS.

Mr. W. S. Sullivan, of Agnews, made a fine record at the Santa Clara Valley Poultry Show, at San Jose, last week. He won the "grand special" for the best three pens in the show all varieties competing. He also won a lot of regular prizes for Orpingtons and a special for the largest exhibit for Santa Clara county. There were birds at the show imported direct from the Crystal Palace Show, in London.

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AGRICULTURAL REVIEW

Butte.

PEAR BLIGHT WORK BEGUN.—Oroville Weekly Register, Nov. 15: The campaign against pear blight for the coming winter has practically commenced. Prof. M. B. Waite, the pathologist from Washington, who is in charge of this work, so far as the United States Government is concerned, has arrived on this coast, and will be in this State until the first week in December getting matters into shape. Seven members of Prof. Waite's corps will be in the field here in California during the winter. The Professor himself intends to return in February. We understand that seven or eight representatives of the University staff at Berkeley will assist in the work, making fifteen scientists who will have charge here this winter. Something certainly should be accomplished between these gentlemen and the county horticultural organizations and others, and it is apparent that California is getting a goodly proportion of government time work.

The peanut crop of this country in 1900 aggregated 11,964,109 bushels, or 263,201,398 pounds. More recent estimates of production are not available, but there is little doubt that the production of peanuts is increasing.

BEGIN PACKING THIS SEASON'S ORANGE CROP.—Oroville Weekly Register, Nov. 15: The Butte County Citrus Association shipped its first carload of oranges for this year's pack yesterday. The packing house on Huntoon street presented a busy scene yesterday, the fruit constantly arriving, where it was packed by a force of eleven women and girls. This force will be increased to twenty next week, and the packing house will run day and night. Next week the association will ship daily three and four carloads of oranges. It is estimated that the crop this year shipped by the association will run up fully to 100 cars. The fruit is medium in size, but the quality is exceptionally good. Orders have already been received for the first twenty-five carloads and the prices are reported to be exceedingly good. There is every prospect that prices will continue so, inasmuch as a shortage of fruit is reported elsewhere. Southern California oranges, with the exception of those grown in the Porterville field, will not be ready for shipment for a month yet.

Kings.

ABOUT WHEAT GROWING.—Hanford Weekly Sentinel, Nov. 15: M. M. Laufenberg, of Stockton, was here Monday. He is the gentleman that H. G. Lacey Co. purchased the boilers now at the Hanford Mill from several years ago. Mr. Laufenberg is a close observer of the wheat growing business in this State and agrees with the majority of experts that the reason that California grown wheat has lost its gluten and is unfit when used alone for flour, is, that the grain is left standing in the fields long after it ought to be cut and bound and stacked and put into a sweat. The State

and National agricultural experts have for the past two years been investigating the cause of the deterioration of California wheat as a millstuff product, and they have concluded that when the stalk of the grain is ripened above the root, all the substance remaining in the stalk should go into the berry. When the grain is left standing exposed to wind and sun this substance is vitiated into the atmosphere instead of going into the berry, and thus the berry loses its substance, or the gluten which is necessary for the making of good flour, of flour that "stands up," as the bakers say, when put into dough. Mr. Laufenberg agrees with this theory, and states that in the great wheat-growing country in the Chico locality self-binders are taking the place of the big harvesters, and the wheat is much better. In the harvest country the native wheat has to be re-enforced with about 66 per cent of eastern wheat to make first-class flour. It is probable that in many parts of the State that wheat growers will discard the big harvesters and go back to the old eastern way of gathering crops. This will be easy when the farms are cut up as they will have to be when California has a population that will fill up the State as it should be.

GET READY TO SPRAY THE FRUIT TREES.—Hanford Weekly Sentinel, Nov. 15: The best authority says that the fruit trees should be sprayed during December. Some here seem to think that a little earlier will be better, but at any rate the spraying should be done between now and the last of December. There are several spraying outfits of the latest approved pattern ready for the work. Up in the Sacramento valley where the experiment on shothole fungus was made last season the best results accrued from December spraying. That is what the State board recommends. This subject will probably be well considered in the State Fruit Growers' meeting to be held here early next month.

Los Angeles County.

WALNUTS FOR EVERYBODY.—Downey Champion, Nov. 17: The Los Nietos and Ranchito Walnut Growers' Association, which has its headquarters at Rivera, has sent out this season 2,200,000 pounds of English walnuts to date, and the season is not over by quite a respectable margin. The nuts, after being washed, bleached, sorted, and sacked, are sent out in carload lots to Eastern firms, which buy the crop each year months in advance of the harvest, 110 cars, each containing ten tons, have been sent out by the Rivera association.

The quality and quantity of the nuts are both proving themselves better as the season advances than some growers thought would be the case. The new machinery is handling the crop easier and better than has been the case in former years, and is resulting in a better and more even grade than formerly. After Thursday of this week the remainder of the crop, of members of the association, will be handled at the Rivera house, the packing house at Los Nietos closing for the season on that date.

Mendocino County.

WINTER TURNIPS.—Mendocino Beacon, Nov. 17: Good mellow ground is best to use for turnips, but almost any kind will do. Plow up a piece of oats stubble or pull your onions and cultivate that up. Be sure your ground is harrowed down well. Select a good winter variety of turnip seed. I think the winter purple top the best. Mix a ten cent package of seed in a half gallon of dry

ashes and sow the whole broadcast over the ground, harrow in lightly, and if there are good fall rains you are assured of a good crop of turnips.

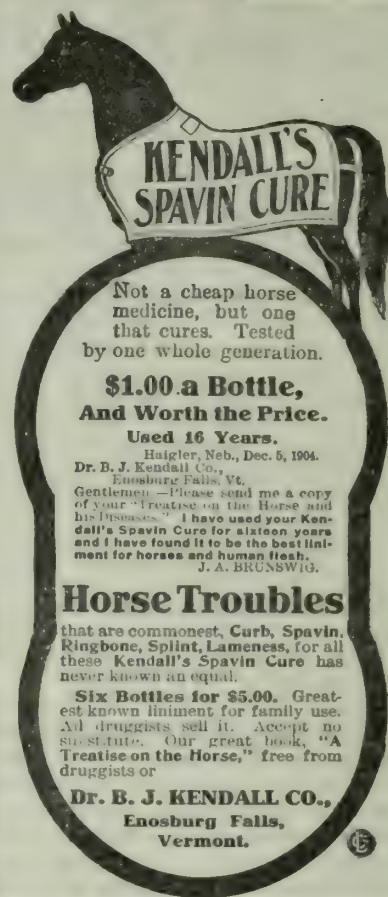
Sacramento.

SECOND CROP OF APPLES.—Sacramento Union, Nov. 15: John McNie, the Perkins farmer and orchardist, has what he considers a freak in the fruit line. A red Astrachan apple tree on his farm has outdone all former efforts and brought forth a second crop of fairly well-developed and finely-colored apples. But Mr. McNie thinks it unwise to be startled at anything the climate and soil in the Sacramento valley may do.

Santa Clara.

PRUNE PRICES TAKE A PHENOMENAL ADVANCE.—San Jose Mercury, Nov. 16: During the past week the price of prunes in the valley has jumped from 2 1/4 to 2 1/2 and 2 3/4 cents and the supply has been so far diminished by the demand that it now seems almost certain that those growers who held back their product will be offered even better prices than these. At the opening of the season there was only a small supply of fruit on the market and everything indicated a record year for the growers. Under the leadership of W. S. Clayton and several other prominent producers a friendly organization of the orchardists was formed with the idea of preventing premature sales and holding the price to a figure which would insure good returns for those who owned prunes. For some time this seemed a successful proposition, but the usual thing happened. At the first onslaught of the packers a few timid ones started the market at a low figure by giving way to fright at the stories sent out by the men who wanted the yield at a big profit and sold at prices close around a two-cent basis. This almost ruined the plans of those who would have made the year a profitable one and forced many to give up their stock at unprofitable prices. There are still, however, a few large lots not bargained for and the growers, realizing that they control the situation, are planning to hold their stock. At the present time Mr. Clayton estimates that the available supply totals several million pounds and the advance in the price will be a material benefit to Santa Clara county. Many of the packers are short and it is expected that the best of prices will be offered later for the remainder of this year's yield.

THE POULTRY BUSINESS.—San Jose Mercury, Nov. 15: Speaking of poultry raising as a business, one of the prominent exhibitors said this morning to the Herald: "Those who go into the



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that are commonest, Curb, Spavin, Ringbone, Splint, Lameness, for all these Kendall's Spavin Cure has never known an equal.

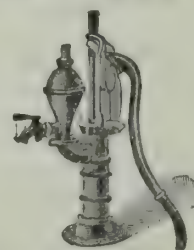
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poultry business in earnest should take great care from the first to get their 'bearings.' People are apt to take it up in hap-hazard sort of way, not realizing that there is much to learn. There is a wide scope in this line of work for the application of business ability, determination, economy and all those things which characterize success in any walk of life. But in no other business does a little effort bring richer returns, quicker results, than the poultry business. It is a mistake to undertake too much at the start, expecting to replace the cost with the immediate returns. Such a course is apt to cause the abandonment of plans, which approached more carefully, and managed with economy, might have been the making of a good business. There are questions other than money to be considered: One should form a clear idea of what he intends to do—of the results he wishes to obtain. All who start in business, go into it with the object of making money, and the fundamental principles of all business are alike. Poultry to the average person, suggests chickens, while there are great possibilities in the raising of turkeys, ducks and geese. Turkeys are especially profitable, being such good for-

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agers that the cost of feed is nominal, and they bring in cash around holiday time when the receipts from other sources are small. They should not be made a specialty of, however, unless they can be allowed a good, wide range. They should be confined only when fattening for the market. Many people have just the natural advantages for raising ducks and geese, but they overlook it year after year or keep putting it off, all the while losing a good, fat addition to their income."

San Diego County.

READY FOR PLANTING. — Ocean-side Blade, Nov. 17: Gardener F. P. Hosp, of the Santa Fe, is making good progress with the preparations for planting out the great eucalyptus groves with which the company will cover the San Dieguito ranch. Hundreds of thousands of trees are already growing in boxes, enough of these being now large enough for planting to set out 100 acres. By the time the land is ready and the rains come, there will be trees enough ready to set out the 700 acres, which is the amount set for planting this season. The force of Chinamen which is constantly at work at the gardens, is busy at present transplanting from the seed beds into boxes.

The company is buying teams for the work of preparing the land, and as soon as it rains, eighteen or twenty of these will be at work. A necessary work is the diking of the banks of the San Dieguito river to prevent flooding of the land, as was the case last season.

Santa Cruz.

BIG PRICE FOR WALNUTS. — The Pajaronian, Nov. 15: The walnut growers of San Luis Obispo and vicinity will read with much interest undoubtedly that Mr. H. Mehlmann Saturday closed a contract with the Oregon Nursery Company of Salem, Oregon, by the terms

of which that company agrees to take for the next five years all the French walnuts produced in Mr. Mehlmann's walnut orchard at the rate of twenty cents per pound "f. o. b." this city, and also to take all the scions from the trees at two cents each. The assurance of so certain and profitable a market should afford great encouragement to the industry.

Yuba.

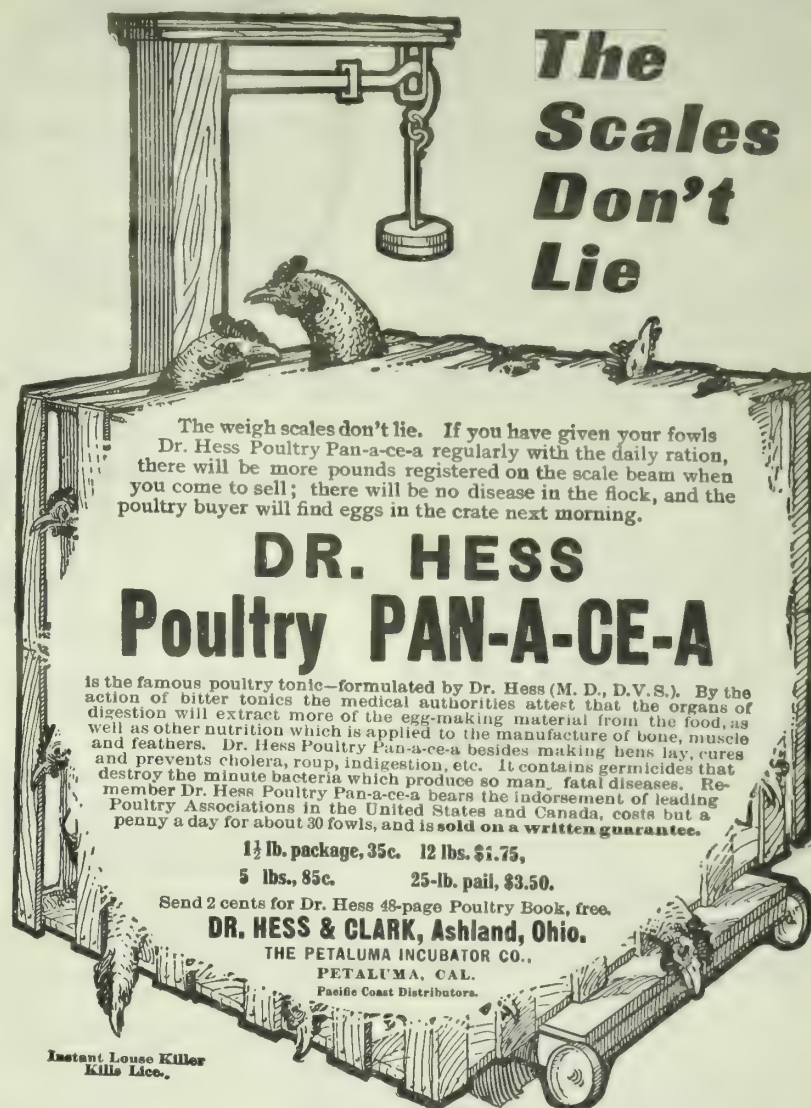
REMARKABLE STRAWBERRIES. — Semi-Weekly Appeal, Nov. 15: Little less than remarkable are some of the strawberries at present being picked on the Le Due ranch. All season the plants have borne heavily and even at this advanced date are producing to a considerable extent. Some of the berries were exhibited here yesterday. They are unusually large, and exquisite in color and flavor.

CATTLEMEN FEAR HARD WINTER. — Semi-Weekly Appeal, Nov. 15: Cattlemen are looking forward to winter with considerable dread. The dry feed will last but little longer, and the lateness of the coming of the rainy season gives little promise of green pasturage at an early date. The feed shortage will cause widespread disaster among them it is feared. Frank R. Williams, one of the large cattle raisers in the lower part of the county, yesterday stated that he had 300 head now pasturing in Sutter county, where there is plenty of feed, but he did not know how long he would be able to keep his stock there, as the first flood would drive them back to the foothills. Several other cattlemen are contemplating moving their herds to other sections.

An attempt has been made to rent suitable winter feeding ground in the valley country, but without result, the invariable reply being that all the available pasture had already been let. Last win-

ter, it will be remembered, scores of cattle were lost in this section because of lack of feed, and similar conditions may prevail before spring. The cattlemen announce that they can see no way out of the trouble, and unless they can procure pasture elsewhere, their herds will be greatly depleted before sufficient green

feed springs up and warm weather makes itself manifest early next year. They point to the significant fact that there is but little hay in the county this year, the late heavy spring rains having ruined much of it. Before next spring it is claimed that hay will be selling in this city at \$30 per ton.



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The weigh scales don't lie. If you have given your fowls Dr. Hess Poultry Pan-a-ce-a regularly with the daily ration, there will be more pounds registered on the scale beam when you come to sell; there will be no disease in the flock, and the poultry buyer will find eggs in the crate next morning.

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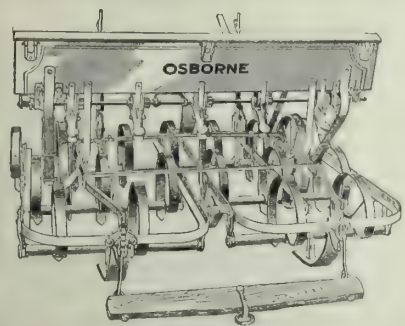
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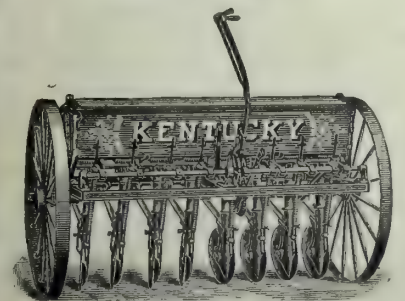
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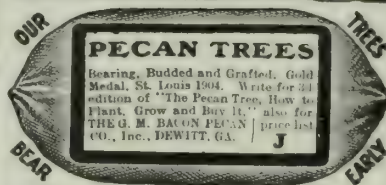
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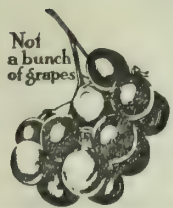


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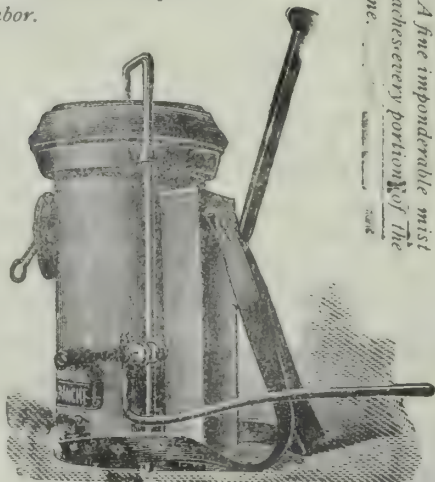
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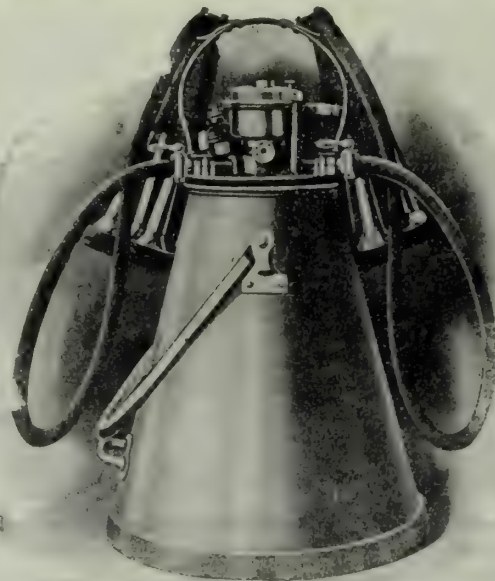
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LXXII. No. 22.

SAN FRANCISCO, SATURDAY, DECEMBER 1, 1906

THIRTY-SIXTH YEAR

QUEER THINGS IN A PATIO.

We use the term, of course, from a California point of view, which results from the restricted conception which the Californian has the uses of the patio and what properly belongs to it. Probably most of our readers look upon the enclosure, to which the pretty name is given, as the interior space of a residence which is open to the sky and where all beautiful and sentimental things and suggestions accumulate. The patio then becomes the sheltered abode of delicate plants, the feathery palms, the broad-leaved bananas, the host of blooming and sweet scented plants, the graceful clinging vines and all that. In such a calm retreat, it is but natural that the fountain should splash, the guitar give forth its no less liquid notes and the soft voices of lovers add to the delicious music. Because of this common California conception of the patio derived from what we have seen of Spanish houses remaining from the old regime and what we have done in American building in imitation of them, it seems instructive to suggest that the patio has uses which are far otherwise than those we have suggested and that we are sublimely unconscious of the fact that we have idealized the word by exalting the one of many uses which has been brought to our attention. For the patio, is in fact any enclosure adjacent to buildings and the uses of the patio are fixed by its environment. In English we might speak, for instance, of certain operations being conducted under cover and of other related operations as proceeding in the open air. The Spanish might say of the later that they were proceeding in the patio, or as we might say in the yard. Thus things done in the yard and not in the buildings may be described as patio processes.

In his interesting sketches of Mexican travel, chiefly from a mining point of view, Mr. T. A. Rickard, writes in detail of a patio of mining which with its illustrations, gives such a different conception of patio affairs from that to which we first alluded that we borrow facts and pictures which il-

separate charges or tortas, each weighing 300 tons, are undergoing various stages of treatment by men, horses, and mules. One form of mixing is done by the trampling of horses. One man, himself on horseback, drives twelve horses, four in a row, tied by the neck to each other. The crackling of the whip, the slusky tramp of the horses, and the shouts of the driver give

tion of the torta is turned over with shovels in the hands of twelve to fifteen men. Six hundred horse are used in the patio; they last four or five years, if young; the older ones last only six months. They become poisoned by the copper sulphate; hence the washing each day. Some of the horses are found to gather a lump of amalgam in their stomachs, as much as half



An Old Patio in Use in Mining Operations.



A Fuller View of the Patio and Its Use in Mining.

lustrative thereof. It seems that after the ores go through certain mechanical processes in adjacent buildings the material goes to the patio for amalgamation. The patio of the Hacienda de Guadalupe is the size of a city square, it is paved with stone and divided into rectangular spaces, 30 by 25 meters, in which twenty

animation to the scene. This goes on by day only, from 7 in the morning until 2 o'clock in the afternoon. After the day's labor, the horses are driven through a big tank to be cleansed, when more shouting and splashing enlivens the hacienda. This mixing continues for 24 to 30 days. Each afternoon every por-

a kilogram, say, one pound. This used to be removed When the horse died, but now the government claims the deceased animal, without permitting dissection, and it goes to the crematory. What happens to the silver amalgam is not stated.

The handling of material in the patio by men and animals is in defiance of all mechanical devices employed elsewhere, but it must be urged that both men and horses are cheap in Mexico. The temporary canals for movement of pulpy material from place to place in the patio are kept tight with manure, the droppings of the animals in the patio, thus contributing smells to the sights, a combination not uncommon in Mexico. There is a striking contrast between the modern mining machines and the patio itself, the whole picture exhibiting a sublime disregard of all modern mechanical ingenuity as applied to the handling of material.

The patio has been used on a large scale and continuously since 1557, therefore it is probable that a great many have attempted, at various times, to investigate the process. Humboldt makes several interesting observations on the process of amalgamation in the patio, as carried out during his visit to Mexico, a hundred years ago, and said that the patio was successful despite the ignorance of any chemical reactions involved. It is only recently, when the process is being discarded for more effective methods, that the chemistry of it has been investigated intelligently. As used for 350 years it was an empirical process, regulated by the experience obtained with the particular ores of each district.

The patio was invented when men, horses, and time were cheap, when there was no haste to realize on the ore in the mine. This is the European idea of years ago; the opposite of it is the American notion that it is best to gut a mine and make the maximum money in the maximum time.

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THE WEEK

The rain which follows the longest spell of north wind within our memory of California, is a most acceptable gift for Thanksgiving week. Though the cold has been nothing to speak of (except from a California point of view), a little warmth will please most people, particularly while famine prices for coal are being exacted. It really does seem wrong for us to speak of cold while the interior States and Territories have been for days in the grasp of a blizzard which has carried snow and ice almost to the borders of Mexico, and where stages have lost the road and passengers have well nigh perished in regions which now and then cherish the ambition to be citrus fruit districts. Californians, even while they may feel a chill at 35 degrees above zero and complain bitterly of their sufferings, should never forget to be thankful for the Sierra Nevada, which turn the blizzards away from our valleys and foothills and for the grand ocean, which quickly warms whatever stray blasts do make their way into our sheltered State. It is true that we get local dashes of snow as these cold winds strike moisture laden air, but the preponderance of ocean and sunshine is so great that snow is always a curiosity, except in the highest altitudes which expect it. But for all the moderation of low temperatures we are quite glad to have them lifted by the warm south winds and to have moistening rains instead of drying blasts. Everyone is waiting to begin winter work and if the rains, which are beginning as we write on Wednesday, continue duly there will be vast area of ground turned and seeded before Christmas. Moist soil will also speed work in preparation for orchard and vineyard planting and planters should not delay in consulting our advertising columns to see who is in the field this year with a good stock of varieties best to plant. Do not wait to order until you get the ground ready. Early orders are surest to get the goods.

The Agricultural Department of the University will undertake rather a new line of extension this year in addition to the Farmers' Institutes, which are going on actively now in all parts of the State. The new line consists in undertaking short courses of instruction at several points, the instruction being systematically arranged to cover the related subjects of horticulture and entomology. There will be a four days' course in Fresno (December 26 to 29); six days' course in Los Angeles (January 7 to 12); six days' course in Sacramento (January 14 to 19). These courses are to be followed by a two weeks' course at Berkeley (January 21 to February 2)—this to be followed by laboratory work in entomology through the balance of February by those who desire it. The Agricultural Department of the University enjoys in this work the co-operation of teachers' associations, normal and high school instructors, county horticultural commissioners, and in Sacramento will co-operate cordially with the officials of the State Horticultural Commission. The undertaking is for the general purpose of giving instruction in horticulture, entomology, and plant disease to all who manifest their desire for it by attendance and its special purpose is to draw together the teachers of these branches in the public school and the county officers who are charged with inspection and quarantine duties. We shall give, as soon as it is ready, a more detailed account of this work, meantime we ask the attention

of all to the dates which we announce and the places where the work will be given. The University cannot do as it would like for the animal industry this year, because of the unavoidable delay in the buildings and equipment on the University Farm at Davisville, but this delay will, it is hoped, be made up by the improved character of the work which will be offered later.

We read from time to time very interesting accounts of vast projects in eucalyptus planting and we always hope that they will succeed, because the clothing of vast, wind-swept, waste areas with trees is delightful to contemplate both esthetically and economically. But we are quite sure that some of those projects are projected without adequate knowledge of the conditions essential to success. One of these plans is to protect a roadstead on the northern coast of California with a 20-ply belt of eucalyptus which shall hold down the drifting sands and at the same time grow so tall that they will break the ocean winds which sweep over the barren points and endanger ships in the unsheltered cove within. This is a grand plan and we hope we shall live long enough to sail into the protected harbor and see the whole area of sand dunes covered with verdure and bloom rendered possible by the eucalyptus barrier. But has the project been adequately looked into? Is the local evidence in the shape of thrifty trees of some age that the eucalyptus will grow well? We hope so, because to enter upon the large expenditure which will be required with no word from the eucalyptus tree that it will endure the low temperature which is occasionally swept upon that coast by northwest wind, is at least risky. And then, if there are good eucalyptus in the region do they enjoy some protection? Of course the barrier on the bleak dunes will have none. Again, how will you get the eucalyptus established on the shifting dunes? That is not easy. Golden Gate Park is a grand example of starting trees in a hard place, but there was much work done before a tree was planted and something was made to grow to hold the sand while the trees got a start. The whole thing is not easy. It is good if it can be done and there is money available to do it in a way which will reach success.

In connection with what we recently wrote about the necessity of improving our waterways and developing the navigable qualities of our harbors, we receive with interest notification of a meeting of the "counties committee" of the California Promotion Committee to be held December 15 in San Diego. The theme of the meeting will be "The Harbors of California." Addresses will be made by men from different parts of the State, competent to treat the subject from a broad standpoint. The discussion will bring out the importance and value to all interests of our harbors and waterways. Addresses on other subjects will also be made. Every county in California will be represented, and all organizations are cordially invited to send large delegations, the number permitted being unlimited. We trust the assembly will be large and influential.

We wish the new alcohol route would work as well for all waste agricultural products as it seems to be capable of doing for the southern cane growers. The question as to how cheaply alcohol can be made from molasses is answered by H. Heyn, who stated before the Louisiana Planters' Association, on October 11, that he figured the cost at 20 cents per gallon, which would give the planter 6 cents for his molasses f. o. b. tanks, whereas he now receives but 2 and 3 cents.

Those who actuated by broad humanitarian emotions will be interested to know that China has again decreed the abolition of the culture of the opium poppy and the use of opium or its products in any of its forms, save medicinal. This action, which comes in the shape of an imperial edict, was the direct result of the report of the Chinese commission appointed to visit this country and Europe, and the edict is signed by the

heads of both civil and military affairs. This is not the first attempt of China to free herself from the effects of the opium trade. The first effort was made in 1839. That result led to a war with Great Britain, which profited by the export of opium to China, and as a result of the war the edict was recalled and China had to pay an indemnity of about \$6,000,000. The Chinese commission which visited England last year found public sentiment far different from what it was three-quarters of a century ago. Hence the issue of this second edict, the abolition of the opium trade, both in the way of home product and imports. This seems to indicate that the world does move and is becoming a better place to live in. There are probably evils enough remaining but that a great nation is no longer willing to destroy the heathen for the sake of the profit that lies in their destruction is a great comfort surely.

The progress of our lemon producers in securing American markets is seen in the fact that only 17,187 boxes came to New York from Sicily during the year which ended September 1. Even that number is too many, but it is small compared with the call for foreign lemons in previous years. Even Turkey took ten times as many Sicily lemons as did the United States. The Sicilian growers are finding better markets in northern Europe than formerly, and we are glad of it.

QUERIES AND REPLIES.

MALE AND FEMALE SQUASHES.

To the Editor: There are some here that argue there are male and female squashes in the patches and on the same vine and they are easy to pick out and in saving seed you should save from the female and get good crops, but if saved from male there will be poor crop. It is news to me and you may think me foolish for asking such questions, but I would like your opinion.—SUBSCRIBER, Santa Barbara.

Mr. H. M. Hall, assistant botanist of the University Experiment Station furnishes the following interesting statement: In regard to the query concerning male and female squashes the following statements will show that the ideas advanced are partly correct, but also somewhat confused. There are not male and female squashes nor even male and female squash plants, but there are both male and female flowers on every squash plant. Male flowers contain the stamens but do not have productive pistils and therefore cannot set fruit. The male flowers have no stamens but do possess perfect pistils which when fertilized with pollen from the male flowers, mature into a fruit, which in this case is known as a squash. Every squash is therefore the result of the fertilization of a female flower by pollen from a male flower. This pollen may come from another flower on the same plant or from a flower of another plant. It is impossible in selecting squashes by seed to determine which ones will produce plants yielding the greatest number of female flowers and therefore the largest crop. The one rule to be followed, it seems to me, is the general one of selecting seeds from the most thrifty plants and from the best developed squashes.

FORMALIN INSTEAD OF BLUESTONE FOR SMUT.

To the Editor: It is next to impossible to obtain bluestone in the market. We want it for bluestoning wheat. In the event of our being unable to get it at all, have you any other smut preventive that is satisfactory?—GROWER, Contra Costa county.

We have often described the formalin treatment of seed grain for smut and it seems to be just the substitute for bluestone which is now needed in California. It has been widely approved by practice in the Middle West and North West and the local experiment stations have given explicit prescriptions for its use. We take the following from the Colorado experiment station: Formalin is the commercial name for formaldehyde gas held in a water solution. This gas should be a 40 per cent. solution, since this strength is necessary to kill smut spores.

Clean off a space on the barn floor or sweep a clean space on the hard, level ground and lay a good sized canvas down, on which to spread out the wheat. See that the place where the grain is to be treated is swept clean and thoroughly sprinkled with the formalin solution before placing the seed grain there. Spread out your seed grain on the space prepared for treating it and prepare the formalin solution. This formalin is quite volatile, so the solution should not be made until one is ready to use it.

Use one pound of formalin to every 40 gallons of water. Put the solution in a barrel or tub, thoroughly mixing it so the formalin will be well distributed. One pound of formalin to 40 gallons of water is sufficient to treat 2,500 pounds of grain. For smaller amounts, estimate 6 to 8 quarts of the solution for every 100 pounds of grain. This solution can be applied with the garden sprinkler. Care must be taken to thoroughly moisten the grain. Sprinkle, stir the grain up thoroughly and sprinkle again, until you feel certain every kernel is wet with the solution. When you have completed the sprinkling process, place the grain in a conical pile and cover with horse blankets, gunny sacks, etc. The smut that does the damage lies just under the glume of the oats or on the basal hairs of the wheat. Covering the treated grain holds the gas from the formalin within the pile, where it comes in contact with the kernels, killing such smut spores as may have survived the previous treatment. After the grain has remained in a covered pile two to four hours, spread it out again where the wind can blow over it, to air and dry as rapidly as possible. As soon as one can take the grain in the hand without the kernels sticking together, it can be sown in the field. Of course, the grain is moist and therefore the kernels are enlarged so we will need to set the seeder accordingly. One can treat the grain in the forenoon and seed it in the afternoon.

Since this treatment swells the kernels it hastens germination and should be done just before seeding time. The treatment is practically inexpensive, takes but a few hours to treat a considerable quantity of grain and effectually kills smut when properly and thoroughly done. While the copper sulphate or bluestone treatment is valuable in killing smut, the formalin treatment can be given in less time, is applied so easily and is so effectual that it is recommended as a sure and ready means of killing smut in wheat and oats.

SUBSTITUTE FOR BORDEAUX IN BLIGHT SPRAYS.

To the Editor: The letters enclosed show that the wholesale druggist of San Francisco and Sacramento cannot furnish bluestone to the fruit growers, as there is none in the market. Can you suggest a substitute for spraying Bartlett's and the Phillips Cling Peach?—ORCHARDIST, Sonoma.

Well-made lime, salt and sulphur wash is a substitute for the Bordeaux mixture, and if sufficiently boiled and thoroughly applied may be expected to be similarly effective. It is more expensive to prepare and more disagreeable to use, but otherwise it is a good substitute.

OCCURRENCE OF GRAPE MILDEW.

To the Editor: I have a vineyard of Tokay grapes. This year they all mildewed so that I lost the entire crop, except on one vine, in middle of the vineyard and next to a well, so I could not cultivate it. It has not been pruned for two years, and the canes on the ground covers most of the space between the other vines. The other vines are trained so the crown is four feet from the ground. There is no sign of mildew on this vine and it was loaded with fine grapes. I trained the other vines high so they would get more air, and so they would not mildew. I would like to know why this vine is free from mildew when all the rest were so bad. Is it because it lies on the ground and gets more heat?—RANCHER, Auburn.

The case is very interesting and you have come very near to accounting for it in your last question. Mildew is worst during rapid changes of temperature and aerial moisture. Conditions which invite a person to

pronounce the weather "damp and chilly" from his own sensations also favor the spread of mildew. Vines growing close to dry, warm ground have more equable conditions and less mildew. If, however, your vines are in low places over damp soil the converse may be true and a higher vine may have less mildew because the upper air may be drier and warmer than the air at the ground surface. Vines in the coast region may have less mildew a little above the ground and in the interior they may have less on the ground, though exceptions may be found in both regions if the particular spot where the vines are depends somewhat from the general character of the region. For instance, a vine should be higher perhaps in an interior river bottom than on the adjacent plains, etc. Occasionally there will be a departure from usual conditions owing to late rains and low temperature which will cause vines to mildew badly in places where they are generally free from mildew. This was notably the case last spring.

There is another condition which may have some weight. A vine which is not repressed by short pruning will have greater vegetative vigor and may be better able to resist mildew. This fact is, however, of small economic value because we are obliged to make the vines grow our way and not their way and to protect them from evils, which may be greater when we have our way, by contriving in all possible directions to secure conditions which handicap these evils.

ACORNS FOR POULTRY.

To the Editor: Can you tell me if good results would be obtained by feeding crushed acorns to chickens? They are very fond of the meats of them and this year the tan bark oaks have both quantity and quality of nuts.—SUBSCRIBER, Santa Clara County.

Response by Prof. Jaffa.

To the Editor: In response to your correspondent I would say that favorable reports have been received regarding the use of acorns as feed for poultry and hogs. It cannot, however, be definitely stated how much of the ground acorns can be fed with safety to laying hens.

The results of the analysis of acorns of *Qercus lobata* as obtained in our laboratory are herewith submitted:

	Kernel	Whole
Water, per cent	34.39	27.92
Protein, per cent	4.18	3.39
Fat, per cent	5.39	4.38
Starch, etc. per cent	53.12	45.38
Fiber, per cent	1.53	
Ash, per cent	1.39	1.13
Refuse, (shell) per cent	—	17.80
	100.00	100.00

These figures show that the acorns as fed contain less than one-half the protein found in grains, and the carbohydrate content is also lower than that reported for the cereals. The availability of the different nutrients has not been determined nor is it known just what effect the tannin, which the acorn contains, has on laying hens.

If a person has on hand a plentiful supply of acorns it would be well to feed a small quantity at first and carefully note the results; more particularly is this necessary in the case of laying hens. With growing chicks it is somewhat different; still owing to their astringent character acorns should be fed with caution.

Professor Carver, of the Alabama Experiment Station, at Tuskegee, Alabama, reports the successful feeding of acorns to cows, pigs, and poultry. He writes:

"In feeding acorns there is this precaution necessary: Where large quantities are given, plenty of laxative food should be included in the ration, as they are rather binding in their nature and likely to produce harmful results.

"In feeding them to hogs, we find that rather a soft, spongy flesh is produced with an oily-like lard that hardens with great difficulty and frequently not at all. This is readily overcome by feeding corn two or three weeks before butchering, although many hundred pounds of meat go into market without complaint that have never been topped off with corn."

M. E. JAFFA.

University Experiment Station, Berkeley.

LATE KEEPING APPLES UNDER FAVORABLE CONDITIONS.

To the Editor: Will you have the kindness to publish a list of ten or twelve, or as many as you can name, of different varieties of the longest keeping apples of good quality suitable for home use, to be grown in the Santa Clara valley. My experience with all apples in this valley has been that they ripen too soon, and long before Christmas they are all gone. It is possible that no long-keeping good quality apples can be grown in this valley, except in the foothills or at comparatively high altitudes, but if you can supply a list of some varieties that will do well in the plain of the valley, it will be much appreciated.—A SUBSCRIBER, San Francisco.

If you cannot get good winter apples by growing the White Winter Pearmain, Yellow Newton Pippin, Wine-sap, Smith's Cider, Esopus Spitzenberg, and other now popular as winter fruit in this State you will probably have to conclude that your situation is not right for growing late keeping apples. You can perhaps do something by using a little irrigation to keep the tree active and the fruit growing later in the season, but as a rule valley heat is incompatible with the slow growth and unforced maturing which a late apple requires.

A SOUTHERN POTATO PROPOSITION.

To the Editor: Some time ago I bought 60 acres between Chino and Ontario. The land is a sandy loam, mixed with a little gravel. It is a rich soil, but very much exhausted, as for a number of years it has been sown in grain time after time by people who rented it, without ever fertilizing the soil. My intention is planting 35 acres next April in Irish potatoes, the Salinas Burbank, and I should like to know which would be the best green crop to grow this winter so as to plow it under as fertilizer before planting the seed.—OWNER, Chino.

Before undertaking anything like 35 acres of potatoes you should ascertain by inquiry, if you do not already know by experience, whether potatoes will do well in the place and with the soil you expect to use. If you are sure of that fact, then the growth of a winter crop would be justified, providing you have moisture enough to spare. It is seldom that potatoes can be planted later than February in your part of the State and still produce a good crop and if you are thinking of growing potatoes without irrigation you certainly cannot use this winter's moisture to grow a crop for plowing under and then expect to get any potatoes from spring planting. If you expect to operate with irrigation, you may, of course, grow a winter crop of field peas or vetches and then irrigate thoroughly before planting potatoes in the spring, but we seriously doubt whether any such operation would be successful. We must advise you to look more carefully into the growing of potatoes in southern California before proceeding as you propose.

DRY FARMING IN CALIFORNIA.

To the Editor: Can you give data in regard to the recent developments in dry farming of semi-arid land. Also kindly inform us whom to address in Washington, D. C., for similar information.—READER, Los Angeles.

We have made several publications concerning dry farming in California. The principles involved in dry farming, which chiefly relate to the conservation of moisture by thorough cultivation and summer fallowing, have been practiced more or less thoroughly in California ever since Americans began to grow crops by rainfall. These same principles are also involved in the constant cultivation of orchard land, which is practiced in this State. Concerning the application of these principles, which is now attracting considerable attention in the interior States and Territories, you can probably get published information by addressing Professor W. J. Stillman, United States Department of Agriculture, Washington, D. C. The features of dry farming which are new are a more thorough cultivation than has been usual in California grain growing though such thoroughness has always been urged and is certainly desirable. Another element of novelty is the Campbell machine which is aimed, however, to secure the better application of the old principles and which has to be tried out on that claim.

HORTICULTURE.

CONTROL OF PEACH BLIGHT.

Although we have in past issues given in detail the nature of the peach blight and the successful treatment of it, the following prepared by Prof. R. E. Smith for the California Fruit Grower will prove an instructive review of the subject:

Peach growers all over the State are fully alive to the importance of some decided action in the control of the blight or shot-hole fungus which has worked so destructively the past two or three years. This disease, which kills the fruiting buds and wood and greatly injures the tree and crop, has been called by Pierce the winter blight, since it is caused by a fungus which is peculiar in developing mostly in the winter time, following the fall rains. In this way the fruiting wood which was healthy and provided with plenty of fruit buds in the fall becomes badly injured or ruined before spring and the buds fail to develop.

While the disease in this serious form is comparatively new in this State, sufficient experience in its treatment has been had to justify the belief that it can be readily controlled by proper spraying. The most common practice in regard to peach tree spraying consists in treatment with Bordeaux mixture, or lime, salt and sulphur, late in winter just before the buds swell. This is effective both against curl leaf and peach worm, previously the principal pests of the peach. With shot-hole fungus, however, this treatment has proved absolutely without effect, the damage being already done long before the time of treatment. Fall spraying, which naturally suggests itself having been tried to some extent and found highly successful, peach growers are strongly urged to carry out such spraying very generally this year for the control of this destructive disease.

Treatment.—As a treatment for peach blight we recommend spraying with Bordeaux mixture in late November or early December after the first heavy rains. It is at this time that the fungus develops and treatment at this time has proved very successful. Spraying should absolutely not be postponed after the middle of December, but gauged somewhat by the rainfall. So far as our knowledge goes it is the first heavy winter rains which start the development of the fungus.

The mixture should be made in the usual way, using the somewhat heavy proportion of 6-6-50, or even stronger. Dissolve six pounds of copper sulphate in water, and slake an equal amount of fresh, strong quicklime. Dilute each considerably with water and then pour together into a barrel or directly into the spraying tank, straining and agitating as much as possible. Make the whole up to fifty gallons with water. If materials are plenty the proportions may be increased up to 8-6, 10-8, or even 12-10 to 50 gallons.

Spraying the trees thoroughly with this mixture at the time specified has proved very effective in controlling the peach blight. No further treatment has seemed necessary so far as experience shows. Of interest also is the fact that control of curl leaf has seemed quite as complete from this early treatment as by the usual spring spraying, while the latter had no effect whatever on the blight.

The State Experiment Station has a considerable series of experiments in progress on the treatment of peach blight, as well as laboratory studies on the fungus itself and its life history and development. Monthly spraying has been going on for some time in several localities, with the idea of determining the most effective time for treatment in various sections. This will be continued throughout the winter. The experience of individual growers will also be closely followed and it is hoped that treatment for this trouble will be general during the next two months. Two men have been detailed for field work in this connection, one each in the Sacramento and San Joaquin valleys.

Shortage of Bluestone.—It is reported quite generally that a decided shortage in the present and prospective supply of copper sulphate exists in this State and that there will be trouble in obtaining this necessary substance during the coming winter. Should this prove to be the case the situation is a decidedly serious one for the orchardist with a large amount of spraying in prospect. It is very much to be hoped that dealers will be able to secure a supply of the material before the shortage is seriously felt. Peach blight spraying particularly seems likely to suffer inasmuch as the work must be done within the next sixty days to be effective.

As a substitute for bluestone which will prove effective and economical we are quite at a loss. Should it prove absolutely impossible to get the desired substance, spraying with lime, salt and sulphur can be

strongly urged, though this is more expensive and laborious. Next to this we would recommend as worthy of trial a treatment with caustic soda—one pound to ten gallons of water. This has considerable value as a fungicide.

Copperas Not a Substitute for Bluestone.—Considerable inquiry has come up as to the possibility of using copperas in place of bluestone, using a considerably larger amount. Iron sulphate, which is copperas, has received some attention as a fungicide, and has a slight value for this purpose. As a substitute for copper sulphate in Bordeaux mixture, however, this change is not to be thought of, inasmuch as the active principle of the mixture is the copper in the form of hydrate. Iron in the same condition would in all probability be entirely inert so far as any fungicidal property is concerned. The proposed substitution is not to be thought of in preparing Bordeaux mixture as a fungicide.

WHAT AN OREGON GROWER HAS DONE WITH COMICE.

Hon. J. W. Perkins, of Jackson county, Oregon, says the Oregon Agriculturist, last year grew and shipped a carload of Comice pears to New York City, where they were sold at auction for \$3,429, which broke all known records for price on that quantity of pears. This year, however, that record was again broken by the sale of another car of Mr. Perkins' Comice pears for \$3,450. On the former car the net amount received by Mr. Perkins was \$2,700.70, and on the latter car, \$2,707. Mr. Perkins has an orchard of 200 acres on the foothills about two miles from Medford. He was recently interviewed by the Telegram, and we quote what he said about these pears and their production as follows:

"The Comice with which I won the record for high price is a French pear, and is but little known. The grafts for my trees came from the original trees, being brought from France by the late A. Block, the 'pear king' of California. My trees are without question the original true variety of the Comice, being only once removed from the original French stock.

"This pear has a wonderful flavor and is spoken of as the 'concentrated triple extract of pear,' and everyone who has eaten his first Comice will admit that never before had he realized what a real pear was. Its texture is smooth, like banana or butter, so that it veritably melts in the mouth, and is very juicy.

"When the trees are properly cultivated and thinned the fruit attains a large size without losing any of its flavor or becoming coarse in texture. In other words, it maintains its quality as well as its size, which combination has been the means of our getting \$5 a box for them.

"This year's crop packed out from 35 to 40 pears to the half box, or 70 to 80 to the full box of 50 pounds. Last year's carload was the first half-box packing ever shipped out of the State. These pears are packed in lithograph labels, lithograph top-mats and lace borders. The boxes are made of clear lumber. This is a very expensive way of packing fruit but, so successful that all the large fruit growers in the Rogue River valley have adopted the plan, so that the fanciest fruits that we ship are given the fanciest pack regardless of cost, and we have all found that the returns have justified it.

"Our section of country lies in the climatic belt between California and northern Oregon, having features of both, a longer rainy season than California and with it a longer dry or sunny season than northern Oregon, elements which make the conditions for fancy fruit growing ideal. Our land is unirrigated, the soil being the grade commonly called 'sticky,' really a very rich grade of adobe. For pears we do not need irrigation, for we have been able to carry off all honors without it, but for apple growing we need more water if we are to compete with the market conditions as they now exist, where size and color are the two requirements for fancy prices.

THE FRUIT GROWERS' CONVENTION.

The Thirty-second California Fruit-Growers' Convention will be held at the Opera House, Hanford, Cal., December 4, 5, 6 and 7, under the auspices of the California State Horticultural Commission, in conjunction with the Pacific Coast Association of Nurserymen. The following program has been arranged:

Tuesday, December 4, 9:30 A. M.

Organization.

Invocation, Rev. J. W. Maunt.

Address of Welcome, H. A. Beekhuis, Mayor of Hanford.

Response, Hon. E. L. Smith.

Opening Address, Hon. Ellwood Cooper.

Address, Governor Geo. C. Pardee.

Address, J. D. Biddle.

Tuesday Afternoon, 1:30 O'clock.

"Table Grapes; Growing and Packing," Mrs. Minna E. Sherman.

"Wine as a Remedy for Intemperance," A. Sharboro.

"The Fruit-grower's Aim," H. C. Rowley.

"Growing the Eucalyptus," Dr. W. S. Miller.

Wednesday, December 5, 9:30 A. M.

Address, F. W. Power, President Pacific Coast Nurserymen's Association.

"Benefits to be Derived from the Pacific Coast Nurserymen's Association, and the American Association of Nurserymen," S. A. Miller.

"The Nursery Business in California; Present Needs and Future Possibilities," Leonard Coates.

"European Methods," J. B. Pilkington.

"Fruit Varieties," Prof. E. J. Wickson.

"Introductions at the Plant Introduction Garden of Possible Interest to Nurserymen," Prof. P. H. Dorsett.

Wednesday Afternoon, 1:30 O'clock.

"What Fruit-growers and Inspectors Expect from Nurserymen," H. P. Stabler, Secretary of Horticultural Commissioners' Association.

"Inspection Laws of California," Geo. C. Roeding.

"Need of Uniform Inspection Law," A. Eckert.

"Investigation and Application," Prof. V. L. Kellogg.

"The Relation of Nurserymen to Growers," A. N. Judd.

Wednesday Evening, 7:30 O'clock.

"Pear Blight Conditions," Prof. M. B. Waite.

"Recent Progress in Entomology," Prof. C. W. Woodworth.

"The Horticultural Commissioner," R. P. Cundiff.

"Root Stock in Planting," A. D. Bishop.

"Barring Out Suspected Stock," S. A. Pease.

Thursday, December 6, 9:30 A. M.

"Horticultural Uses of University Farm," Prof. E. J. Wickson.

"The Water Supply of the Sierra Nevada Mountains," John Tuohy.

"The Importance of Drainage in the San Joaquin Valley," John S. Dore.

"The Relation of Bees to the Fruit Industry," J. M. Rankin.

"The United States Plant Introduction Garden and Its Value to California," Roland McKee.

Thursday Evening, 7:30 O'clock.

Address—"Transportation and Marketing," J. A. Filcher.

"Report of Fruit Distributors," Hon. Alden Anderson.

"Report of Committee on Transportation," R. D. Stephens.

"The Pecuniary Value of Good Roads to the Fruit-grower," A. R. Sprague.

"A fixed Price for Prunes, and How to Obtain It," J. Luther Bowers.

Friday, December 7, 9:30 A. M.

"Green-manuring of Orchards," James A. Mills.

"The Fruit-grower as a Factor in Government," Edward Berwick.

"The Fruit Industry of Tulare County," P. D. Fowler.

Friday Afternoon, 1:30 O'clock.

"Methods of Increasing the Bearing of Muscat Vines," Prof. Frederic T. Bioletti.

"The Economic Value of Wild Birds," W. R. McIntosh.

"A Further Plea for Selection," Leonard Coates.

"The Fruit-grower and the Country Press," Fred A. Dodge.

On Thursday afternoon there will be an excursion to Lemoore and points around Hanford and on Saturday to the Citrus Fair at Porterville.

ENTOMOLOGICAL

THE CODLIN MOTH AND OTHER ORCHARD PESTS.

By W. H. Volck, authorized by C. H. Rodgers, L. N. Trumbly and F. W. Hitchings, Horticultural Commissioners of Santa Cruz county.

Effective remedies for most orchard diseases are known, but the time and manner of application which will give the highest returns are modified by climatic and locality differences. It has been the object of the codlin moth investigation to solve such problems for the Pajaro valley, and the recommendations given in this bulletin have been developed from our practical experience here.

Winter Spraying.—The object of winter spraying in this section is two-fold. First, the control of various scale insects, chiefly the San Jose scale. Second, the improvement of the condition of the tree by the removal of moss and other growths. A number of sprays have been recommended for this purpose, but it is the opin-

ion of almost every expert on the subject that the lime sulphur spray, more commonly known as lime, salt and sulphur, answers all requirements best. The properties of this spray are well known, and may be briefly stated. It is a fungicide, it is an insecticide, it removes mossy growths, it improves the general condition of the tree.

All of these properties are not possessed by any other known spray, which properties, recent investigations of the Washington Experiment station, have shown to be due to lime and sulphur in solution. The solution is formed by boiling the two ingredients together in water.

Preparation of the Lime Sulphur Spray.—The Piper formula, or 1:1:4 wash, is prepared by using one pound of lime for every pound of sulphur. First slake the lime in the cooking vat. Then add the sulphur and enough more water so that the mixture will stir easily. Stir the mixture constantly while it is coming to a boil, and continue brisk boiling for one hour. When the boiling is complete dilute with water until there is one pound of sulphur to every four gallons of spray. The diluting may be done with cold water, in or out of the spray tank or in any manner convenient to the operator. The solution should be strained as it is run into the spray tank. This formula requires no salt. The old, or California formula, using salt, is well known to those who have prepared it in the past, and so it is unnecessary to discuss its preparation here. The old formula has given perfect satisfaction and so there is no risk in continuing its use. The new formula has not been used here, but there seems to be no reasonable doubt that it should succeed as well in this locality as it has elsewhere. The advantages of the new formula are that it is easier to prepare, cheaper, and less difficult to apply.

Instead of preparing this spray the farmer may purchase it in concentrated form, as there are several commercial brands now on the market.

It should be remembered that the purchaser of a proprietary article is usually taking some risk; that the material may not be up to guarantee; and, further, it may prove more expensive than the home-made compound.

Application.—The lime-sulphur spray is a winter wash, and should be applied while the trees are dormant. This wash seems to be very effective when applied just as the buds are swelling, but weather conditions at this time of the year are usually against spraying. For this reason any favorable weather during the winter should be taken advantage of for the application of the spray.

The lime sulphur spray should be very thoroughly applied, especial attention being paid to wetting the small twigs, and the tops of the trees. Two applications will prove far more effective in killing San Jose scale than one, and are advisable where an orchard is really scaly. Owing to the general good effect on the tree a treatment with the lime sulphur spray every other year will be a paying investment in most orchards whether scale is present or not.

Spring and Summer Spraying.—The troubles to be corrected by spring and summer spraying are at present the codlin moth and apple scab. It is fortunate that these pests can be handled simultaneously.

The combined Bordeaux and Arsenate of Lead Spray is intended for varieties troubled with the scab, but it would be a good practice to treat all alike at the first spraying with the possible exception of Bellflowers. Omit Bordeaux with the second spraying on all varieties which do not become scabby.

For the valley orchards the following schedule is recommended:

The First Spraying.—Use 2 to 2½ pounds of arsenate of lead to 50 gallons of 5-6-50 Bordeaux. Apply when the majority of the blossoms have fallen. That is from April 25 to May 10, approximately.

The Second Spraying.—Use 1½ to 2 pounds of arsenate of lead to 50 gallons of 4-6-50 Bordeaux. Apply about the last of May or one month after the first spraying.

These two sprayings should be thoroughly applied, and will furnish the best possible protection against the attacks of worms and scab likely to occur at this period.

The Third Spraying.—(For the codlin moth only).—Use 2 pounds of arsenate of lead to 50 gallons of water. Apply between the 10th and 25th of August. These three sprayings are deemed sufficient to control the codlin moth in the valley orchards.

In the hill sections, where worms are more abundant, the second spraying should be applied about the middle of May. For the third spraying in hill sections, use 1½ pounds of arsenate of lead to 50 gallons of water. Apply about the middle of June. For the fourth spraying in hill sections, use 2 pounds of arsenate of lead to 50 gallons of water. Apply about the middle of August.

For the fifth spraying in hill sections, use 1½ pounds of arsenate of lead to 50 gallons of water. Apply before the middle of September.

The Bordeaux Mixture.—Bordeaux is a combination of bluestone and lime. It is the most effective remedy for fungus diseases known. The various formulas mentioned refer to the proportions of bluestone and lime and the amount of water used to dilute it, i. e. 5-6-50 Bordeaux is 5 pounds of bluestone and 6 pounds of lime to 50 gallons of water. The other formulas read in the same way, the first figure referring to bluestone, the second to lime and the third to water.

Fill the spray tank two-thirds full of water, then add the lime either properly slaked and strained of hydrated lime. After the lime has been placed in the tank start the agitator and add the required amount of bluestone which has been previously dissolved in water.

Continue the agitation for about a minute after the bluestone solution has been added, then place the arsenate of lead in the tank. The tank may now be filled with water.

Bluestone is more readily dissolved in hot than in cold water, but it should never be placed in an iron kettle.

From our present knowledge there is nothing to be gained by using the Bordeaux mixture as a winter spray. If any winter spray is used it should be the lime sulphur solution, which acts both as a fungicide and insecticide. There is, however, considerable evidence to show that Bordeaux applied at the time that the blossoms are opening will do much towards the control of the apple and pear scab. This early spraying should not be neglected with pears, and it may prove profitable in the treatment of apple scab.

The powdery mildew was carefully observed in our Bordeaux experiments this year, but we could demonstrate no advantage from its use on this disease.

Spraying a Tree.—Quite as important as the material used is the method of application, for spraying must be done thoroughly, and it is false economy to be too saving of the spray.

Do the inside spraying first, and then, beginning at the top, apply the overshot or outside spray. Do not finish the sides and bottom until the top is thoroughly sprayed. The men should walk completely around the tree, and spray directly at it from all points. Do not try to spray around a corner. Before leaving any part of the tree, the men should stand well back and spray the tips of the most extending branches.

The orchardist should insist on the tops of the trees being sprayed first and thoroughly. If the upper work is done well the lower branches will receive almost enough spray from the drip, and they can then be finished quickly, thus avoiding the greater drip loss which comes about through beginning at the bottom.

In summer spraying material should not be wasted on the trunks and large limbs free from foliage.

The Spraying Outfit.—Use a power outfit equipped with a mechanical agitator where practicable and maintain a pressure of 140 pounds or more. For large trees long extension rods should be used, as the tops can not be well sprayed without their use. The nozzles are also a matter of considerable importance, and the type varies with the character of the spraying to be done. Bordeaux nozzles are best when the spray contains coarse impurities, but for ordinary work those of the cyclone type are superior.

The lime, salt and sulphur spray prepared by the old formula usually requires a Bordeaux nozzle, but the new formula, and the commercial lime sulphur spray, should be as readily run through long-distance Bean nozzles as are the summer washes. It is well to use a battery of two or three nozzles on each extension rod in order to increase the volume of spray handled by each man, for with a large volume of spray the time required to thoroughly spray a tree is much reduced, and hence the labor becomes less expensive.

Other Insects.—The tent caterpillars are readily controlled by arsenate of lead, and no attention need be paid to them if the regular codling moth spraying schedule is followed out. Where this insect is to be treated separately use 1½ pounds of arsenate of lead to 50 gallons and spray lightly. Experiments this year show that apricot, cherry and other trees may be successfully treated for tent caterpillars by the use of this spray.

When canker worms are to be combated the same formula as recommended for tent caterpillars may be used, but the spray should be more thoroughly applied.

No spray that will control the Tussock, or horned caterpillar has as yet been discovered. Careful egg picking is the best remedy. The work must be very thoroughly done and the orchardist should require thoroughness rather than speed on the part of the pick-

ers. In removing the eggs care should be taken not only of the trunks and large limbs, but the smaller branches, twigs, and tops of the trees as well. The eggs should all be removed and destroyed before February 15.

The Sappy Bark Disease.—This fungus disease is killing many apple trees in the Pajaro valley. The tree usually dies slowly. One limb after another is attacked until the trunk becomes diseased. The fungus is most active during the winter and early spring months, and is characterized by the sappy and puffy nature of the bark which is being attacked.

Scrape all the diseased bark away down to the hard wood and also cut away the bark all around the diseased portions until perfectly healthy tissue is reached. Now thoroughly saturate the wound with corrosive sublimate solution. When a limb is too badly affected to save it should be removed below the diseased portion, but if this will require the removal of another important limb not badly affected, then the cut should be made at the juncture of the two limbs, and the diseased bark remaining should be removed, and the wound treated in the usual way. Great effort should be made to save the trunk of a tree, even if it requires the removal of over half of the bark.

In preparing the disinfecting solution use two of the 7.3 grain corrosive sublimate tablets to a pint of water. A pint whisky flask makes a convenient carrier for the solution. Apply with a sponge. The tree should be worked over several times during the winter in badly affected orchards, and it will be well to re-treat all the wounds each time.

SHEEP AND WOOL.

THE WOOL SITUATION AND OUTLOOK.

"The year 1906 will go on record as the most profitable in the history of the American sheep industry," said Frank J. Hagenbarth, general manager of the Wood Live Stock Company of Idaho. "The benefits resultant from a prosperous trade have been generally distributed among growers. Some, it is true, went to extremes. Their optimism on wool caused them to overreach and wool that should have been sold at home early in the season was consigned. This wool could have been sold at 20 to 23 cents and was consigned at advances of 17 to 20 cents, which is practically all the grower will get. It was simply a case of discounting the future too severely. When wool reaches 20 cents in the West selling is the part of judiciousness. Add to this freight to Boston, storage, sorting, and other items of expense and the cost laid down there is 23 to 25 cents, not to talk of interest which soon runs up. The middleman must have his profit of 10 per cent., as he handles a clip but once a year. On the whole, selling at home when a reasonable price is obtainable has decided advantages over consigning."

Asked as to the future of the wool market, Mr. Hagenbarth said: "This clip will be well cleaned up before that of 1907 is ready for the manufacturer, but present prices are high and if they can be maintained the grower ought to be satisfied. Undoubtedly we have reached the crest of the upward movement and variations may now be expected. Prices next spring will depend to some extent on the kind of winter we have, as with these prices buyers are disposed to be severely discriminating as to quality. There is a lamentable lack of understanding among wool growers on this subject. Quality and shrinkage exert no little influence in determining intrinsic values and failure to comprehend this fact is responsible for much dissatisfaction that is wholly unnecessary. In Montana this has reached a point where growers have organized with the avowed purpose of protecting themselves against an alleged combination of buyers. While there has undoubtedly been a tentative understanding among these gentlemen, they can hardly be blamed in view of the high level of the market and the risk they are compelled to take. Jones' clip may shrink but 60 per cent. in the scouring process, while Smith's shrinks 70 per cent., hence it is obvious that all wool is not worth the same. As a matter of fact, recent events have justified the stand taken by buyers, as Boston prices have not justified extravagance. If a lot of wool dealers were to go to the wall growers would suffer. Personally I do not believe in these periods of hurrah. They are well enough for a year or so but the period of recovery from the subsequent depression usually lasts half a decade. A steady conservative market is the best thing for the whole trade. Failures of Boston dealers would open our eyes to the difficulties attendant on financing the business and the risks involved."

"Breeding sheep on the range are selling at \$5 to

\$5.75 per head at present," continued Mr. Hagenbarth, "and demand is unprecedented. Last week I learned of several large sales of ewes ranging from one to five years at \$5.75 per head and present prices of both wool and mutton justify the investment. One gratifying result of high prices is the care the grower is giving his pastures. He has emerged from the age of prodigality and has realized that a fat well-bred animal is more desirable property than a thin scrub. To produce the desirable article feed is necessary and the sheep grower has judiciously invested his increased earning in land and water rights, thus putting his business on a lasting basis. All the money that has been made out of sheep since the industry began to enjoy prosperity has gone into the development of the West. Our concern has invested between five and six hundred thousand dollars in permanent range and we are but one of many. No longer is the hue and cry raised that the sheepman is skinning the country and giving nothing in return. Today he is bending his energies to converting what was a semi-desert into a habitable region."

POULTRY YARD.

GENERAL SUGGESTIONS.

Mrs. Ella L. Layson writes for the Petaluma Poultry Journal some general suggestions which will be helpful to beginners and to older growers who have not decided upon what they regard as the best ways in all respects.

In whatever line of the poultry business one may be engaged the most essential thing to be considered is the health of the fowls. There can be but little profit from a flock of sickly fowls but some times the health of the stock is disregarded in the ambition to make more money and large numbers are crowded together and cared for with but little consideration for their natural requirements.

Chickens do not need costly buildings or expensive appurtenances, but certain conditions must be complied with which, though simple in themselves, are imperative.

In stocking a poultry plant market poultry should be avoided though the cheaper prices may be a temptation to the inexperienced. There is always more or less disease among the poultry crowded together in the market and fowls that may be healthy enough when sold will soon become contaminated there. It is much cheaper in the end to buy from some reliable poultryman, for in buying suspicious stock there will be enough loss to cover the difference in price. With a little personal experience the buyer will soon learn that good, healthy laying hens or young pullets are worth the price that is usually asked for them. Many have failed at the start by buying diseased stock and when bought in the market there is no redress.

The profit does not depend upon the number of hens one keeps but upon the proper housing, feeding and general care of the fowls, and the ability to secure from each hen all the profit that lies within her capacity. Of course the number that can safely be kept depends upon conditions the individual must determine for himself. But there should be no crowding in the houses or yards or at feeding time. Hens are creatures of habit and like the same place on the roost every night and the same place to lay in and if there is confusion from lack of system or overcrowding one should not expect many eggs.

There should be time to look over the fowls every day or two in order that any simple ailment that may appear may be detected and treated at once. Some poultrymen have no time for this and then there will be a dead hen to throw out which means an unnecessary loss in most cases. Now and then a fowl will have a cold or indigestion maybe, and if a warm, comfortable place is provided for them away from the others they may easily be cared for and in a few days will be laying again, while if disease of serious nature appears prompt action is the most important.

If chicken houses are not cleaned frequently they become a source of disease and hens will do better in every way if provided with clean houses and nests free from vermin, and if there isn't time to do this then more hens are kept than are being properly cared for. When conditions are right we shall see fowls with smooth, glossy plumage, bright red combs, bright eyes and animation expressed in every moment. Ruffled plumage, dull eyes, pale combs, and a dejected ap-

pearance denotes a neglected state of things in general and improper feeding and lice in particular.

Warm houses are not necessary for health. We have had houses so cold that the mash would freeze before it could be eaten, but the fowls were perfectly healthy, not a sign of a cold all winter. But in a warm house with currents of cold air drifting in where the battens had become loosened the hens would frequently have colds. Roosts should not be placed nearer than eighteen inches from the wall unless the walls are air tight. In walls apparently tight, if one will place their hand against the building when the wind blows, a perceptible current of air will be felt. This coming in contact with the fowls at night will cause colds and finally roup.

Fowls are extremely susceptible to changes of the temperature and this should be borne in mind when planning their quarters. Do not keep them too warm at night if they must step out in the cold air as soon as they get off the roost. There was only one season of the year "back East" when our chickens had colds, and that was in the fall when days were still warm but the nights chilly, and we think why in some sections of California we have trouble with the chickens at all seasons of the year is because there is so much difference between night and day temperature, and those who best guard against this will be least troubled with colds.

Where houses have cold earth floors if an armful of straw is scattered around on rainy days it will keep the fowls more comfortable and contented. Be prompt in feeding in rainy weather so the hens will not be running about in the rain in search of food, and during the few hard rains unless one has shelter outside the laying houses it is safer to keep them shut in all day. A few hours of discomfort will be less harmful than exposure to cold winds and heavy rains.

With wrong feeding comes a new list of troubles. The most frequent error is overfeeding, but in order to get eggs day after day we must feed heavily and it is to be expected that now and then a hen will overeat, but the occasional loss of a hen is more than offset by the many extra dozens of eggs obtained than one would get from a flock scantily fed. There are hens that will lay freely on a limited supply of food, but in order to do this she must draw upon her own body and when moulting time comes she will not have the vitality to pass through that ordeal. Our best results come from a liberal feeding of a variety of food.

It is poor economy to buy the lowest grades of food either ground or whole, and damaged grain (except burnt) is positively dangerous. Mouldy feed will produce results similar to cholera. Light, chaffy ground feed contains but little nourishment, and too much will cause irritation of the bowels. Good, sound wheat, heavy oats, better if scalded, barley, shorts, and middlings with a little cracked corn will produce the right results if combined with animal food and green stuff.

In buying any of the prepared animal foods only the highest grade should be used. It will be safer, better, and cheaper as, being, pure, a smaller quantity will suffice.

Grit must always be provided, the harder and sharper the better.

Great quantities of soft shells will be consumed by laying hens and furnish material for egg shells in the cheapest form possible.

Condiments only create a tendency to lay and are useless without good, substantial food. In most forms of derangements of the bowels, condition powder is highly beneficial, but as it contains strong spices, should only be used in cases of actual need.

FINISHING TURKEYS.

Probably many of the turkeys were finished on Thanksgiving day, but Christmas is coming and some birds may yet be alive for improvement. Some suggestions prepared for the Prairie Farmer by Mrs. Millie Honaker are therefore timely:

There is every inducement to the turkey owner to push the growing birds along as rapidly as possible, from now until killing time. To do this it is necessary to feed a generous grain ration. A little grain at all times is good, almost essential in fact, but especially so during and for a considerable time previous to the fattening season.

It is a mistake, (but one often made), to compel turkeys to forage for their entire living as long as it may be obtained in this way. As a rule they are unable to get as much as they need for rapid growth, and further

so much tramping about necessitates more active exercise than is best.

If the growing turkeys have been fed a regular grain ration all along there will be no gathering in and rounding up of the flock as will probably be necessary in case they have not. Just simply an increased quantity of grain night and morning until as much is given as will be eaten each time.

At first a mixed grain ration is advisable, but toward the end of the feeding season corn should be fed almost exclusively. It is well towards the last to give a noon feed, and this may consist of a mash composed largely of shorts, wet up with warm water or milk.

Corn meal may be added to good advantage, as may also boiled potatoes and other rich foods. A bran or shorts mash is in fact good at any time and may be fed in place of dry grains at least once a day from the time the birds are turned out until finished for market.

Besides grain in some form plenty of fresh water and sharp grit should be always where the birds can get at them. It is surprising how much water a flock of fattening turkeys will drink, and it is equally surprising the quantity of grit will be used.

Green stuff, while essential to the health of young turks, is not particularly advantageous to fattening ones, still up to within a couple of weeks of killing time it is well to see that they have it in some form. Where on range enough is obtained at this season from fields and pastures. If closely yarded I would supply it in some shape.

Unless necessary in order to prevent straying, it is not best to confine turkeys that are prepared for market except for a couple of weeks at the last. If on full feed they will seldom wander far or take more exercise than is good for them. But the last two weeks it will always pay to confine closely and to prevent more exercise than is absolutely necessary.

I have repeatedly tested the matter by finishing one lot on range and another in confinement and I have always found that those in confinement were heavier and better fattened.

Often it happens that in confinement the young gobblers will fight almost constantly, resulting sometimes in the loss of one or more. In this case the quarters should be darkened if possible; if not such as are most quarrelsome should be removed to some small room which can be partially darkened.

Heavy birds are usually in best demand. This is the time then to sell old stock, especially old Toms. Young gobblers of good weight are always in good demand but usually light hens sell at a discount. If any are to be kept over for the next holiday market it should be the light gobblers and young hens. It will rarely pay to keep over for a later market anything which will dress over 14 pounds, or to sell anything less than 9 or 10. But by no means carry over a flock which may be put into marketable shape for Thanksgiving, nor even any considerable number of individuals. As said in the beginning the first market is always the best, and it is worth in every way all it costs extra to make such birds as may be, ready for it.

TWO GOOD FORMULAS.

Here are two good formulas from a correspondent of the Poultry Journal, who has tried and proved their value. They are recommended as being highly efficacious and having the advantage of low cost:

For Dust Powder.

- 2 pounds sifted wood ashes.
- 1 pound air slacked lime.
- 1½ pounds Persian Insect Powder.
- ½ pound Naphthalene flakes.

Mix all these together before using. A good way is to use a sieve to mix, as by this method one can insure the ingredients being thoroughly mixed. Be careful not to use this powder at night, as it is only intended for use during the daytime while the fowls are in the open air. Our correspondent says that he lost some birds by using the mixture at night after they had gone to roost, but that it surely "gets" the vermin. The cost of this powder is low and no breeder should be without a supply.

For Poultry Spray.

- 1 pound hard, common laundry soap, boiled in one gallon water until dissolved.
- Add one gallon cheap kerosene or coal oil.
- 1 pint crude carbolic acid.
- Agitate until a perfect emulsion is formed.
- For use dilute with eight parts of warm water. If used as a wash use twelve parts water. Do not use for fowls with white plumage, as it will stain and give the birds a dirty appearance.

THE MARKETS

Wheat.

The wheat market locally is in a very uninteresting condition this week, as the volume of wheat changing hands has suffered a still further decrease. The trouble seems to be partly in the fact that the large transportation companies have not the cars to take the wheat to shipping points and interior buyers are not anxious to get a lot of wheat on hand that they are unable to dispose of. This is less true in California than in the north, where there is more wheat to be had. The majority of the warehouses throughout the northern coast are filled with wheat owned by the shipping interests who are unable to get cars to bring it to tidewater and as a result the majority of buyers now are simply holding off for further developments. The demand abroad is not very brisk and there are no present indications that seem to justify buyers in laying in a stock for future disposal. The quantity of wheat reaching harbor towns along the coast is gradually decreasing each week, and up to the present time there is no prediction of any early change in the situation. The milling interests bought freely earlier in the season, and these people are practically out of the market for the time being. The local market has not been materially altered since last week, although the dealings in futures have declined. In the north, where the wheat interests are more vital, the market had also been marked down.

Barley.

Although the local market is fairly brisk now-a-days the barley market throughout the coast is at a standstill. The local market is held up by the immense demand here in town and is not affected so materially by the dead lock that seems to be existing elsewhere. A large quantity is still held by the farmers and no sales of any consequence have been made. In some places in the north the growers have pooled their interests and are unwilling to sell unless the price set, \$20 per ton, can be realized. The lack of cars necessary to bring the wheat to coast points is also influencing sales at northern points considerably. The brewing barley crop is short in Oregon and Washington, and in many places will not reach over one-third of the entire crop raised. The price is firm in those localities at \$20 per ton. Occasionally sales are made locally for \$1.12½ for feed barley and \$1.15 to \$1.17 for brewing grade.

Flour.

The general trend of the market locally is fairly steady as only enough flour is brought here to supply the immediate needs of the people. However, outside of San Francisco the situation is much the same as the wheat market. The foreign market is in a very inactive condition, and there are no present indications of a change. Most of the exporting that is being done is on old standing orders and will be completed by the first of the year. After that date the general opinion is that the export business will suffer a decrease until some definite action is taken on the part of foreign buyers. The principal demand is now from China, though Japan is also in the market. Quotations locally are as follows: Family Extra, \$4.65 to \$5.10; Baker's Extra, \$4.50 to \$4.60; Oregon and Washington, \$3.50 to \$4 per barrel.

Oats.

Outside of the demand coming from feed sources the local market is fairly quiet this week owing to the fact that dealers are unable to supply any speculative demands. As a rule this article is beginning to become scarce at coast towns and the price has been coming up correspondingly. There is still a good demand in this State for seed varieties as the majority of the crop has proved to be under quality. Quotations are: Oats, white, \$1.40 to \$1.42½; red, \$1.30 to \$1.65; black, \$1.65 to \$2.15.

Corn.

The situation locally is still without great activity, although the feed interests are creating a fairly firm market. The quotations this week are as follows: Small Pound Yellow, \$1.50 to \$1.55; Western Mixed, \$1.25 to \$1.32½; White, \$1.30 to \$1.32½.

Millstuffs.

The demand here is good for all grades of mill feeds and the price is steady at about the same figure as that of a week ago. The condition up the coast is much the same as locally, but the once evident abundance of mill feeds has disappeared and a general shortage is reported throughout the Coast. Although prices in the interior are far above quotations at tide-water, millers are not shipping any to these points. The outlook is good for a continuation of these high figures and millers are careful not to take larger orders than can immediately be filled.

Hops.

The hop interests are at a little lower level than they

have been for the past few months, owing to the fact that the crop is pretty well out of first hands and the market quotations show a very steady tendency and the price has not been altered for some time. Desirable grades of the 1906 crop are quoted at 12½ and 15 cents, but occasional sales are made at 16 cents.

Poultry.

The poultry market was influenced considerably by the coming holidays although the Thanksgiving demand did not cause any such material raise as last year. The turkey market was rushed, however, and a rise in prices come at the end. The demand is brisk for large fat stock and lately young stock have taken a turn to the good.

Hay.

The arrivals for the last week were only 2927 tons, almost 1000 tons less than the previous week. This is apparently caused by weather conditions. The north winds have had the effect of holding back all shipments by water. The schooners are hiding in the various sheltered spots and inlets around the bay, waiting for the storms to cease before taking chances of going into open water. Added to this, the railroad deliveries have been very light for the last few days, with the result that there is a great demand for almost any kind of hay and the supply is only a fraction of the requirements. There is, in consequence, an extremely firm market with prices ranging a trifle higher. The San Francisco Hay Association has just completed compiling the semi-annual statement of the stock of hay on hand in California on November 1, tributary to and available for the San Francisco market. The total is 168,000 tons. The statement taken at the same time for the year 1905 shows 157,000 tons. These figures naturally would lead to an expectation of diminished prices. There are, however, many factors which tend to counteract these large figures and the fact remains that the supply is below the demand here and that there are small indications of a change. Some growers and interior holders will be a little sceptical as to the reliability of the figures themselves, and at all events they can have but little depressing effect in view of present conditions.

Beans.

The firmness of Lima beans continues, and if anything, the market has grown stronger on this variety, and whatever stocks have been sold by growers are in very strong hands. Shipments have been heavy, and continue in good volume. While it seemed at first, as if, with the tremendous crop, prices should have ruled on a lower basis, yet it is evident that the consumption of Lima beans has grown in greater measure than the production, making it necessary to ship about one-half of the crop out of the State within the first two months of harvest. If there is any justification for the present range of prices on Lima beans, it must lie in this fact. Growers who have not sold yet are very firm in their views, and unwilling to sell even at present prices. The market for the other varieties has not changed very much. Pink and Bayo beans are as before, and the same can be said of Small White beans. Arrivals in San Francisco have not been quite as heavy so far as they have been in several years past, still they are quite heavy, and in view of the present unsatisfactory facilities for handling large quantities here, it is just as well that arrivals are slower.

Bags.

The bag industry is at a very uneventful season just now, and very little is being done locally, the market is fairly firm at quoted prices, but there is little or no demand. Standard Calcutta grain bags, 4¼c., wool bags, 38½c, fruit bags, 7 cents.

Potatoes.

Potato dealers are particularly well satisfied with the present conditions and are finding that the demand is brisk enough to justify the heavy shipments which are being made. There is a particularly strong demand for fancy grades and some sales have been made at from 5 to 10 cents above market quotations. Salinas are arriving freely and are bringing from \$1.50 to \$1.90 per ctl. Rivers are worth 90c to \$1.15. Oregons are high on account of the scarcity of cars in that State and the supply locally is rather limited. Sales range between \$1.40 and \$1.60 per 100 pounds.

Onions.

Onions are a little weaker this week partly on account of heavier receipts but largely due to the fact that the stock is of an inferior grade. The demand is brisk for fancy goods and although market quotations range from 50 to 65c some sales have been made for more.

Seeds.

The market is rather active locally and the exporting trade is beginning to assume a volume that would compare favorably with past years. There is a brisk

demand from the Orient especially for radish seeds, which seem to be scarce in nearly every country outside the United States. Most of the houses are well stocked in the city now and dealers predict a very busy year.

Butter.

The butter market has been unsteady for the past month and is now wavering at the 31c mark. The demand is still brisk and is a little more than the daily receipts can supply. The poorest packing grades are plentiful and are not so much in demand but the choice varieties are not to be had in quantity sufficient to supply the daily needs.

Cheese.

The steadily increasing market has been a source of much interest to local dealers and the 15 cent mark has at last been reached. This is only for the best quality however and the poorer grades are bringing only about 13½ cents.

Eggs.

The supply of eggs has not been increasing lately and the scarcity has not been sufficiently relieved to cause any change in the price. Receipts have been abnormally small from the surrounding country and the best fresh eggs are bringing as high as 55 cents.

Vegetables.

Although the local markets are becoming more or less limited in the varieties of vegetables, the seasonable ones are plentiful and are bringing good average prices. The demand is not great but steady enough to clean up each day's receipts.

Fresh Fruits.

The supply of grapes is again becoming more plentiful as the later varieties come on and now the market is nearly as well stocked as it was two months ago. Arrivals of apples have also been somewhat increased lately and these are now quite plentiful locally. Pears are practically all gone. The best apples are bringing \$1.25 to 1.50. Grapes vary according to varieties. Seedless, \$1.25; Black, 75c to \$1.15; Isabella, \$1.50 to 1.75.

Dried Fruits.

The situation locally is becoming more and more interesting as the fruit arrives, but as only a sample stock is kept here the market is more uninteresting than elsewhere in the State. The crop, in all varieties, is pretty well bought up and the bulk of it is now in the hands of the larger packing concerns. Generally speaking the price is high and steady so that the tendency of the crop toward changing hands is somewhat less than it otherwise would be. The Eastern markets are in good condition and although heretofore the offerings have been comparatively small a large amount of fruit is now being shipped East daily to various parts of the United States.

Honey.

Local dealers report the honey market firm at 16 cents for the best grades. The scarcity of a month ago has not been relieved and a still further advance in price is expected. The best varieties are extremely scarce locally and the demand is only partially supplied. The poorer grades are more plentiful and are selling well owing to the fact that better varieties are not to be had.

Raisins.

The raisin situation is a source of much interest in the central part of the State, where the industry comprises one of the chief supports of the farmers. The 1906 crop has practically all left the hands of the growers and a number of estimates have been made concerning the price for next year. The contractors are finding that the growers are not at all inclined toward signing contracts at any price offered by the packers as they are firmly convinced that the price will be particularly good for 1907. The growers have learned a lesson from the past season as many contracts were let for 2¼ to 3½ cents, while some growers who did not contract received as much as 5 cents for the same crop. The situation is interesting and will undoubtedly be a source of considerable speculation during the coming season.

Nuts.

Nuts are firmly held at high prices locally and as the supply is very limited the price is practically nominal. There is a good demand for various varieties, but very few dealers are handling them.

Citrus Fruits.

The receipts locally have been increasing until the market is now fairly well stocked. The demand is brisk enough, however, so that no reduction in price has been made. Present quotations are as follows: Navel Oranges, per box, \$2.80 to \$4.00; Valencias, \$2.50 to \$4.00; Lemons, \$2.00 to \$4.50, according to quality; Grape Fruit, \$2.50 to \$4.00; Limes, \$4.00 to \$4.50.

THE DAIRY.

Extract from an address by Mrs. A. F. Howie before the Connecticut Dairy-men's Association.

Too many farmers make a big mistake by supposing that almost any pure bred animal will do for a beginning and that the finer qualities of improvement may be safely postponed until a later period in a herd's development. I believe the careful consideration of the first cross to be quite as essential in the upbuilding of a herd as any following step of improvement. And, while an animal may have been offered at a low price, with the explanation that it was not quite up to a breeder's standard, but plenty good enough to grade a herd, it would be well for a prospective buyer to be cautious enough to learn why such an animal should fall below the standard of a breeder.

If possible, let him personally inspect that animal, and if the owner leads out a runt, stunted fellow with a narrow chest, gaunted barrel, lack luster eye and hide bound, at the same time calling attention to what he thinks you are likely to deem as his most commendable virtue. "He's gentle." Look him over, and you will soon become convinced that he hasn't vitality enough to be anything but gentle.

The proper place for an animal of this kind is under ground. Don't touch him at any price; such an addition would not prove a betterment in any herd.

But, after all, a good beginning may make a disastrous ending if one permits himself to be swayed by each and every one who stands ready to give advice to a wavering beginner.

Perhaps he had made a commendable start in the right direction. The first bunch of calves are a credit to his efforts and he will be inspiringly satisfied until some neighbor while inspecting the youngsters will call attention to his lack of judgment by remarking, "Yes, I see that you are on the right track in gradin up a herd of pure bred cattle. It's a good idea, I'm going to do it myself, some time when I get around to it. (Utterly unconscious of the fact that none of us are allotted more than 100 years to develop any kind of stock, and that time is our most valuable commodity.) But what under the sun possessed you when you put that measley little Jersey at the head? Don't you know that when you come to sell your calves to the butcher you won't get anything for the carcass? Why, it just makes the buyers swear when they see a Jersey come to the stockyards."

"But,—" when he notes the discouraged look,—"you haven't gone far wrong. The Jerseys are rich milkers, there's no getting around that, and now, if you'll cross with a Holstein, you'll get the large frame and more milk."

The beginner may recognize it as good counsel and a Holstein will replace the Jersey. Another year, and another neighbor will take it upon himself to criticise and suggest. He will deplore the quality of the milk while commending the increased size of the cow, and, as a remedy, will advocate a compromise by way of a Guernsey sire. And, what is the result? No one breed has been improved. The dairyman has made a mongrel of all, and worse, for with such indiscriminate breeding, the undesirable qualities of a breed are more frequently reproduced than the valuable traits.

When the sire has been carefully selected, look well to the dam. These mothers have a way of leaving an impression on their offspring; see that she has a good constitution; see that she is a persistent milker, not the cow that

will give you a large flow of milk for a short time and then dwindle down and in a few months go dry, and board with you the remainder of the year. Such a cow is not a profitable dairy worker.

Select the cow that will give a reasonable flow of reasonably rich milk for at least ten months in the year, and if both sire and dam are in perfect health we now have a foundation stock worthy of our earnest thought, and more careful attention.

If the mother has received the proper care and food the little creature that comes to the herd will be a bright-eyed, lively little thing. When it fearlessly noses about you, don't give it a rude push and drive it from you. Remember, that in order to succeed, a dairyman and his working partners must be the best friends.

The first step in the calf's education is to teach it to drink. I have seen men, real nice men, who belonged to a church

and who would not swear, only under great provocation, who would plow all day, rather than attempt to teach a calf to drink.

I have seen such a man take a pail of milk, roll up his sleeves, set his teeth as though he were going to a dentist's chair and march out to that poor, little, inoffensive calf. Then he would put the pail down, grab it by the ears, throw one leg over its neck and then ram its head down to the bottom of the pail until the bubbles came up.

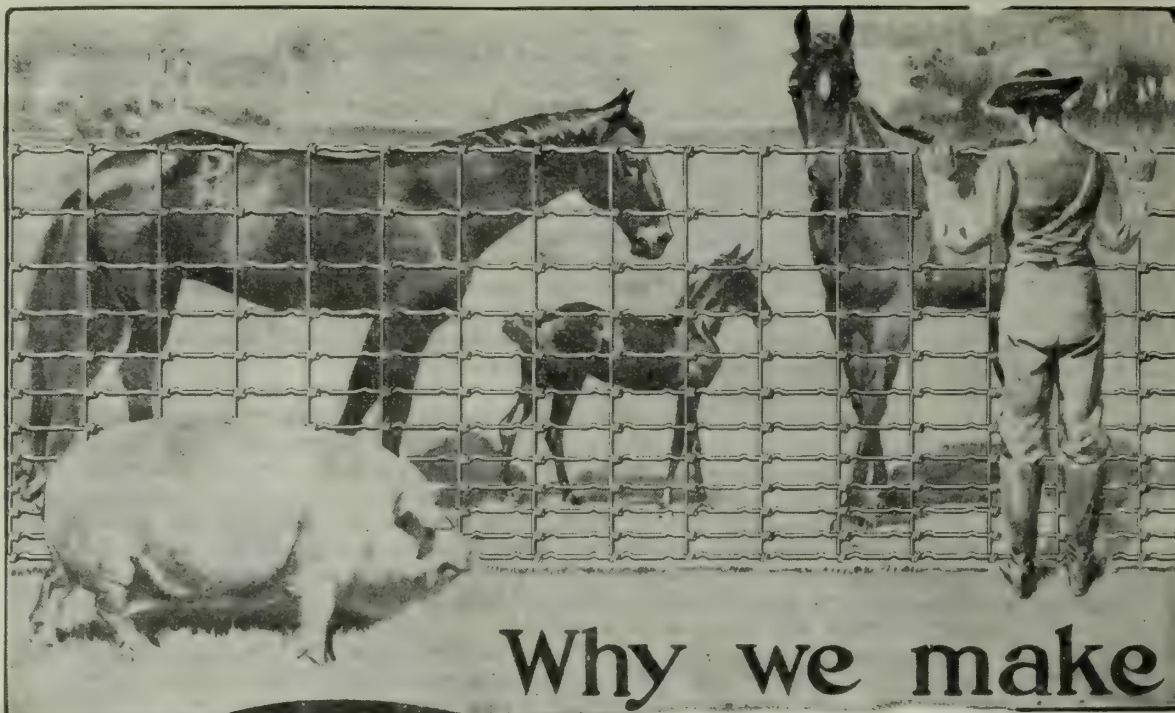
Is that the humane way to teach a calf to drink? It will kick and struggle. Why, of course; wouldn't you? Yes, you certainly would if your nostrils were down in the milk and you were drawing milk instead of air into your lungs. One should use a little sense.

Now, I will tell you how mother and the girl would accomplish this task. They would get the little one in a corner and pat and pet it, talking so ten-

derly all the time that it would never realize that it was being managed. Why, I have even seen women who could get a man in a corner and manage him so beautifully he never knew that he was being managed at all.

Well, a calf is seldom wiser than a man. A woman will dip her hands in the pail, with the finger tips showing a little above the milk, and while she is talking and stroking it, the head is pushed gently down until the lips touch the milk and grasp the fingers. So soon as it begins drinking the fingers are withdrawn. Perhaps the head may come up and the same process repeated.

A little time and patience will be required, and I have known them to drink after the first lesson; again, it may take several. But humane methods from the start will pay big dividends in the cow barn. Begin with the foundation. One cannot pet or love too much. It is an essential part of their training.



Why we make 50,000 miles of fence every month.

Every year since wire fence came into use, we have made and sold more wire fence than all other fence-makers combined. With the largest output at all times during the remarkable growth of the wire fence industry, we always "bid highest" for fence brains.

These master minds of steel-wire-making have never stopped working on wire-fence improvements.

And we make 50,000 miles of fence every month—enough to go twice around the world—because the discerning American farmer demands that much

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That's over 80% of *all* the wire fence sold, which means that four out of five farmers demand American Fence.

Now, four out of five American farmers are not *wrong* on this fence question.

They know that whenever they need fence, they can always be sure that American Fence is the best fence ever produced up to that hour and minute.

Recent improvements in galvanizing make American Fence longer lived, make it cost you less per rod per year's wear, though the price remains the same.

NOTE—I want to send you the combination key-ring, shown in the corner, with our compliments, as a continual reminder of American Fence. We register your name and number on our books, and return keys, without cost, if found and sent us.

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me how
much fence
you will need
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I will write you
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about American Fence
and send you this com-
bination key-ring, screw-
driver and bottle-opener.

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CHICAGO, AND RECEIVE REWARD.

Until a calf is three weeks old, it should be fed three times daily, two quarts of clean, warm milk each time,—98 degrees is the proper temperature. At the end of the first week a small proportion of the milk may be skimmed, and by the end of the second or third week the entire amount may be skimmed.

One should not think because that the milk is thin the calf would be able to take a greater amount. By skimming, the butter fat alone has been removed. There yet remains all the casein and other solids which will amply supply the bone and muscle forming elements necessary for the development of a dairy animal. After three weeks, the six quarts of milk may be divided into two feeds a day.

In bringing the milk up to a proper temperature, the can should never be set directly on the stove for fear that the milk may become scorched. Plunging the can in hot water is a better means of obtaining the right degree of heat.

It is not necessary to ever raise the quantity of milk, for as the calf grows older and requires more liquid, water may be added. However, a larger amount of milk may be given if a little is cautiously added from time to time.

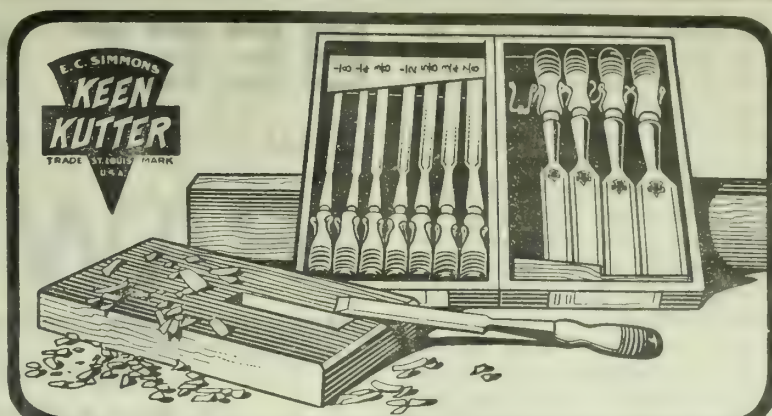
From the day of its birth it may be given clean, bright hay. The hay should not be thrown in the pen where the calf may walk over it until it becomes soiled and unfit for food, but should be put in a rack where it will be kept fresh and clean. Another very important thing in raising a profitable dairy worker is plenty of sunlight and pure air. The calf pens should be arranged so that they may be flooded with sunlight.

They must also be kept dry and clean. A little fresh bedding scattered over a wet, filthy surface is not sufficient, for the moisture beneath will prove harmful in the extreme to the rugged constitution that should be the foremost object in calf raising.

At the end of the second week a little box may be placed in one corner of the pen in which a small quantity of whole oats or bran may be put. After the calf has finished its milk, a little of the grain rubbed on its nose will soon teach it to find the box.

We now have it in a thrifty condition and if care is exercised as to the temperature of the milk, the cleanliness of the pens, the sunlight and ventilation the calf is well started on the road to a course of future usefulness.

The fall and summer calves are left in the stable until after the first flush of grass is over. We do not want to put them out while there is too much succulence in the grass, and then if there is not enough pasture they should have a soiling crop. When a heifer is from five to six months old, take away the grain.



SUCCESSFUL TOOLS

These Chisels have carved their way to fame. To-day, those who know tools pronounce the Keen Kutter the perfect Chisel Success. Tempered nearly to the handle; hand whetted; sharp and ready for use; handles of selected white hickory with leather heads.

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are all successful tools—tools that have won their way by hard, honest, true work. Every step in their success has been reached by sheer force of merit and quality. Keen Kutter Tools include—Saws, Chisels, Bits, Gimlets, Awls, Planes, Hammers, Hatchets, Axes, Drawing-knives, Pocket-knives, Screw-drivers, Files, Pliers, Glass-cutters, Ice-picks, and a full line of Farm and Garden Tools. For 37 years Keen Kutter Tools have been sold under this mark and motto:

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Make her satisfied with roughage, but give her enough roughage.

Be sure she has good, pure water. You may give her a little from the start. The old Connecticut rule is, sixty quarts of water a day for cow at flush of milk. The spring and summer calves are kept in until September, then are put on pasture.

Now, if a heifer is thrifty and well and has grown naturally, you do not want to force her, just a steady, natural growth, she should become a producer at an age of from 22 to 30 months. I should prefer to have her about 23 months old. Three months before she is about to freshen give her extra care; begin and grain her gradually at first, then until she will take with profit all that she can eat readily. Begin to groom her in order to stimulate the circulation. You may go to hundreds of farms and the horses will be sleek, but the cattle will stand day in and day out in their stalls with never a brush or currycomb touched to them. And it is far more essential for our cows to be clean than our horses, because we are to eat the product of the cow.

This heifer should be put in a stall, should be made to feel her importance. Of course, she has never been curried with a milk stool, has never been touched up with a pitchfork. You have never done any of these things if you are going to have a first-class worker.

Make her think she is of some consequence.

When this heifer is in the stall, brush her and groom her and pet her; handle the udder to familiarize her with the milking process and then, when she freshens, there will be no heart rending "breaking in," there will be no kicking and stamping around in the stall.

She may look about and step about when she hears the milk falling into the pail, but, if you give her a kindly, reassuring word, in just a day or two she will stand chewing her cud like an old cow.

Now, I beg of you, go to the old country and bring back another method, that is, of milking three or more times a day. I have heard Americans say: "It is all I can do to milk twice a day." But, cannot you see that if you had left the calf with her, from time to time it would have relieved the udder.

You have bred her to give a large flow of milk; you have fed her for the same purpose, and now that she gives it, be humane enough to take it from her and not allow her to suffer.

The first milking season should be prolonged up to the second freshening, if possible. Before she freshens for the third time, let her go dry for two months, then when she freshens you have a cow that will, as a rule, prove a profitable dairy worker.

CHAFF.

Miss Thumper.—That old gentleman cried when I played the nocturne. He said it reminded him of his past life. Is he a great player?

Mr. Chumper.—No, he used to be piano tuner.

Harold.—Newlywed is greatly worried over a thirty-day note.

Rupert.—Can't he meet it?

Harold.—It ain't that—it's a note his wife gave him t omail thirty days ago and he's just thought of it.

The cold wave was holding back, although the almanac long before had declared the arrival of autumn. "The fact is," it remarked to the Aurora Borealis, "I hate to butt in now and kill all the noble enthusiasm that inspired the indictment of the ice trust."

Lost Strayed or Stolen—One Cow

That is about what happens each year for the man who owns five cows and does not use a Tubular cream separator. He loses in cream more than the price of a good cow. The more cows he owns the greater the loss. This is a fact on which Agricultural Colleges, Dairy Experts and the best Dairyman all agree, and so do you if you use a Tubular. If not, it's high time you



did. You can't afford to lose the price of one or more cows each year—there's no reason why you should. Get a Tubular and get more and better cream out of the milk; save time and labor and have warm sweet skimmed milk for the calves. Don't buy some cheap rattle-trap thing called a separator; that won't do any good. You need a real skimmer that does perfect work; skims clean, thick or thin, hot or cold; runs easy; simple in construction; easily understood. That's the Tubular and there is but one Tubular, the Sharple's Tubular. Don't you want our little book "Business Dairyman," and our Catalog A.131 both free? A postal will bring them.

The Sharple's Separator Co.
West Chester, Pa.
Toronto, Can. Chicago, Ill.

WHAT TO DO FOR FLEAS.

Recently the school houses of Milwaukee became infested with fleas to such a degree that schools had to be closed. A cry for relief filled the land and in response to it there came scores of methods for exterminating fleas, a few of which are submitted herewith, since the question of how to exterminate fleas is frequently asked:

1. There is nothing like wool. Get pieces of wool direct from the sheep and place them in the schoolroom ten feet apart. The fleas will get mixed up in the wool, thinking it is mutton, and their rough feet hold them there, and they die.

2. We had a raccoon in our basement with fleas. We used strong boiling salt water. One application and good-bye fleas.

3. Try fly paper, placing a piece of raw beefsteak in center of each sheet, and lay around on the floor.

4. The only way to get rid of fleas is to put plenty of sticky fly paper around. Fleas, as you probably know, like light colors, and fly paper attracts them in the most satisfactory manner. Having passed through a siege of fleas I am able to testify as to its efficiency.

5. Don't fail to use pennyroyal oil. If it fails set me down with the rest of the cranks.

6. We have been troubled with fleas. Use a little sassafras oil. It may not kill them, but it will drive them away.

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This is the record of the DE LAVAL machines, which is of itself a mountain of strength beside which the records of all would-be attempting cream separators are but mole-hills.

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It means something in putting your money into a cream separator to know that you are not only getting the machine which will DAILY give you the best results, but one of which there are already many thousands an average of TWENTY YEARS in use, while the average life of imitating machines is not over five years and most of the so-called "cheap" machines of today are not likely to last two years.

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is the only guaranteed cure for Colic, Curb, recent Shoe Bolls and Calicous. It locates lameness, relieves and cures Spavine, Ring Bone, Cockle Joint, Grasses, Heel, Scatches, Catarrh, etc. Send today and get the book free and information about Dr. Tuttle's specialties. Tuttle's Elixir Co., 33 Beverly St., Boston, Mass. Mack & Co., San Francisco and F. W. Braun, Los Angeles, California Agents.

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HOME CIRCLE

PERHAPS—PERHAPS NOT!

Married in January, chilling time,
Widowed you'll be before your prime;
Married in Febr'y's sleety weather,
Life you'll tread in tune together;
Married when March winds shrill and
roar,
Your home will lie on a foreign shore;
Married 'neath April's changeful skies,
A checkered path before you lies;
Married when bees o'er May-blossoms
flit,
Strangers around your board will sit;
Married in queen-rose month of June,
Life will be one long honeymoon;
Married as July's flower-banks blaze,
Bitter-sweet mem'ries in after days;
Married in August's heat and drowse,
Lover and friend in your chosen spouse;
Married in gold September's glow,
Smooth and serene your life will flow;
Married when leaves in October thin,
Toil and hardship for you begin;
Married in veils of November mist,
Fortune your wedding-ring has kissed;
Married in days of December cheer,
Love's star shines brighter form year to
year.

WOONG OF MARY ANN.

Ezekiel Waterbury was determined to marry. He told Mary Ann Higgins so one night as he sat by the kitchen table watching her knead some bread for the morning's baking.

"It took me some time tew make up my mind, but I'm goin' tew dew it, sure as sixpence!" he said, emphatically.

Mary Ann looked at him a little scornfully.

"You ain't got spunk enough tew pop, tew begin with," she said, in lofty disdain; "an' if you have, who be you goin' tew pop tew? There ain't many decent girls tew be had just fer the askin'," she added, with a tinge of reproof in her tones.

"There's enough on 'em that's ready an' waitin'," Ezekiel answered, with equal loftiness, adding carelessly, "but if the fust one ain't agreeable I can jest ask another, bein' as how I ain't over partickler."

Mary Ann's scorn deepened considerably, but Ezekiel was in no wise disturbed. He was the owner of a small farm, several cows, a somewhat antiquated horse and lumber wagon, and had as good a garden as any man in Berryville, and besides that, who but himself had led the choir in the church for several years and carried the tunin' fork into every singin' school that the village had ever known?

Ezekiel reckoned this was recommendation enough for any man in search of matrimonial adventure.

"Mary Ann is afear'd of losin' a good home, I s'pose," he argued to himself

when left alone; "but law sakes! she needn't be, fer I wouldn't let no wife of mine lord it over Mary Ann, nohow! No, siree! She's took care of the house tew long tew git the cold shoul-der from Ezekiel Waterbury now!" And with this determination in mind, he began to think over the list of acquaintances for a wife who would be most likely to suit himself and not encroach upon any of Mary Ann's long-established privileges.

"There's no one tew be suited but me an' Mary Ann," he decided again, for he knew that his poor old mother was too demented to know or care who held the reins of government in the Waterbury establishment.

He swung the ax over his shoulder the next morning, preparatory to filling the wood box before starting his day's work, but his mind was still busy on which of the "ready an' waitin'" maidens would do as a starter for his somewhat delicate venture.

"How do you think you would get on with Anna Maria Parsons?" he asked of Mary Ann, when he had completed his morning task.

Mary Ann sniffed a little warningly.

"She an' I haven't spoke since the night of the 'spelling' bee" tew her house," she said shortly. Then she turned with a martyr-like look upon her face and added pathetically, "but don't you mind me, Ezekiel. Go on an' marry Anna Maria, if you want tew. I can go away, of course." And she raised the corner of her apron to her eyes and turned to leave the room.

"Hold on, Mary Ann!" Ezekiel called, with a sudden thought. "What dew you say to Araminta Smithers? You know she's—"

But Mary Ann would not even listen. "Araminta Smithers, indeed! The sauciest minx in the whole village! No, Ezekiel Waterbury! I'll go away at once and not wait to be ordered out by that red-headed little—"

But now it was Ezekiel's turn to fly, and he pulled the old straw hat down over his eyes and rubbed his ear reflectively as he began searching again among his acquaintances for a wife that Mary Ann would like. Suddenly a bright idea occurred to him. He rushed back to the house in a perfectly hilarious mood.

"See here, Mary Ann," he began with a congratulatory simper. "I've jest thought of the very one! I'll ask Miss Millens, the schoolmarm, on my way home from meetin' tonight!"

"An' git sot on fer yer pains!" Mary Ann responded promptly. "Ezekiel Waterbury, you must be stark, starin' mad tew think of proposin' to the schoolmarm! What on 'arth dew you think she would do in this 'ere kitchen? Why, she couldn't try out a pound o' lard if her life depended on it!" she

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RAW BONE

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WESTERN MEAT COMPANY

SOUTH SAN FRANCISCO,

San Mateo County

DOMESTIC HINTS.

Soda should be used for washing greasy things, for the alkali added to the grease practically makes soap, which does the work of cleansing.

When cleaning metal candlesticks do not stand the candlestick on the stove to melt the grease off, as people often do, for an easier and better plan is to fill them with boiling water. Don't allow it to stand any time, but pour it off and rub the candlestick well with a dry cloth. Enameled candlesticks, as well as those of plain metal, should be treated thus.

Leather that has become dull and shabby-looking may be very much improved in appearance by being rubbed over with the white of an egg, well beaten.

It is always advisable to polish new boots before wearing them, and, in order that they should take the blacking well it is a good plan to rub them over first with a cut lemon. Leave them to dry thoroughly, then black in the usual manner, and the polish obtained will be most satisfactory.

See that the iron is not too hot when ironing silk blouses, etc., as silk quickly discolors. Sprinkle the article first with water, then roll up tightly in a towel. After this it may be ironed, and the creases will readily be taken out.

Many people cannot sleep with the windows open at night in damp weather. A screen which will admit pure air and yet keep out the dampness can easily be made, according to Good Housekeeping. Take thin Angora flannel and fasten to a screen frame. Plate this in the window at night when the sash is raised. In the morning the inside of the screen will be found dry, while the outside is wet, the air having filtered through.

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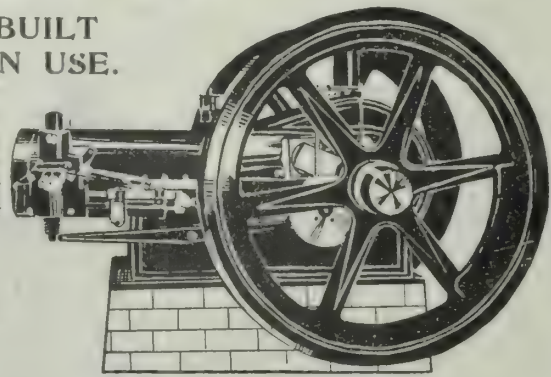
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With a Perfection Oil Heater you can heat a cold bed-room, make a sick-room more comfortable, warm a chilly hallway, heat water quickly, and do many things better than can be done with any other stove no matter what fuel it burns. The superiority of the

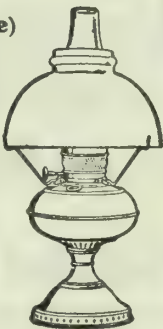
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lies in the fact that it generates intense heat without smoke or smell. The oil fount and the wick carrier are made of brass throughout, which insures durability. Gives great heat at small cost. Fount has oil indicator and handle. Heater is light and portable. Absolutely safe and simple—wick cannot be turned too high or too low. Operated as easily as a lamp. All parts easily cleaned. Two finishes—nickel and japan. Every heater warranted. If not at your dealer's write nearest agency for descriptive circular.

The Rayo Lamp

can be used in any room and is the best all-round house lamp made. Gives a clear, steady light. Is the safest lamp you can buy. Brass throughout and nickel plated. Equipped with the latest improved burner. Handsome—simple—satisfactory. Every lamp warranted. Write to nearest agency if you cannot get it from your dealer.



STANDARD OIL COMPANY

transitory, and as a consequence few are willing to take any chances in making up goods in anticipation of demand.

Some dealers are showing a handsome line of plaids with a flannel finish. These goods are particularly adapted to the cutting up trade, for ready made suits, which is operating extensively on them for immediate delivery.

The small check in greens and blues is regarded more favorably than the prominent effects for fall, and is expected to continue strong.

Paris gave its decision on stripes, especially on cream grounds, and this decision seems to be confirmed by authorities in this market.

The question of the kersey in connection with the women's wear trade is a perplexing one. A good many orders were placed early in the season, but now buyers will not take the merchandise.

Kerseys have been sold during the last few weeks at or below cost, and yet there is a feeling that the future will develop a satisfactory demand.

It is a difficult matter to secure the correct shade in brown, and certain goods on hand have been returned to the mill to be dyed black.

The same is true of broadcloths, where the brown is perhaps most in evidence. The Textile Manufacturers' Journal says that agents claim they are selling twice as many blacks as browns.

In fact, black is coming to be more and more a factor as the season progresses, especially in plain goods, though a good many fancy weaves are being shown for the coming selling period.

The combination of plaid and plain materials is a fashion note which should interest those who have frocks to make over, and the sleeves of the season, though often intricate of detail, are, on the whole, smaller than those of last year, so that even if no new material is introduced into them they can usually

Lamp-chimneys with my name on them live to a ripe old age unless an unusual accident happens to them. They never break from heat.

They give the best light, too, because they fit and are made of tough glass, clear as crystal.

Let me send you my Index to Lamp-Chimneys. It's free.

Address, MACBETH, Pittsburgh.

be successfully developed out of old sleeves.

If the old silk frock can serve no better purpose it may at least make a foundation for a frock of semi-transparent material. We have seen one delightful gray frock of new voile made up over a foundation furnished by an old gray silk frock and trimmed in bands of gray silk, also provided by the old frock. The girdle was of the voile with bands of silk at top and bottom, and the only new trimming was the net and lace of which the shallow guimpe and under sleeves were made.

This dainty guimpe, by the way, had at the collar top a narrow edge of dull silver lace through which was run a strand of coral chenille, and a cluster of tiny silver balls dangled from coral chenille strands at the base of the throat in front.

Such little touches upon guimpe, cuff, girdle, etc., often give a distinctive and smart air to a very simple frock, and the French understand in perfection the small detail. Small, dangling ornaments of silk, chenille or metal, are being used again, and often with happy effect.

FASHION NOTES.

Just at the moment there is a craze for prominent cloth finished plaids in a wide range of colors, and it does not

seem as though there was a sufficient stock of these goods to go around.

The majority of dealers, however, are of the opinion that this demand is only

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City

AGRICULTURAL REVIEW

Butte.

GOOD PRICES RECEIVED FOR CITRUS FRUITS.—The Gridley Herald, Nov. 23: Reports of the prices which the Butte county Citrus Association is obtaining for its members is most encouraging. Fruit which will reach the East in time for the Thanksgiving market is bringing \$2.50 per box for fancy and \$2 for choice. Last year the first fruit brought the shippers \$1.53 per box for fancy fruit. It will thus be seen that the prices this year are a great deal higher and the market stronger. Advices from the east to the association are to the effect that it is expected that prices will fall after Thanksgiving to \$2 per box for fancy fruit, and \$1.75 for choice. The eastern agents also state that the Florida crop this year is large and of a good quality. Twenty-five carloads of fruit have already been shipped from Oroville by the Butte County Citrus association. At present a force of sixty employees is working at the packinghouse in two shifts, one during the night and one during the day. Five carloads of oranges a day are now being packed and shipped. The growers are jubilant over the prices, as from present indications the fruit will net them a much higher price than last year, when prices were very good. The net price received last year by growers was \$1.22½ per box. This year it will apparently be much higher than this. In view of the fact that last year's prices gave them a handsome profit, the growers have every reason this year to feel doubly encouraged.

Colusa County.

TO COMBAT THE PEAR BLIGHT.—The Tri-Weekly Colusa Sun, Nov. 20: The crusade against the pear blight which has attacked many of the orchards throughout California is to be vigorously prosecuted. Both the National and State governments, assisted by county officials, have taken steps to suppress the evil which threatens to ruin one of California's greatest industries.

Arrangements have been made to make the first tests to find the best means of combating with the pear blight next Wednesday in the orchards of W. J. Smith, one of the largest growers in the Sacramento river, on Grand Island. It is proposed to put in the entire day with the experiments. Trees affected by the blight will be pulled up, and then an analysis of the roots will be made. Next the scientists will turn their

attention to the trunks and the boughs of the trees.

A large number of people interested in the work of eradicating the blight will be on hand at Grand Island. Among those who will be present will be Professor M. B. Waite, the expert sent out by the United States Government; Lieutenant-Governor Alden Anderson, a large grower of fruits and the head of the California Fruit Distributors; State and county horticultural officers, county officers and fruit growers from all the down-river fruit growing section.

"In this connection," said Mr. Anderson, "it might be of considerable benefit to people interested to know that in this county alone there are 350,000 pear trees, which bring in an annual income of \$10 each."

Lieutenant-Governor Anderson said fighting against the pear blight is of the greatest importance, not only to the growers of this county, but to the entire State.

Placer County.

CARNATIONS FOR ENTIRE COUNTRY.—The Evening Bee, Nov. 20: Following close on the heels of the fruit season, just closed, comes the opening of the season for shipping carnations, or rather rooted carnation cuttings.

This is an industry comparatively new in this county, and one of which probably little is as yet known, outside of those actually engaged in the business.

Started about five years ago by an Eastern florist who came to Loomis for his health, and who saw in our mild winter climate exceptional advantages for the outdoor cultivation of this beautiful flower in its many varieties, the pleasant and profitable nature of the pursuit at once interested others, and the result is that Loomis now enjoys the unique distinction of having the largest acreage in the world devoted to the exclusive rooting of carnation cuttings for the trade.

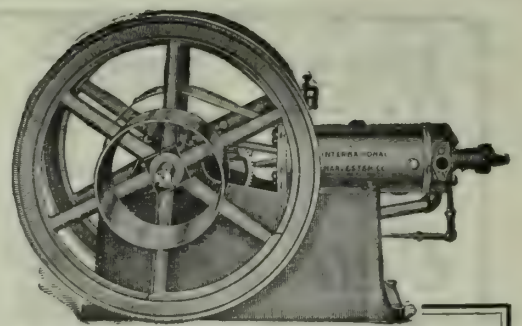
There are grown at present about sixty varieties, and the rooted cuttings range in price from \$10 to \$120 per thousand.

Shipments have just begun and will continue to go forward by express until April 1, going to florists all over the United States and Canada, who from these rooted cuttings will grow the blossom which is fast displacing the rose as a decorative flower.

Shasta.

HEAVY FRUIT SHIPMENT.—The Sacramento Union, Nov. 22: During the week past the Sanitary Fruit company has received from the growers one mil-

Success and Failure



ALL the difference between success and failure in thousands of instances is moisture.

In many cases the water is present but cannot be gotten upon the land for want of the proper means.

An I. H. C. engine will convert failure into success by putting the water onto the land.

This engine is readily belted to any centrifugal or other pump for lifting water from deep or shallow wells, ponds, irrigation canals, flowing streams, etc.

They will lift and distribute more water in a given time for less labor and fuel than any power on the market.

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which we have just issued called "Farm Science" contains the best and latest Agricultural information. It is intensely practical and covers a wide range of essential subjects. Mailed for three 2-cent stamps. Write today.

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lion pounds of dried prunes; also for the Warren company of Chico, one hundred and forty thousand pounds, which is now stored in the bins at their packinghouse. Fearing the building would not sustain a greater weight they have stopped receiving more until that which is now in the bins has been shipped. Yesterday this house packed and shipped 140,000 pounds of prunes in 50-pound boxes. Today they sent out a car of 91,000 pounds; also one 80,000-pound car of dried Bartlett pears and have ready for shipment tomorrow two carloads of prunes weighing 160,000 pounds. So far this season the California Fruit Cannery's association packing-house here shipped of this year's crop 15,000 boxes of dried prunes in 25-pound boxes to England and to Eastern states 10,000 boxes of dried prunes, 10,000 boxes dried peaches and 5000 boxes dried pears. This fruit was packed in 25- and 50-pound boxes, aggregating 40,000 boxes dried fruit already shipped by this packing-house to date. Before the dried fruit crop of this territory can be delivered and packed at the present rate of progress the dawn of the new year will have arrived.

Sonoma County.

LOCAL BIRDS WIN ALL PRIZES.—The Petaluma Argus, Nov. 20: Harold

R. Campbell arrived home from the San Jose Poultry Show on Sunday night, loaded down with blue ribbons and silver cups and other prizes. His barred Plymouth Rock fowls carried everything before them and he wears a proud smile. In addition to the prizes which he won, Mr. Campbell took orders for fancy fowls which aggregate several hundred dollars.

Although there were over 1000 fowls on exhibition, representing the best in the State, Mr. Campbell walked away with the first and second prizes for cockerels; first and second for pullets and first and second for hens. Also the first prize for cocks and first prize for best breeding pen. He received a silver cup for the best display, and a hand painted salad dish for the best cock, cockerel, hen and pullet.

Sutter County.

FALL TOMATO PACK.—The Evening Bee, Nov. 20: The Armsby Preserving Company's cannery here finished the fall tomato pack yesterday, thus completing the work for the year. Owing to the fact that the cannery building was burned, and had to be completely rebuilt, the pack has been comparatively light this season. Next summer the company expects a heavy run, and will probably

Warranted to Give Satisfaction.

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A Safe, Speedy and Positive Cure for Curb, Splint, Sweeney, Capped Hock, Strained Tendons, Founder, Wind Puffs, and all lameness from Spavin, Ringbone and other bony tumors. Cures all skin diseases or Parasites, Thrush, Diphtheria. Removes all Bunches from Horses or Cattle.

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All about Bees and Honey

The Bee-keeper's guide to success. The Weekly

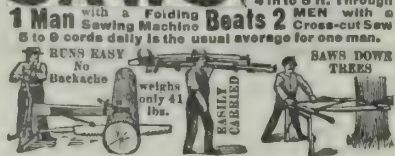
American Bee Journal

tells how to make the most money with bees. Contributors are practical honey producers who know how. Interesting—Instructive. \$1 per year; 3 mos. (13 copies) 25c. Sample free.

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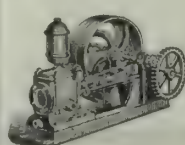
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SAN FRANCISCO ONLY



handle a good share of the fruit and vegetable products of the county, furnishing employment during the summer and autumn to several hundred men, women and children.

San Luis Obispo County.

THE PRUNE YIELD.—San Luis Obispo Tribune, Nov. 20: The prune growers of California will receive \$2,500,000 more for their crop of 1906 than was obtained by them for the crop of 1905. This is the estimate made by A. W. Porter, of the J. K. Armsby Company, of San Jose, to be used upon market conditions, with which Porter is familiar.

Tulare.

OPENS ON THE FOURTH.—The Alta Advocate, Nov. 23: Word has been received that Governor George C. Pardee has accepted the invitation of the Fruit Growers' Convention, and will be here on the opening day of the convention, December 4. From present indications the convention will be one of the largest ever held in the state. The local committees who are making preparations for the entertainment of the visitors are doing everything possible to make every one who attends enjoy themselves, when they are out looking at the sights of interest in and around Hanford. Excursions are being arranged to all the principal points. The finance committee is meeting with much success, as the business men are coming forward remarkably well, so that the visitors when they return to their home will have only words of praise for this county and the people as well. The committees will meet next Wednesday at 2 o'clock, when final arrangements will be made. This will very likely be the last meeting before the convention and a full attendance is desired. The nurserymen from Oregon and Washington have engaged a special train and are coming down in a body, and it is thought that they will also have a big meeting, which will be

held in connection with the Fruit Growers' convention.

Yolo.

THE FRUIT FAIR.—The Winters Express, Nov. 23: F. W. Power of Chico, president of the California Nurserymen's Association, called on Secretary John Isaacs, of the State Horticultural Commission, Saturday relative to the Hanford fair, which is to be held next month. He says the interest attached to the fair by the nurserymen and fruit growers of the state is surprising.

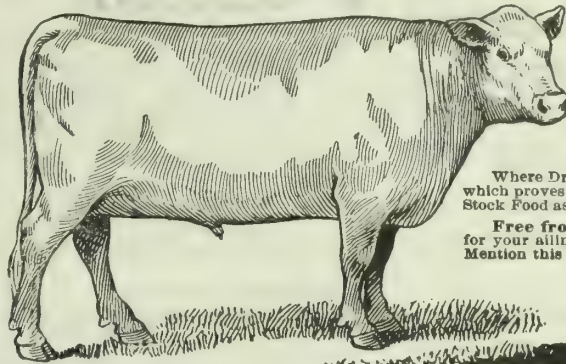
From Scrawn to Brawn

The difference between the scrawny animal and the thrifty one is not usually due to the amount of food consumed but the amount digested. In fact, the scrawny animal frequently consumes more. It is a vital point to see that there is a gain in weight each succeeding day sufficient to cover cost of feed and labor, otherwise, you are feeding at a loss. Such a condition can be brought about, and the scrawny animal converted into a brawny, thrifty, profitable one, by adding



DR HESS STOCK FOOD

the prescription of Dr. Hess (M.D., D.V.S.) to the regular ration twice a day. It compels the rapid development of bone, muscle, milk fat, etc., and insures perfect health and condition. It produces this extra profit by supplying the animal with bitter tonics, which improve the digestion, strengthening every function of assimilation; by increasing the flow of intestinal juices; by stimulating the parastaltic action of the bowels (that churning motion that brings the contents of the bowels in constant contact with the minute cells which absorb the nutrition); by supplying iron for the blood, nitrates to assist nature in expelling waste material from the system; and by supplying laxatives to regulate the bowels. Professors Quitman, Winslow, Dun, and all the noted medical writers indorse these ingredients for producing the results above mentioned. Besides, Dr. Hess Stock Food is sold on a **Written Guarantee**.



100 lbs. \$7.00 25 lb. pail \$2.00

Smaller quantities at a slight advance.

Where Dr. Hess Stock Food differs in particular is in the dose—it's small and fed but twice a day, which proves it has the most digestive strength to the pound. Our Government recognizes Dr. Hess Stock Food as a medicinal tonic and this paper is back of the guarantee.

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Also manufacturers of Dr. Hess Poultry Panacea and Instant Louse Killer.

Instant Louse Killer Kills Lice.

THE PETALUMA INCUBATOR CO., Petaluma, California, Pacific Coast Distributors.

He has just come from a tour of Superior California and Oregon. He reports that a larger delegation than ever before will come down from the north to attend. "The co-operation of the fruit growers of the north with those of the south is becoming more noticeable every year," he said, "and the work this alliance will be able to carry on will be of great benefit to this state. The Hanford fair this year will demonstrate this. Many northern nurserymen are coming down to attend. I found the condition

of the orchards in Superior California of the best and it is encouraging."

Yuba County.

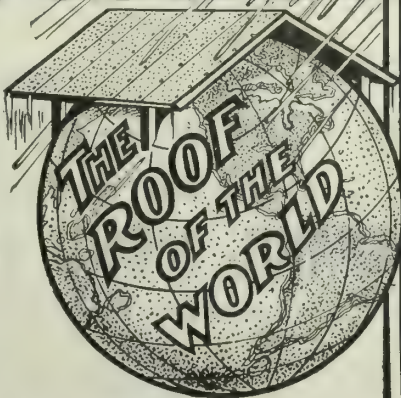
WINE GRAPES SHIPPED.—The Semi-Weekly Democrat, Nov. 19: J. W. Blevin, the Yuba City representative of a Sacramento winery, has just closed a very successful season, shipping in all sixty carloads, or something over 1200 tons of wine and other varieties of grapes from Sutter county to his institution. The business will be continued under contract for four years.

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The true worth of a roof is figured on the actual service it gives.

A leaky roof not only damages the building, it endangers the value of the goods within, or the health and comfort of the occupants.

For every kind of roof—



is a permanent protection—absolutely weather-proof, fire-resisting and practically wear-proof. That wear-proof surface of hard flint sand is a money-saver. Booklet "B" tells all about it. It is free with prices and samples.

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BRONZE Turkeys and Eggs—Ed Hart, Clements, Cal. Large Size, good plumage, early maturity.

COPPIN & SONS, Cottonwood Farm, Pleasant Grove Cal. Belgian hare and homer pigeons, 25 to 50c. each

L. W. CLARK, Petaluma, Cal. White Leghorns, the white kind that lay lots of large, white eggs. Just hatched chicks a specialty, will travel 1000 miles in perfect safety.

SINGLE COMB WHITE LEGHORN AND INDIAN Runner Ducks—Eggs \$1.50 per setting; \$6.00 per hundred. Send for illustrated catalogue. John P. Boden, 1338 Second street, Watsonville, California.

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GEO. V. BECKMAN, Lodi, San Joaquin Co., Cal. Registered Poland-China Hogs, both sexes.

BERKSHIRES—Prize Winners—bred from prize winners. Boars all ages. T. Waite, Perkins, Cal.

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W. SULLIVAN, Agnews, Cal. State Vice-President N. S. C. B. O. Club

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Two thorough bred Shorthorn Heifers, one four years, one eight months old. Also one thorough bred Shorthorn Bull four years old, bred by J. L. LOVE of Malon, Mo. Pedigrees furnished. Apply to A. B. HUMPHREY, Mayhews, Sacramento Co. Calif.

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Glenn County - California

FOR SALE**IN SUBDIVISIONS**

This famous and well-known farm, the home of the late Dr. Glenn, "The Wheat King," has been surveyed and subdivided. It is offered for sale in any sized government subdivision at remarkably low prices, and in no case, it is believed, exceeding what is assessed for county and State taxation purposes.

This great ranch runs up and down the west bank of the Sacramento River for fifteen miles. It is located in a region that has never lacked an ample rainfall and no irrigation is required.

The river is navigable at all seasons of the year and freight and trading boats make regular trips.

The closest personal inspection of the land by proposed purchasers is invited. Parties desiring to look at the land should go to Willows, California, and inquire for P. O. Elbe.

For further particulars and for maps, showing the subdivisions and prices per acre, address personally or by letter

F. C. LUSH,

Agent of N. D. Rideout, Administrator of the estate of H. J. Glenn, at Chico, Butte County, Cal.

FOR LEASE

Sale or exchange for bay property—50 acres apples in Corralitos near Watsonville, 8 years old; 8156 boxes last year; easy liberal terms, immediate and certain income.

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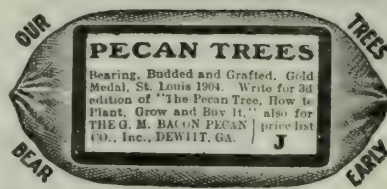
Burbank's Crimson Winter Rhubarb
Our Specialty.

Now is the best time to plant. \$1.50 per dozen, \$7.50 per 100, \$50 per 1000. We still have a few thousand of Fancy Navel and Valencia Orange Trees.

WAGNER'S NURSERY,

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Pasadena, Cal.

**Placer Nurseries****FRUITS THAT PAY.**

We make a few suggestions concerning the planting of fruit, and being Fruit Growers and Fruit Shippers, as well as Nurserymen, we know whereof we speak.

The California fruit industry is growing and prosperous, even though a great many orchardists are not successful.

CHERRIES—Where soil and location are suited there is no better investment. Pacific Coast cities consume them in large quantities at good prices. Canners buy them in bulk at a remunerative figure, while packed they sell at fabulous prices east and for several years shipments from various districts have sold averaging from \$2,500 to \$4,000 per car. California Cherries have no competitor. Being now intelligently distributed to a population of 80,000,000 people there is little danger of over-production.

PLUMS FOR MARKET—Plums are grown in the east and south, but nowhere do they attain the size, the shipping quality, nor the degree of perfection of the California grown fruit. California Plums have little competition on the eastern market. They are rapidly growing in favor and will continue to be a profitable crop.

PEACHES—For eastern shipment our peaches come into competition with others grown east and south. However, the long season, the large size, the superior flavor, and above all, the shipping quality of California

Cox Seed Co.

Wholesale Seed Merchants and Growers

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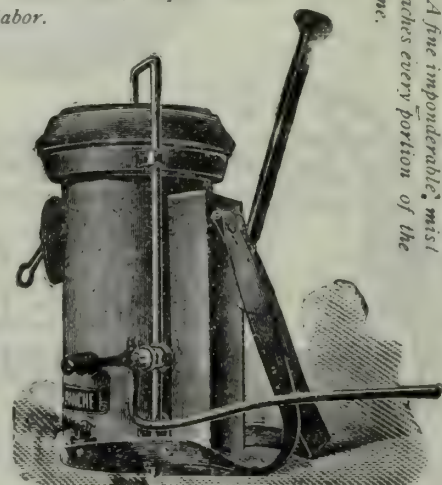
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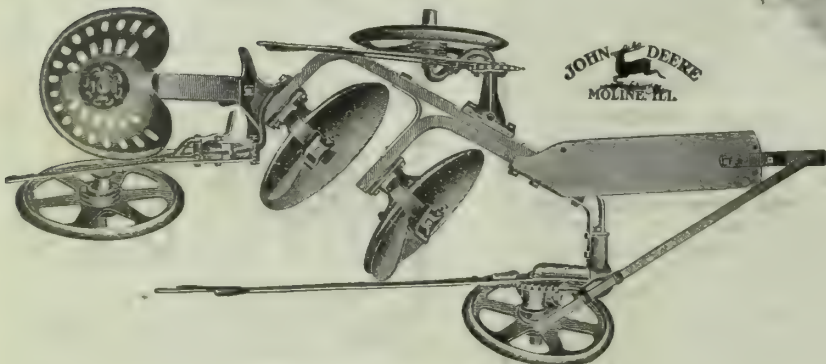
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Langdon, N. D., November 16, 1905.

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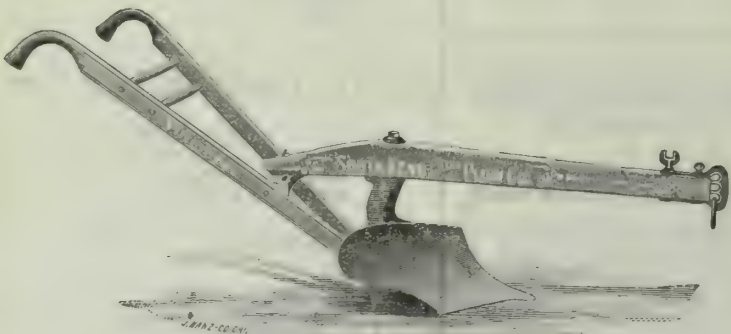
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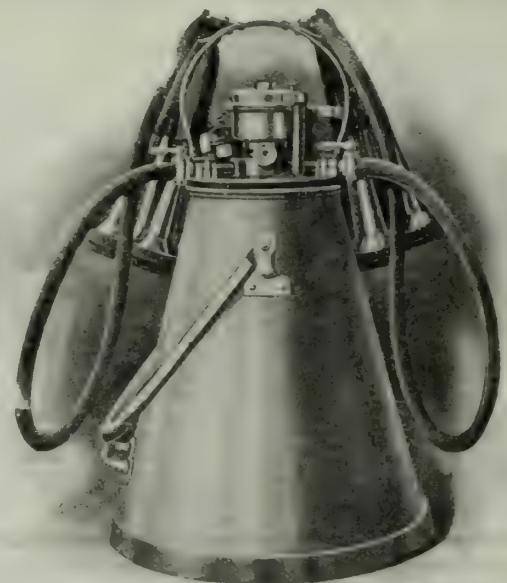
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THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

LXXII. No. 23.

SAN FRANCISCO, SATURDAY, DECEMBER 8, 1906

THIRTY-SIXTH YEAR

SOIL EXAMINATION BEFORE FRUIT PLANTING.

We have already indulged twice of late in discussion of the behavior of fruit trees on deep and shallow soils, particularly in reference to root development. This is a thing seldom seen, because it is only a professional investigation or a very curious grower who will shift enough ground to see how the root system of the tree is developed. Fortunately it is not necessary that everyone should undertake excavation because the top growth of the tree generally will tell its story if one knows how to listen to it, or to put forth visible signs of distress if one knows how to discern them. We have several pictures on this page showing trees on poor places and having such root systems as were illustrated in our issue of November 10. The first picture shows a surviving apricot on a piece of hard pan, all its companions having perished and been cleared away. This tree is obviously in straits, but by finding a crevice to the hardpan, or having an exceptionally vigorous root system, it has outlived its neighbors. The second picture shows almond trees on hardpan, stunted, brushy, scant in foliage, and altogether unprofitable. The last picture shows an abandoned orchard from which cultivation has been withheld because it paid nothing. This is an utter waste of land aside from the bad name which it gives a locality to allow such trees to stand indefinitely, advertising their shame. Such places should be cleared up, the trees made into firewood, and the land allowed to do its best, even if it is only the growth of pasture in the rainy season.

But the chief lesson from the pictures is the warning not to plant fruit trees in such places, but to ascertain before planting what is the character of the subsoil. This does not require soil analysis in all cases, though in some cases it is indispensable to an understanding of the situation. In the soil circular recently issued by the University Experiment Station, and from which we quoted at length in our issue of November 24, Professor Hilgard gives suggestions of very simple ways in which a farmer can prospect his own subsoil and reach very valuable information. He shows that it is clearly necessary that not only the existence of underground layers be definitely ascertained, but also that their particular nature be considered with respect to the kind of surface soil, and to the practically feasible or profitable uses to which the land is intended to be put. The following is Prof. Hilgard's statement:

Outside of adobe tracts, an exceedingly simple and effective device for subsoil examination is a square steel rod not less than a quarter of an inch in diameter, well pointed at one end, and provided at the other with a stout iron ring for the reception of a cross-handle, such as is used for post-hole augers. With such a prod or sounding-rod, not less than five feet in length, and made to penetrate the soil by means of a slight reciprocating motion aided by the weight of the operator, the exploration of the subsoil for hardpan, dense clay layers, or bottom water becomes a matter of a few minutes; and a few hours' time suffices to thus explore extended tracts, and perhaps save bad investments of thousands of dollars; or, at the very least, to convey very valuable information as to the probable defects or virtues of the land, not only with respect to root penetration, but also with regard to irrigation, drainage, etc. It is easy also to detect thus, with a little practice, the presence of underlying layers of quicksand, gravel, or other loose materials through which irrigation water would waste,



Apricot Tree on Hardpan.



Almond Orchard on Shallow Soil.



Neglected Orchard Which Should not be Allowed to Cumber the Ground.

or which would present the capillary rise of bottom moisture within the reach of plant roots, by the large interspaces between their grains. Any remaining doubts as to the nature of such underlying materials at particular points can then quickly be settled by the use of a post-hole auger. The latter serves also most conveniently for the taking of samples to be submitted for examination by the Station; but it should be remembered that in no case should any one sample represent the average of more than one foot in depth; and that whenever a material change of resistance to the auger's penetration is observed, the depth at which such change occurs should be noted, and a sample taken of the material causing such change, again not to exceed in any case the additional depth of one foot.

The extreme depth to which the boring and taking of samples should reach depends not only upon the nature of the soil, but also upon that of the crop expected to be planted. The tap-roots of a pear tree will in almost any soil require, for normal development, a depth of six feet at least; hence pear trees should never be planted in shallow soil. Almonds and peaches, on the other hand, will be content with half that depth, if necessary, provided the soil be rich enough and the supply of moisture adequate, but not excessive.

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THE WEEK

Our comments in our last issue upon the breaking of the north wind and the beginning of rains were about a week ahead of time, for the norther reasserted its sway and the rain was quickly swept into memory. The aspect, as we write, is that all the delight we prophesied will be realized, but a little later than we anticipated. It only means that the season will be shorter and work will be more hurried. We are finished with worrying about seasons, because we have seen the gloomiest forebodings of dry years drowned in heavy rainfalls and the brightest anticipations of abundance dashed by drouth. Our conclusion is that California weather comes out about right most of the time and the only way is to proceed with seasonable work and rational plans for improvement and the results will warrant such confidence more times in a decade than in any other part of the earth where men live and work. And this is about all we know about it.

We have something on another page about the millions of restless Hindus who have heard of great chances in America and are preparing to embrace them. This report from Hindustan is complemented by reports of the arrival of these wanderers on the coast. It seems, according to reports from Seattle that Hindu laborers driven out of British Columbia have begun to flock into Washington, seeking for work. The immigration officers are helpless to prevent their coming, for the Hindus have money enough to guarantee their present needs. British Columbia authorities, alarmed over the probable effect of the Hindu immigration, have tried to prevent the influx into that province, but because the Hindu is a British subject the officials have been unable to do so. Popular sentiment and the failure of the Hindu to get work is diverting the immigration to Seattle. During the past week alone 1000 are said to have arrived in British Columbia.

As we have said elsewhere these Hindus are appearing in California and are getting busy at various jobs, being chiefly noticeable by their complexions and their head gear. They are well behaved and earnest at whatever they undertake and they will be quickly made use of in the shortage of labor supply, which bids fair to be more oppressive in California during the coming year than hitherto. So long as they keep away from the large towns and distribute themselves through the country and the small towns they are likely to excite no opposition and to help out the labor situation notably. The present issue over the Japanese in the schools of San Francisco, which is assuming international proportions, is what may be expected when thousands of Asiatics congregate in the cities. If the Chinese had not made Chinatowns in the cities the issue against them would not have been made. The Japanese are less desirable as farm laborers, but they are serving rural purposes and with all their defects it would cause great losses to dispense with them. We do not know how the Hindus will rate in the scale of agricultural efficiency, but they will have to be pretty poor if they do not help out in the present emergency. It is not a question of what labor a California farmer would prefer, it is what kind can he get and he does not look

with much favor upon claims and policies which bid fair to make it impossible for him to get at all.

As we have repeatedly shown, the scarcity of agricultural labor is not peculiar to California and consequently our farmers cannot be urged to "provide better for their men and hire them by the year as they do back East." This exhortation may have a certain grain of truth in it but that it is altogether inadequate and inapplicable to the present situation is seen from the fact that East, South, and West are all alike in the scarcity of farm help in spite of the free Caucasian Immigration which is going on. No change in the California method of hiring and housing has anything to do with the present situation, though it may have had some pertinency when it began to be urged and when the West had but lightly drawn upon the Eastern supply of young Americans. The great development of the West has simply absorbed that supply and the men who composed it are now largely land owners in the West and need help to proceed with their undertakings. Perhaps a more striking side light could not be thrown upon the whole American condition in point of farm labor than the experience of Southern cotton growers in attempting to supplement the negro labor. The State of South Carolina is doing something in its own interest. The landing and distribution of the first shipload of European immigrants at Charleston under the plans of South Carolina's commissioner of immigration was watched by the editor of the Charlotte Chronicle. He found them to be of a higher class than those arriving at New York. The men were strong and healthy looking, the women well dressed and with carefully laundered linen in their trunks, while all had money in their purses, some with sufficient to buy small farms. There was no chance to secure any servants among the shipload, as they all had plans completed and some were picking cotton in South Carolina fields a few days later. Other shiploads are arranged for.

Speaking about cotton we are reminded that the cotton growers of Texas are moving toward the protection of the business and of their business very much as the wool growers of the Rocky Mountain States are planning to do. Officials of the Farmers' Union in Texas state that they will soon have ready 200 cotton warehouses in that State in which it is intended to store the cotton output of Texas for a steady and level supply to the buyers. It is estimated that it will be possible to store, indefinitely if necessary, 750,000 bales of cotton. The association declares that a reasonable advance in money will be made to any farmer who is unable to carry his crop without financial assistance. The warehouses are to be bonded and thus prepared for the loaning feature. California has had plenty of movements in that direction: First in wheat and later in fruit and other produce and though all that was planned for was never reached, it cannot be denied that much good was accomplished by the effort of the farmers to help themselves and the end of such enterprises is not yet.

It is an interesting fact to Californians that though American trade with Bordeaux covered purchases from the French amounting to about one and a third million dollars more in 1906 than in 1905, there were smaller purchases of certain things which California is producing, viz: brandy, \$16,888; preserved fruit, \$28,097; olive oil, \$59,914; still wines, \$63,344; and nut oil, \$29,310 in all cases the amounts being the decline in the quantities purchased.

There seems to be some apprehension at Fresno that the petition, which the papers say the University is making for a partial distribution of the Kearney estate, is undertaken with the intention of using the Kearney money for the pursuit of educational work elsewhere. It is even said that the University intends to use that money in connection with the University Farm at Davisville. As we understand it all such apprehensions are unnecessary. The petition for a partial distribution of

an estate is about the only way that the heirs can begin to secure a settlement of their claims and standing. It simply precipitates the question of what condition the estate is in and what claimants will appear. It acts to cause the executors to set forth the condition of things from their point of view. It is apparently the duty of the University to raise this question and we cannot see how it gives any indication at all of what it is intended to do with any part of the property which may be distributed. It all looks to us like a little unnecessary alarm and apprehension.

We had a pleasant talk the other day with Prof. W. E. Hansen, of South Dakota Experiment Station, who had just reached California from a tour of the world, in search of rare specimens of plants and trees that would be of economic value to the farmers of the United States. He believes he was eminently successful in his mission. He left Washington on July 17th last, going direct to England, and thence to Lapland, Norway, and Sweden, Finland, and across Russia and Siberia to Vladivostok, and from there to Japan and California. He found some plants that are entirely new to the United States, which may be of particular value to agriculturists in the Northwest. "One great trouble in the West," says Prof. Hansen, "has been to grow plants in what used to be known as the desert sections, and some of the plants which I found will, I believe, thrive there, thus decreasing the area of the desert, and at the same time afford food for livestock, upon which man depends in large measure for his success in that portion of the country."

Californians who are troubled almost unspeakably by delay in transportation and lack of cars may derive some consolation from the fact that this is not a local trouble alone. It is reported from the Department of Commerce and Labor. Internal commerce movements during October, 1906, compare favorably with those of the corresponding month of last year. While there was an appreciable decrease in the grain, livestock, and provision movements at interior markets, as compared with corresponding receipts and shipments in 1905, movements in nearly all other lines of trade appear to have been particularly active. Coal and iron shipments and coke production were extremely heavy, and were indicative of industrial progress in the iron and steel industries. Car shortage during the month was felt in all sections of the country, and long delays in the delivery of freight were of constant occurrence. With regard to the first ten months of the current year, all trade movements, with but few exceptions, appear to have been far heavier than those for corresponding periods of either 1905 or 1904.

QUERIES AND REPLIES.

BLACK WALNUT TIMBER.

To the Editor: I am a resident of the upper Sacramento valley and am considering the advisability of planting ten acres of ground there to black walnut trees, having in mind their value for timber in say about twenty or twenty-five years. Will you be kind enough to tell me what you think as to the advisability of this also the soil, water and cultivation requirements of this tree, method of starting, transplanting, etc?—SUBSCRIBER, Tehama county.

Black walnut trees will thrive on deep soil where a good moisture supply can be expected. The trees can be grown readily from the nuts which have been kept moist since gathering, or seedlings can be purchased at reasonable prices from the nurserymen. Either planting the nuts in place or using young seedlings will succeed and the land can be cultivated for ordinary field crops for several years while the trees are growing. The black walnut will grow on uplands and endure considerable hardship, but under such conditions is not likely to make the rapid, straight growth which is desirable for timber purposes.

BASKET WILLOW GROWING.

To the Editor: A party in this city who desires to establish a factory for the manufacture of willow baskets writes for information concerning lands suitable for the growing of the basket willow. I know that experiments have been made with the willow in California and would like to learn whether you think it can be grown commercially on our low lands. Any information you can give me about the basket willow and land suitable for its growth will be greatly appreciated.—READER, San Francisco.

Basket willows have, as you say, been successfully grown in California for a great many years and there is no difficulty about producing them in any quantity and most excellent quality. Naturally, low, moist lands are well adapted to their growth, but we have seen their satisfactory growth on land not in the river bottoms in places of the State where the rainfall is quite large. As with most things, there is some danger of overgrowth on our very rich and most moist, bottom lands and for securing medium sizes most useful in basket work, land of medium quality might be more desirable. The question concerning basket willows in California is not whether they are growing and producing well, but whether the manufacturing side of basket weaving can profitably use as much as can be grown. Nearly all the popular European varieties have been introduced and are now growing in different parts of California.

ASPARAGUS AND BEANS.

To the Editor: As I am to be interested in the renting of a 330-acre Sacramento river ranch, I would like you to give me names of books on dairying, asparagus and beans. Which would be the better way to start asparagus, say twenty-five acres of it? Would it pay me to set out the plants on a five years' lease?—INTENDING FARMER, Sacramento.

There is no book on dairying in California. Our book on California Vegetables gives elementary information on the growing of asparagus, beans and other vegetables in California. It seems to us that a five year's lease would be rather a short time to reap the advantage of asparagus planting, although it might be worth while. You would, of course, begin with yearling roots, cutting nothing the first year and cutting lightly the second. This would give you the third, fourth, and fifth years for a profitable crop. You could learn much about this business by taking a day or so among the asparagus growers north of Sacramento, and down the river as far as Vorden, or farther if you have patience to look into the matter personally.

NO PEAT IN CALIFORNIA.

To the Editor: Will you kindly give information on the subject of peat or peat bogs? Also, where is the nearest peat bog of any consequence.—ENQUIRER, Berkeley.

Although there is very much soil in California partly made of decomposed vegetation which is called "peat" soil, there is, as we understand it, no true peat and no true peat bogs in California, as the formation is too recent.

TREES FOR THE MOJAVE PLATEAU.

To the Editor: I would like to know what would be the best thing to plant for a windbreak here in the Antelope valley, on the edge of the Mojave Desert. The elevation is about 3000 feet and the climate very dry. We have a great deal of wind, which is hard on orchard trees, and I would like to find something which will grow tall and make a good thick windbreak. The soil is a decomposed granite, very deep, with no hard-pan, so that roots can penetrate very deeply into the soil. While our rainfall is light, at the same time we have irrigating water, and I would expect to keep the ground moist in this way. The *arbovitae orientalis* has been recommended, but this does not grow tall enough; do you think the *arbovitae occidentalis*, commonly called white cedar, would do, and if so, what variety would you recommend? Or, the *arbovitae gigantea* grows still taller, but do not know whether either of these would stand the climate, even with plenty of irrigating water. The Monterey cypress dies out, and for this reason does not answer the purpose well. The Monterey pine also seems to die more or less, and, besides, the foliage is

not very thick. Can you suggest a tall-growing tree that can be planted close enough together to make a good windbreak without dying out, and that will stand the hot, dry climate?—FARMER, Littlerock.

This goes beyond our knowledge, and we print the questions hoping to attract the information from wiser persons. It is not only the heat which the trees have to contend with but an occasional drop to lower temperatures than are experienced in our valleys. Nothing but observation in this or similar regions will enable one to answer the questions. We commend our correspondent to a careful reading of the discussion of trees under Nevada conditions by the Nevada Experiment Station, which we recently published at length. Also we hope to hear from others.

CUTTING BACK NURSERY STOCK.

To the Editor: In nursery stock, is it safe to cut seedlings back to the bud now? If not, how soon can they be cut back?—SUBSCRIBER, Merced.

Cut back in the spring about the time that the buds begin to swell. It is not only better to keep on the top to protect the bud during winter-working of the soil, but when the sap is active the healing of the stub is quick and dying back by drying of the stock is prevented.

NOTHING DOING HERE WITH CURCULIO.

To the Editor: I know you will think it strange I write you for information, but after seeing your plums and peaches on this market for the past four years, free from curculio, and having fought this for several years, with much labor and small success, I appeal to you. I have sprayed with Paris green and have used the sheets (being more successful with the sheets) and if you know any new application to apply to this pest I will send money for it. I have a mixed orchard near this city of about 1500 trees, just coming into bearing. I have all other insects dangerous to fruit culture under control but the "little Turk."—FRUIT GROWER, Memphis, Tenn.

We regret to inform you that we cannot give you any information whatever concerning fighting the Curculio. This is a pest which has never appeared in this State, and we have always been sincerely glad of it. Your description makes us gladder than ever.

BROWN ROT OR SHOT HOLE.

To the Editor: My apricots were badly affected with what seemed to me the same disease ("brown rot") as the peaches. Permit me to ask if they too (the tree) should be sprayed in December with the same preparation as the peaches?—GROWER, San Jose.

If your apricots are affected with brown rot, a large part of each affected fruit, perhaps half of it, has turned brown, while the balance still remained green. If you have shot hole fungus your apricots have a great number of small reddish-brown spots scattered over the fruit. You must judge from the appearance of the fruit whether you have one disease or the other. Fortunately, they are both checked by the same treatment, a thorough use of the Bordeaux mixture, such as has already been described for the peaches. If, however, by watching early in the summer you see a tendency of the fruit to become spotted while quite small another application of the Bordeaux mixture, about half the strength, which is used in the winter, should be applied. This, of course, cannot be done after the fruit becomes of good size, because there is danger of spotting it.

HOW FLEAS ARE DESTROYED IN INDIA.

Consul-General Michael, of Calcutta, reports that the Agricultural Research Institute of Bengal, has just concluded a series of scientific experiments to determine the method of destroying fleas.

A leaflet issued by the Imperial Entomologist says that the best manner of destroying fleas, with special reference to checking the ravages of plague is free use of crude-oil emulsion, which consists of 80 per cent of crude petroleum mixed with 20 per cent of whale-oil soap. This combination makes a jelly which mixes freely with water, and is generally used at 3 per cent solution. At 10 per cent it destroys fleas with perfect certainty. It is applied to the floors and walls of houses by any garden sprayer. An animal washed with the emulsion will be entirely relieved of the pests.

HORTICULTURE.**A REVIEW OF THE PEAR BLIGHT WARFARE.**

By Prof R. E. Smith of the University of California Experiment Station in the California Fruit Grower.

With the approach of another winter in handling of pear blight and the general subject of the situation in regard to this disease in this State become of the greatest importance in the consideration of this industry. The efforts which have been and are being made for the suppression of this disease are well known. The last legislature made available about \$10,000 to the State experiment station for this purpose, the United States Department of Agriculture had seven men in the State last winter on this work and is about sending out another party for the present season, many county boards of horticulture have been very active in pear blight suppression and the growers themselves have in general made an earnest effort to save their orchards from this disease. Certainly no effort should be spared now to hold the ground already gained. The work has had its vicissitudes and the situation at times or in certain instances has seemed discouraging, yet on the whole good success has crowned the efforts of those who have made a thorough and systematic campaign against the blight. Many orchards are in better condition now than last year, and whole sections have succeeded in keeping down the disease. Certainly there is no question that the best possible methods should be applied in keeping the blight in check as fully as possible, and every pear grower should begin at once on this important work.

First of all let him choose carefully the man or men to work on blight and by no means leave it to the ordinary pruning gang. Pick out an observing, careful man, and keep him on blight work all the year round in an orchard of any considerable size. Give him what help is necessary but keep down the number of men as much as possible and make this work distinct and specialized. When the orchard owner himself assumes the duties of blight expert the best results are usually obtained.

Above all inspect the orchard thoroughly, carefully, systematically and frequently. Learn to recognize the blight in its very ordinary phase, which can be done from the State and government inspectors who will soon be scattered about the northern part of California, but do not by any means accept their inspection as final or sufficient for a whole season. The worst feature of the blight is its insidious and apparently mysterious development when thought to be absent or already exterminated. Commencing as soon as the leaves have largely fallen, the trees should be gone over repeatedly by one or a few careful men until they know every tree and every branch in the orchard. One man can handle a large orchard in this way by making it his sole duty and having help for cutting, and the saving which he can effect in holding down the disease has been shown in numerous cases to be enormous. It is almost always the unheeded, unknown development of blight, getting down into the trunks and larger branches of the trees, which produces the deplorable condition seen in many orchards. The writer has come more and more to believe, that the personal factor is by far of greatest importance in pear blight work. Send a large crew of men through the orchard at long intervals to cut out blight and the result is always bad. Let one good man stay in the orchard all the time, with what help he calls for, and the result can hardly fail to be satisfactory.

The methods of work in blight eradication have come to be well known in every pear-growing community and can be learned by personal instruction from the experts better than by written descriptions. It is not at all difficult for any one to learn the methods, but it is often extremely difficult to find men to apply them. Hence again the necessity of training one good man and keeping him constantly in charge of this work. The trees should be inspected, as said, thoroughly and often. It is not at all sufficient to go through the orchard once or twice looking at the trees and cutting out what blight is noticed; it is little better than useless to instruct the pruning gang to look for blighted limbs and cut them out. The disease is spread more than it is checked by these means and the affected wood removed is mostly that in which the blight is dead and entirely harmless. The dangerous, inconspicuous cases are overlooked in this hasty work. To successfully cope with the disease, start the inspection at once, ahead of the regular pruning, with one or few men, using the gouge in the butts and the ladder in high tops, and continue the inspection all through the winter and again after the bloom. Cut out all the blight as found and thoroughly disinfect every cut. Paint over large cuts after they have dried out somewhat. Badly affected trees

should be removed if they cannot be cleaned, since they present a constant menace to the remainder of the orchard.

It is along this line of more careful, competent, constant work that the writer's experience leads him to look for success in pear blight control. It is his belief that each large grower or community of growers must employ or develop a specialist for this special purpose and keep him constantly at this work, or they will fail in controlling the disease. The work is of too particular a nature to be left to ordinary help.

The sole aim of those in charge of the expenditure of public funds for this purpose is to aid the grower in the most effective and advisable manner. Much effort was spent last winter in demonstrating methods of work and the results of proper treatment. An effort was made to eradicate the disease as widely as possible, and large areas were systematically inspected. It should by no means be expected, however, that these experts will do the actual work of blight removal in the orchard. This the owner must do himself, and the writer has attempted above to outline methods whereby he will be most likely to succeed. It is the purpose of the experiment station and department men to instruct the growers and their help, inspect and check up their work, and assist the county boards of horticulture in encouraging general blight eradication. Naturally the government can not be expected to continue the work indefinitely. The State can well continue to supervise and exercise general oversight over the suppression of this dangerous disease, although it is scarcely the province of the experiment station to keep up work of this nature. The matter of pear blight legislation will be to the pear grower an important feature of the work of the next legislature. During the coming winter men will be stationed in the pear-growing centers to assist the growers as much as possible in cleaning their orchards of blight.

CORRESPONDENCE

HORSE GROWING—MIXED FARMING.

Editor Press: A few years ago there was a cry in the land, this portion of the land we love to call our own Golden State, that the market for horses of every description was glutted and that no money was to be made in raising colts, good, bad, or indifferent. But that day is past for good and all. Nevermore, at least not for many long years, will there be shouted from the hill tops the fact that the supply of good horses far exceeds the demand.

Farmers, and others, here in Napa county, are awakening to the fact that a good horse is ever in demand and that there is good money to be made in raising them. Good horses, mind you, no poor, ill bred equines, for these latter, although the cost of raising them is fully the same as for bringing to maturity the better class, will always be of slow sale at unremunerative prices. But our farmers now have an opportunity, never before offered them, of breeding their mares to well pedigreed imported stallions—Normans, Clydes, and English Hackneys. We've made a good beginning this year and will make praiseworthy records in the years to follow.

Now, what is said above in regard to Napa county, may truthfully be written of many another locality in this State. That there is a shortage of good horses is quite apparent, else why is it that San Francisco buyers frequently make trips through our valleys, and among our hill ranges, in quest of horses for city use? We read, a day or two ago, that buyers for the San Francisco fire department had made trips even as far distant as Idaho and Montana without finding the class of horses for which they were looking.

City buyers, as they visit us, here in Napa county, are desirous of purchasing horses for draying, or like heavy work, in particular, and also roadsters and carriage horses. Now-a-days a fairly well broken horse commands at least \$150, and good horses readily sell for from \$200 to \$300, and one cannot pick these up any day, either. All this gives the farmer more confidence to raise one or more colts annually, and in so doing he will find profit, providing he breeds mares of good pedigree to stallions of guaranteed worth. Many a farmer can annually raise one or two colts and not be out of pocket to any considerable sum, with the assurance that, when the young animal shall mature and be well broken, it can readily be sold for from \$150 to \$200. This neat little sum will go far toward paying the taxes, which persist in coming to the front all too frequently.

"Hereafter I'm going to manage differently than heretofore I have done," said a lover of horses, a day

or two ago. "Instead of waiting until they are three or four years old before I commence to train them to harness work and to road travel, I shall commence, in a moderate way, when they are yearlings." Thus doing he will have well broken young horses before he is aware, and the animal will be the better for it all. How well we remember the method of breaking horses in vogue in the State, thirty or forty years ago. Not until the colt was three or four years old did he receive the least handling. Then he was generally blindfolded while the saddle was placed in position and the bridle where it belonged. Then, for an hour or two, at least, the animal was raced up and down the road, or in the wide field, until it was well nigh exhausted. Happily for all concerned this method is now obsolete.

Some of our good farmers live ten or twelve miles distant from town, away up among the hills. They have good arable land, some acres covered with trees, numbers of which are annually cut for stove wood and hauled to market. Some acres are devoted to grazing; some are planted to berries, to grapes, or to pears and apples. Now, the valley farmer in his conceit, has much misplaced sympathy for his brother on the hill, who consumes a goodly portion of a day when making a trip to and from town, whether he comes simply to purchase household goods or to haul his produce, of whatever nature it may be.

But this season, at least, when the ledger balance was struck the hill farmer's net income, in many instances, surprised the man who cultivated the lowlands. This excellent showing on the part of the highlander was due, in great measure, to diversified farming. Wood cut from the upper fields, stock sold from the pastures, berries grown on productive patches irrigated from perennial springs, grapes, wine and table, from productive acres, pears and apples, unsurpassed in flavor, the former, this season, commanding extra figures—all aggregated a very satisfactory income.

But whether the farmer tills the level acres that lie in the valleys, contiguous to prosperous towns, or the steep hillsides situated far from the sound of factory and locomotive whistles and the evening church-going bells, he has, in either case, to work early and late, often facing discouragements. But all weariness is forgotten if money is made. If it is not, the farmer takes courage and plans for the next season, which he hopes will be the banner year for him.

The dreaded pear blight has invaded some of the best orchards in our county, much to the dismay of our horticulturists. The disease crossed our eastern borders, and, as did the phylloxera, thirty years ago, this unwelcome pest will undoubtedly spread its ravages until a large extent of territory within our limits shall be afflicted.

We hope the efforts of our National and State authorities are taking to stay the plague will prove eminently successful. The farmer always has some foe to contend with. The Hessian fly attacks his wheat crop, the cut-worm and other worms, his corn, scale and bugs without number his orchard, together with blights and varied fungus diseases. Life is a warfare, a contention, at the best, and he is a coward who throws up the sponge and acknowledges defeat. But that is very far from characteristic California style.

The wonderful fertility of many of the soils of California is forced upon our attention when we note the abundant harvests often garnered from fields that have been cropped year after year, ever since the State was settled, nothing having been fed to the soil to replenish the annual drain upon its resources. Rotation of crops is practiced on this or that farm, or fields are pastured every few years. And how about our orchards and vineyards? As a rule what is returned to the soil with the intention to keep it up to a first class condition, in good shape for bountiful crops in seasons to follow?

Past neglect to furnish fertilizers to our fields and orchards is no excuse for not making use of one or other of the commercial fertilizers on the market, which, we are pleased to say, some up-to-date individuals are feeding to the hungry soil. We often wonder at the shortsightedness of scores of our fellow farmers.

Take, also, the matter of irrigation. With an abundance of water at our command to use at what time we will, the California husbandman is able to make himself complete master of the situation. He will have at his command a veritable gold mine. Yet how few there are who avail themselves of this branch of up-to-date farming. What we farmers of the valleys of California need is to keep in mind the old time motto

"Not how much, but how well." Fifty acres can often be made to yield better returns than four times that acreage, if they be tilled in the manner the modern farmer has it in his power to do.

If the different granges in this State would systematically take up the consideration of such subjects as fertilization, irrigation, and the study of the many insect pests that infest orchards in almost every portion of California, it would, without the least doubt, result in untold value to all parties concerned. Brawn is excellent in its place. Too many of our farmers are, practically, slaves to their unceasing work. But more mental exercise, the mastery, in good degree, of the problems above enumerated, would result in great advantage to the individual, as well as to the State at large.

A. WARREN ROBINSON.

Napa, Cal., Nov. 22, 1906.

THE FIELD.

HINDU LABOR.

We have seen in our travels quite a number of Hindus with their dark skins and peculiar head-gear working at unloading cars, handling stuff at beet sugar factories and at jobs of agricultural connection. This possible labor supply is therefore of local interest and Californians will read what Consul-General William H. Michael tells of the growing sentiment among the coolies of India to go out into the occidental world for the purpose of earning higher wages. They have been arriving in large numbers in British Columbia all this year, though the Canadians object to their presence. Mr. Michael writes from Calcutta:

Ten sturdy-looking Punjab Mohammedans, some of whom could talk English so as to be understood, called on me recently to ascertain whether they would be admitted into the United States if they should go there to find employment on farms. They said they had each 100 rupees (\$33.33) with which to pay their passage and other expenses. I told them that with that amount of money they had better not undertake the journey. They said that some of their friends were in America working on dairy farms, and that they thought they could do well in America, as they understood the care of cows and the work of a dairy. But they returned to the Punjab with the purpose of earning more money, and when they had enough money to justify the venture would go to the "great country," which they called the United States.

There is a good deal of discontent in India among the laboring classes, especially the capable and more intelligent laborers. A good many Indians have gone to Natal, where they earn from \$30 to \$35 per month, whereas they would not be able to earn more than \$6 or \$7 per month at home. Indeed, in most localities the average wage per month is not more than \$3 to \$4. It is little wonder that there is discontent, and a growing desire on the part of Indian laborers to go away from their own country in the hope of finding better wages and better opportunities.

The question of labor supply for the tea gardens in Assam has become so serious that it is engaging the attention of the government of India, which has come to look upon the scarcity of labor in Assam and its necessary consequences with some degree of alarm. An investigation committee was appointed to discover the causes and to provide a remedy. Some have ascribed the cause to the penal contract system, which authorizes a contract for the period of four years and gives to the employer the right of private arrest. Under the operation of the law, which prescribes four years and confers the right of private arrest, the laborers are bound up tight, and placed almost wholly at the mercy of their employers. To be sure, the new law of 1901 limits contracts to four years and prescribes the following minimum monthly wage schedule: For the first year, \$1.65 for a man and \$1.35 for a woman; for the second and third years, \$1.81 and \$1.51; for the fourth year, \$1.98 and \$1.65 respectively.

With the prices of foods advancing, with employers binding men and women up tight in a penal contract, with the power of private arrest to enforce the contract, what wonder that even the ignorant and dispirited cooly should rebel. One would naturally conclude that those interested in ascertaining the reason why the persistent effort put forth through several kinds of alluring agencies to induce the cooly to emigrate from India to Assam has failed. Though ignorant, easily persuaded, and long suffering, the cooly after a while learns a thing or two.

GROWING LIMA BEANS IN SANTA BARBARA COUNTY.

Mr. S. K. Boysen of Santa Barbara county gives the Orange Judd Farmer an interesting account of Lima bean growing on the coast of Southern California:

The soil is prepared the same as for corn planting. Plowing begins after the rains have set in, and the land is repeatedly cultivated during the wet season until May. The beans are then planted in rows 2½ to 3 feet apart. After a week's time the plant is well advanced, growing very rapidly. In case rain sets in unexpectedly the young crop readily spoils and has to be replanted.

The weeding and cultivation is at first done with machinery called bean knives, and when the vines have advanced too far for this method, hoeing by hand is resorted to. The bean is not poled, and in about six weeks the plant has reached dimensions which in many instances cover up the line mark of the rows, and forms a solid field of the most beautiful green, dotted with tiny, white flowers. Where there are young walnut orchards present the bean is planted in between the rows of the young trees to utilize the same soil.

One remarkable fact is, that the lima bean does not seem to deprive the soil of its productive qualities. It can be grown repeatedly on the same land. Some fields here have carried the crop for thirty years. Irrigation is not needed. The plant depends largely upon the moisture of the warm soft fogs, prevalent here on the long, narrow strip of coast land between the Santa Ynez mountains and the Pacific.

Harvest begins in September, and after cutting the beans are piled in small heaps and left to mature from three to six weeks until ready for threshing. The pods are remarkably tough and retain the beans well. One ton to the acre is an average crop, and bring from \$60 to \$100 per ton. Last year, in some instances, as on the ranch belonging to J. W. Bailard, a tract of 40 acres yielded 1½ tons per acre of the common lima bean, selling at 3 cents per pound, representing a value of \$90 per acre. Beans selling for seed bring from 4 to 5 cents per pound. The bean straw makes a valuable fodder for stock and can be baled.

One man can with four horses care for 75 acres in beans and good land for the purpose may be bought for from \$200 to \$250 per acre. These prices may seem fictitious to the Eastern farmer, but considering the climate and location of the counties referred to it is easily explained.

THE STOCKYARD

A GREAT EASTERN SALE OF CALIFORNIA HOLSTEINS.

Press of other matters has delayed reference to one of the most significant events which has ever transpired in the history of California cattle breeding, viz., a very successful sale of California-bred Holstein-Friesians, recently, in the Dexter Park pavilion, Chicago stock yards. There was 75 head in the sale, taken from the herd of the Pierce Land & Stock Company of San Francisco, and they represented the best of the breed. The cattle showed much quality and condition in spite of the long trip from their western home. This is the first sale of dairy cattle ever held at the stock yards, and its success is prophetic of more to come. The attendance was good and bidding was of the kind that put the average on 75 head up to \$220.60. The top price of the sale was \$1,350, paid for a 7-year-old cow, Alcartra Polkadot, one of the best butter cows in the world. She has a record of 120.16 pounds of butter in a 30 days' test, or about four pounds per day. It is said there are only three cows in the world which have a better butter record. The highest priced bull of the sale was Fidessa Romeo of Riverside, which sold for \$385. There were only seven bulls in the sale, the pick from a herd of 100.

Buyers were from Illinois, Ohio, Michigan, Wisconsin, New York, Pennsylvania, with breeders from several other States in attendance. Dean W. A. Henry and Dr. S. M. Babcock of Wisconsin University, Dr. W. H. Earles of Milwaukee, and Prof. W. J. Fraser of Illinois University were among the prominent men present.

The sale began by a few remarks from Prof. W. A. Henry of the Wisconsin Experimental Station. It was well that Prof. Henry, a man so well known, should say a word of what he knew about the cattle and the conditions under which they were raised, for he has visited the ranch upon which they were kept. In substance, his remarks were as follows:

"Rough and Ready Island is situated not far from Stockton and the Pierce Land & Stock ranch is below the local river level, making similar conditions to those of Holland so far as protecting levees goes. The island has a delightful climate, mild and well adapted to stock

raising. The cattle are fed right, bred and cared for right. I have visited Mr. Pierce and know his methods of doing business. He is a square man. He has a solid financial standing. The markets for his cattle have been along the Pacific coast and the Orient, but I am glad that he has come East to seek a new market. It will be a benefit to us. While I am interested in Mr. Pierce, yet, I am more interested in Wisconsin and I believe we are to become the breeding center of the United States, and we want to encourage men to bring us good cattle. The breeders of pure-bred cattle are, in a sense, missionaries, and they should be encouraged in the bringing in of more good cattle. We need better cattle instead of more cattle, and I feel that the East will be ahead for what Mr. Pierce has done."

Mr. Pierce stated that aim in establishing this herd was to get the best in the world. I have never tested for tuberculosis, but the cattle will be sold subject to test. My cattle are never stabled, except for a few hours a day, when they are milked.

After Mr. Pierce had extended his thanks for the splendid attendance, the sale began, and the bidding was sharp and spirited until the close. It was a source of considerable satisfaction to see so many beautiful and capable animals led into the ring. Nearly all the cows that were raised in this country had high official records, and as Prof. Henry said, they were bred right. Beauty was combined with utility. The first cow that was sold had an official record of 132 pounds of butter in thirty days. She brought \$280. This seemed like a high price, but it was made comparatively small when Alcartra Polkadot sold for \$1350, and her daughter, less than a year old, \$530.

The summary of the sale is as follows:

Sixty-eight females sold for \$15,100, an average of \$220.06.

Seven bulls sold for \$1,445, an average of \$206.42.

Seventy-five animals sold for \$16,545, an average of \$220.60.

STANDING OF THE HEREFORDS.

Colin Cameron, Lochiel, Arizona, was recently elevated from the vice-presidency to the presidency of the Hereford Breeders' Association. Mr. Cameron is a veteran in the "white-face" trade. He took Herefords to Arizona in 1882, the first of the breed to invade that territory, and they proved so eminently satisfactory under range conditions that the ranch he manages now has the largest registered herd of the breed in the country. In accepting the honor Mr. Cameron remarked that the association was less than a quarter of a century old, and that some present could recollect when it was organized with twenty members. Now they have 3,200 names on the roll and 120,000 living recorded cattle. He did not know if breeders of the present time appreciated the work and the integrity of the early members. At the time the association came into existence the Short horn dominated cattle affairs, and it was a terrible struggle for the Hereford to win recognition. He came from the far West and he believed that the credit was due to the ranchmen of that region that the Hereford has come to the front as the leading beef breed. There was at that time no market in the Mississippi valley, for the Herefords and breeders sold their surplus stock to ranchmen, and when the returns from their breeding on the ranch showed them superior as grass cattle then the farmers began to buy and breed them. He believed that in the minds of Hereford breeders there was nothing of so much importance as that a good class of bulls should be sent out from herds and that records should be carefully kept and that no animal not entitled to be there should be placed on record.

IMPROVEMENT OF FARMERS' HOMES.

The United States Department of Agriculture will soon issue, as No. 270 in the Farmers' Bulletin series, a treatise on "Modern Conveniences for the Farm Home." The object of the publication is to show how farmers can equip their homes with many of the conveniences now largely confined to city homes. Among the subjects treated are water supply, plumbing, bathrooms and closets, sewage disposal, and heating. The farmer is shown how, at a comparatively small expense, he can supply his home with water by means of an elevated tank filled by a hydraulic ram, a windmill, or a small engine. The best methods of disposing of the sewage are explained and illustrated. Suggestions are made regarding the laying out of home grounds, the location of buildings, and the remodeling of homes already built, and these suggestions are accompanied by illustrations. The bulletin, which contains 48 pages, is for free distribution, and application may be made to the Department of Agriculture or to Senators, Representatives, or Delegates to Congress.

FRUIT MARKETING.

MARKET FOR PACIFIC COAST FRUITS IN CHINA.

In response to a letter from an Oregon apple grower, Consul-General Amos P. Wilder writes from Hongkong that the question of shipping apples to China is almost wholly one of cold storage. He says:

The trans-Pacific steamers serve most excellent apples on the table, showing the chill as they are brought on. A Hongkong firm handled some Canadian apples last year with satisfaction, and, apart from the "European" population, the Chinese themselves might soon become extensive apple eaters. The manager of this firm tells me that if the apples come right and sell well that they will give an order, as they are looking for an American apple shipper; but, as I say, the trouble is to get the ship's officers to carry the apples in their cold storage room.

There are no Chinese apples beyond a small crab. The Chinese are eager fruit eaters, and of course their markets carry some of the finest fruits in the world, including the mango, lichee, and mangosteen. In addition there are many well-to-do Europeans (foreigners) who would pay well for a good eating apple. Apples are generally shipped in cases of 100 each, but no doubt the barrel, with which Americans are familiar, will do as well. Much stress is laid among the Chinese on the "chop." If they once become wedded to apples bearing a certain name or a certain district it will be difficult to substitute others. An importing firm with branches in a number of ports and the Hongkong firm alluded to would distribute to the Chinese retailers if the American apple supply proves attractive.

Shipments to Liverpool.—Recent advices from Liverpool state that in the week ending October 13, 25,000 barrels of apples were landed at that port from North America. In the busy season consignments range from 60,000 to 100,000 barrels a week, and such large shipments are expected to arrive in November. One of the chief authorities of that port on the apple trade states that they have received information there that the apple crop in Canada is only a moderate one, while the crops in New England, Nova Scotia, and California are on about an average, and in the district along the Hudson river the crop will be practically nil. But the crops in the Western States are very large. The Canadian government has taken steps to improve the grading and packing of Canadian apples, the barrels being examined by inspectors before shipment, and consequently the fruit is arriving much better graded and packed than was previously the case. It is hoped that Americans will pursue a similar course, and thus strengthen themselves in the British market.

Market for Hawaiian Fruits.—The Hawaiian agricultural experiment station at Honolulu, through one of its officers, has conducted an experiment of shipping Hawaiian fruits in cold storage to San Francisco and Vancouver. Several tons were shipped to San Francisco in cold storage and were then shipped northward to Portland by railroad, where it was found that more than 95 per cent of these delicate tropical productions, hitherto considered too tender for such a journey, had come through uninjured. The results of the experiment are considered of great importance as opening a new market for the most delicate tropical fruits.

A PLUM CROP.

To the Editor: I herewith send you statement of fruit taken from 130 trees, or one acre of ground, and sold to Producers' Fruit Company, Newcastle, this season:

Gathered and sold 1400 crates of Hungarian Prunes at 75c per crate.....	\$1050.00
Expense—Labor harvesting	\$64.00
Packing	56.00
Paper	3.00
Nails	3.00
Crates	98.00
Baskets	56.00
Making crates	10.50
	290.50

Profit\$759.50

Auburn, Cal.

W. S. LEAK.

POULTRY YARD.

PRESERVING EGGS.

Our readers are generally informed on the water glass method of preserving eggs, but a few specific suggestions about the way to apply it may still be useful. Mr. Miller Purvis, an Illinois poultryman, tells exactly how to do it:

The best egg preservative yet discovered is sodium silicate, commonly called water glass. This is a thick liquid composed of silica and soda, and resembles molasses. Most druggists keep it in stock. If yours does not he can get it for you. Water glass costs from 15 cents to \$1.50 per gallon, according to the seller. I think most druggists sell it at about \$1 a gallon, although the usual price ranges from 75 cents to twice that amount.

To preserve eggs in water glass secure big stone jars, say those holding four gallons, and scald them thoroughly. Then boil enough water to fill a jar, put it in and let it cool. Then add 10 percent of water glass. A four-gallon jar holds 32 pints. Put in it 28 pints of water and a little over 2½ pints of water glass. This will not quite fill the jar, but is sufficient, as some of the liquid will necessarily be taken out as the eggs are put in. A good way is to mix the liquid in one jar and keep it for filling in other jars as the eggs are put in.

You get 40 eggs a day. Gather the eggs every day and be very careful only to use perfectly fresh eggs. Put them in the jar and put in enough of the water-glass solution to cover the eggs. The next day add those gathered that day and put in more of the solution, and so on until the jar is filled. Over the eggs put a light cover which is small enough to drop inside the jar and weight of which is just enough to keep the eggs beneath the surface of the solution. Keep in a cool place and they will be good six or eight months after being put down. Preserved eggs are not so good as fresh ones, because they lose the delicate flavor they have at first, but they will be sweet and sound and only an expert can discover the difference between them and newly laid eggs. Eggs have been kept sound a year in this solution.

Observe these rules: Boil the water to be used and let it cool before adding the water glass. Use stone jars in preference to anything else, but if these are not to be had a clean wooden vessel such as a pail or keg may be used. Where a wooden vessel is used, it should be thoroughly scalded before using. Keep the eggs always covered with the solution. Put them in the solution as they are gathered from day to day. Be careful that every egg put down is perfectly fresh and that the shell is not cracked. Keep as cool as possible in hot weather. One gallon of water glass and nine gallons of water is sufficient for about 50 dozen eggs.

If the males are removed from the flock of laying hens, the eggs will keep better, as they will be infertile. Use only clean eggs for preserving. Eggs that have been washed do not keep as well as those naturally clean.

CARE OF POULTRY COLDS.

A very timely account of treatment of poultry colds is given by Mr. A. Warren Robinson in the Petaluma Poultry Journal:

If due care is bestowed upon healthy fowls, if they are fed and housed properly, little or no sickness will appear. If troubles arise simple remedies, within reach of every one, may be used to as great advantage as the more costly preparations so extensively advertised in our poultry periodicals. For instance, coal oil, placed in the drinking water provided fowls, has been found an excellent preventive and remedy for simple colds. Some persons recommend frequent feeding of wheat soaked in kerosene. Tincture of aconite in the drinking water is excellent, as is also spirits of camphor. Eucalyptus oil is one of the very best things for colds, for humans as well as fowls.

A tried and tested remedy for colds, slight in their nature, or acute, one which poultrymen may with profit keep on hand for immediate use, is: Kerosene, turpentine and sweet oil equal parts. Into this put a liberal supply of gum camphor, shaved finely. Add a few drops of carbolic acid and oil of eucalyptus. Shake well and bottle tightly. At the least indication of colds, in young or adult fowls, place a quantity of the above named mixture in a small oil can, such as the good wife uses with her sewing machine. Insert the point of the can into the nostrils of the afflicted fowl, forcing into the nasal passage a few drops of the preparation. Likewise, in the throat. Do this two or three times a day.

So efficacious has permanganate of potash proved for the cure of swelled head or incipient roup, that the writer thinking to benefit many a brother poultryman, calls the attention of the reader to this easily procured

article. Get a dime's worth at the drug store, dissolve it in a little water, a quart say, and when there is any indication of slight colds, put a few drops of this liquid in the drinking water, just enough to give it slight purple tinge. For swelled head use at its full strength, or very slightly diluted, inserting the head of the fowl into the liquid, keeping it there two or three seconds. After the fowl has taken breath repeat the operation. Do this two or three times a day, placing the sick fowl upon slight rations. It is a sure cure.

FERTILITY OF EGGS.

We have taken an incubator record for two or three years, said Professor James E. Rice, Cornell University, before the Ontario Poultry Institute, in order to find out what happened to the eggs that came from certain hens. We keep a record of the hens during the breeding season, and I asked Mr. Halpin, one of our students, if he would go through a lot of our records and take out certain individuals and follow them all the way through. He took a pen of Barred Plymouth Rocks that were in the same house and were only divided from the others by a wire netting, and they were fed on a similar ration and they were all alike in appearance. He found that one incubator had so many of those hens' eggs and another had another lot, and so on. He traced the eggs of one egg that hen laid all that time that went into these machines hatched a healthy chicken. We found in the case of a good many other hens that almost every egg they laid for that entire time gave us a chicken, and we also found in that same pen one hen that during the entire time had laid about as many eggs and had about as many go into the machine, yet did not have a single fertile egg to her credit. We found in the case of other hens in the same flock that, although their eggs were fertile, the germs were dead or were weak all the way through, and other hens' eggs would occasionally hatch and die in the shell. In other words, the question of fertility applies to all flocks of hens. In some cases certain individuals are to blame for the trouble. We had one small incubator which held fifty eggs, and we found that the eggs from two hens in that incubator had all hatched and none of the others did. We are going to trap nest a flock of hens, and we are going to incubate every one of them to see if the hens will give us fertile eggs for a certain number of months and then stop. I think that is a question we will have to consider in the future. We must do our mating and brooding to that end.

ADVANTAGES OF DRY FEEDING.

The dry feeding method, says J. B. Lisk in the New York Tribune, is doing more to simplify poultry keeping and give busy man a chance than anything that has come into practice in recent years. The feed for one or several days is placed in hoppers, which are arranged so that the fowls can help themselves at any time during the day while the supply lasts and the hopper is open. The problem now presents itself of furnishing a proper ration in the right form, and continuing to furnish it all the year through. Grain alone in an unground state is not enough. The feed ought to be supplied both whole and ground, as a hen cannot digest whole grain fast enough to keep up a large egg yield. It is also not best to feed it all ground, because a full ration of soft mash every day impairs digestion, and a hen will not eat enough dry mash to keep her going. The proper way seems to be to feed both whole and ground grain every day. My method is to keep oats alone in one compartment of the feed hopper. If oats are mixed with wheat or other grain the birds will soon empty the hopper, and you will find the oats lying around the floor where they pulled them out in order to get the more toothsome grain. Wheat, buckwheat, cracked corn and similar grains can be mixed and fed from the same compartment of the hopper if desired. I keep the oats before them all the time, and the other grain open in the afternoon, scattering a few handfuls in the litter for them to scratch during the morning.

The dry mash is before them all the time, so they will have ample time to get ground grain enough. Bran, middlings, cornmeal, oilmeal, beef scrap, etc., are used a great deal in the mash. A farmer will use a great deal of grain on the farm to grind for the mash. The mash should be ground all alike so that there are no larger pieces, or else the fine particles will be thrown out of the best devised hopper in the effort to get the coarser bits. The mash should be the richest part of the ration. Oilmeal and finely ground beef scrap should form an important part. It is not necessarily the costly ration that brings the best results. Only good, clean grains and meat should be used, and this

fed so as to give a variety every day; not one kind of grain for a month, then another kind; but several different grains each day. Fowls confined in the winter are unable to forage, and thus obtain a variety.

Two or three times a week will do to give a wet or cooked mash, providing the dry mash is before them all the while. If I could, I would feed each hen a small allowance of cooked mixture every day. They like it; it brings happiness, good cheer and contentment. How they sing and shout their appreciation, which goes to make life worth living and fills the egg basket!

A "pocket" of two-inch mesh wire netting, nailed in one corner of the pen and filled with a bushel of clover hay is just what the hens need, and they eat a lot of it all winter.

THE GARDEN

THE CASSABA MELON.

To the Editor: I was very much interested in the article written by Mr. C. C. Royce, of Chico, which appeared in your issue of November 17, in regard to the Cassaba melon; as well as in your note at the end of his article. Last February, if I remember rightly, I wrote a long article on the Cassaba melon for the Pacific Fruit World, and soon after its appearance, it was copied in full in your valued paper. I am very sorry that it has been lost. Mr. Royce, in the first part of his article says: "Some months ago I read a communication in the Rural Press from a gentleman whose name I have forgotten, concerning the history of the Cassaba melon in this country, and if I remember rightly claimed to be the first grower of the melon in California." I am, evidently, the man he refers to. He is, however, greatly mistaken as to my claiming to be the first grower of this melon in California. I do claim, as far as I know, I was the first man to advertise the seeds of this melon for sale in this State, as well as the first man to sell the seeds to Eastern seedmen. In the fall of 1889 I sold 200 pounds to Samuel Wilson, of Mechanicsville, Pa., and in the winter of 1890, I sold him 600 pounds more. Since then, from time to time, I have sold these seeds to several other prominent Eastern seedmen. I further claim that to the best of my knowledge, I am the only man in California, that has brought this very valuable melon into such prominence by writing articles in its praise. I find on referring to my agricultural scrap book, that I have written up to this date, nine articles, many of them pretty long ones, for the following named papers: Rural Press, four—the first one appeared March 8, 1890; Pacific Bee, two; California Cultivator, one; Sonoma County Farmer, one; Pacific Fruit World, one.

I received a great many letters and postal cards from all parts of the United States asking for further information in regard to this melon. In my articles for the papers I was always very careful to state that the seeds were first sent out by the San Francisco Weekly Bulletin to some 3,000 of its country subscribers in the spring of 1880, and I was one of that number. I raised these melons with great success, from 1883 to 1905, inclusive, on my place near Calistoga, without fertilizers and no irrigation. I sold my place the 14th of last July, and have not seen it since, but I am informed that there is an enormous crop of melons on the two acres I had planted.

Now, here is something that I cannot understand, and I would like Mr. Royce to give the readers of the Rural a little more light on the subject: If General Bidwell planted the melon seeds sent him by the Department of Agriculture, at Washington, D. C., in the summer of 1869 (as Mr. Royce states), and one of the varieties resulting from such planting was the now well-known Cassaba melon, how is it that General Bidwell did not introduce the seed until 1875, the date you state he did in your note at the end of Mr. Royce's article? And, further, why did not the seedmen of this State secure some of the seed in 1875, at least, five years before they were introduced by the San Francisco Weekly Bulletin? And what were the agricultural papers of this State doing in all this time that they did not make known the great value of the melon? I certainly think that it would be well for the Rural Press to investigate this matter still further, and endeavor to find out, if possible, who should have the credit for first introducing what I still consider the most valuable musk melon that has ever been introduced into the United States.

I trust that this hastily written article may prove to be of some interest to your many readers.

IRA W. ADAMS.

Potter Valley, Mendocino County.

ENTOMOLOGICAL

FIGHTING THE MELON APHIS.

This has arisen as a sharp issue in the large commercial cantaloupe districts of California, especially perhaps in the Coachella district on the Colorado desert country. Many methods have been tried, not always with success. The following outline of the fumigating method with instructions for its use is from a bulletin just issued by the Bureau of Entomology of the United States Department of Agriculture by Mr. F. H. Chittenden:

Fumigation with Tobacco Preparations.—Tobacco extracts and fumigating powders have been extensively used for a number of years by florists as fumigants against aphides and other insects occurring in greenhouses, such as white fly, thrips, and other small, delicate, and soft-bodied insects. The extracts contain a larger proportion of nicotine than ordinary decoctions prepared by steaming waste stems and powdered tobacco, and are therefore much more effective, which is true also of the powdered forms of nicotine. A number of these preparations are on the market and are advertised in the principal florists' journals and in other agricultural periodicals. They are used in various ways, and directions are furnished with the packages purchased. The liquid preparations vary in strength from 35 to 40 per cent up to 80 to 85 per cent nicotine.

Field Fumigation with Tobacco.—During the years 1904 to 1906 the employment of tobacco or nicotine preparations in destroying the melon aphis in the field was the subject of experiment in Texas by Messrs. C. E. Sanborn and E. D. Sanderson. These have stated to the writer that, judging from their experimental use of this method and its practical use by extensive growers, it bids fair to become the best method of dealing with the melon aphis in its occurrence in the South. The process is in brief the fumigation of a dry preparation under a cloth-covered frame placed over the affected vines. In 1905 and 1906 the writer found that a very short exposure to tobacco fumes killed aphides, when other insects, such as thrips, survived a considerably longer treatment.

In practising this method Mr. Sanborn has used apparatus substantially as follows:

Preparation of the Frame and Cover.—For vines 2 or 3 feet long he advises a light frame 4 by 6 feet, supported by legs 8 inches in length. Lumber three-fourths inch thick and 2 inches wide is suitable. Strengthen the frames by connecting the ends with a crosspiece. Two diagonals are also used for strengthening the frame and for convenience in handling, the latter being attached after the cloth cover is in position. The cover is of muslin of a cheap grade (7 or 8 cents a yard) and sufficiently compact to prevent a passage of gas through its meshes after being oiled. Its size should be about 2 feet wider and 2 feet longer than the frame which it covers. This is sufficient for an 8-inch wall and a 4-inch lap to the ground. Dirt is placed about the bottom to keep the gas from escaping there.

After the cloth has been cut and sewed into the sizes desired it is saturated in a vessel of linseed oil which fills the pores. It is then wrung out, slightly dried, and placed over the frame and held in place by nailing the diagonals to the frame above the cloth. A gallon of linseed oil is sufficient for rendering four covers of the size above specified sufficiently air-tight for this method.

The number of frames for use depends upon the degree of infestation and the rapidity of the operators. Ordinarily about 10 frames are sufficient for one man's attention.

Method of Application.—The frame is placed over the infested plant. One sheet of the fumigating preparation is torn into from two to four or more equal parts (according to directions on the package or as experience may decide) and each part is put in a tin fruit can under the frame near a corner and then ignited. The cans are perforated at the bottom by driving a large nail in at the side. It is well to use a long taper or fuse for lighting the fumigant, affording the more active beneficial insects time to escape from under the cover before the tobacco fumes are given off. Earth is then heaped on the border of the cloth on the ground to prevent the escape of the smoke. The frame should remain in position ten or fifteen minutes, or longer if preferred. Each operator should have enough frames to handle so that each frame in succession may remain on a vine during the time mentioned.

In localities where the aphis is most injurious local

merchants who deal in insecticides should be informed of the fact and requested to keep a supply of fumigating preparation always in stock.

The best time for fumigating is when there is no wind and the vines are damp. In moderately dry weather, however, good results may be obtained.

Care should be exercised not to allow the dry fumigant to ignite. It should smolder only. Vines should not be disarranged except where they protrude a few inches beneath the cover. The leaves should not touch the top of the cover.

Variations of the Fumigating Frame.—The frame described above has been used in the fumigation of young plants in southern Texas. The size and make-up of the frames may be altered or improved by the individual grower to adapt them to the size of the vines and the nature of the plant to be fumigated. Farther north than Texas manifestation of injury is not usually observable until the plants have made considerably larger growth, and a larger frame, say about a foot high, will be found more desirable for general use. Unbleached cotton of compact mesh, at 10 cents a yard, answered as well as the oiled "muslin" in experiments conducted by the writers, and there is a saving of time in its use. Moreover, it does not collect dirt nor soil the clothing and other objects with which it comes in contact. [No particular fumigating material is mentioned in the Bulletin from which we quote. Manufacturers of such materials should advertise their goods.—ED.]

THE VINEYARD.

PROF. PIERCE COMMENTS UPON THE RAVAZ THEORY.

Prof. Newton B. Pierce of Santa Ana, whose original and protracted work on the California or Anaheim disease, makes, in the California Fruit Grower, some comments upon the theories of M. Ravaz, which were given in the Pacific Rural Press of October 27:

The theories of Ravaz as to the nature of our California vine disease is interesting reading, but I believe as these theories led Ravaz to erroneous conclusions, I am induced to make a few comments upon them for the consideration of vine-growers.

Every man of experience in horticulture has seen diseased trees or other plants over-producing fruit. It

SPRAY AND USE — REX LIME AND SULPHUR SOLUTION

The Greatest Insecticide and Fungicide Known to Modern Science.

COST. We deliver it to points in California for 24c per gallon. One gallon is used with eleven gallons water, making twelve gallons of diluted spray for 24c, or 2c per gallon. This is as cheap as it can be made at home and saves time, labor, and the very disagreeable work of mixing, boiling, and handling. REX LIME AND SULPHUR SOLUTION is entirely free from sediment. No clogging of spray pumps. Pumps last longer and spraying is done more quickly and thoroughly.

ITS ADVANTAGES. It is straight lime and sulphur. No other ingredients are used. It is mixed and boiled twelve carloads at a time in four huge vats by specially made equipments for producing that perfect chemical combination so essential in order to reach the full limit of value for destroying insects, fungus, mildew, etc. It is much more perfect preparation than orchardists can possibly make.

READ CAREFULLY what Prof. R. W. Thatcher, of Pullman, Washington Experiment Station, has to say about it:

"I have analyzed REX LIME AND SULPHUR SOLUTION and find it contains a MUCH LARGER percentage of sulphur IN SULPHIDE FORM than any other preparation I have ever known, and it is the sulphur in sulphide form that gives the lime and sulphur spray its value."

In a letter to Mr. W. H. Benteen, of Watsonville, Cal., Prof. Thatcher explains as follows:

"In regard to the REX LIME AND SULPHUR SOLUTION I would say that their solution is as good or better than the homemade preparations."

"I have no hesitancy in recommending it very strongly for use wherever the lime and sulphur preparation is desired."

E. H. Shepard, Mgr. of Hood River Apple Growers' Union, Hood River, Oregon, reports as follows:

"Like everyone else here I have had to spray. The first year I cooked the lime, sulphur and salt myself. Results fairly good. The next year I used lime and sulphur, cooking chemically with caustic potash. Results better. Last year I used REX LIME AND SULPHUR SOLUTION. Results very much better."

Prof. A. B. Cordley, State Entomologist at Corvallis, Oregon, after making official experimental tests on a larger scale, reports as follows:

"I have tested the REX LIME AND SULPHUR SOLUTION in comparison with the homemade lime and sulphur sprays and in the tests made—which was on a considerable scale in the larger orchard of the Benton County Prune Company—I must say that the REX gave better results than did the homemade spray."

OTHER ADVANTAGES.

REX LIME AND SULPHUR SOLUTION has been very extensively used both for spraying and dipping sheep and cattle, and the Department of Agriculture at Washington, D. C., makes frequent analyses of it and requires that it must be made at all times to stand the same tests. This gives the users of it the best possible protection, because it is and must be uniform, while the homemade spray varies from ten per cent. to fifty per cent. in its strength and value.

USE NO SALT.

There is no need of using salt with REX LIME AND SULPHUR SOLUTION.

FOR FUNGUS.

Use the straight REX LIME AND SULPHUR SOLUTION—one gallon with eleven gallons water, adding just enough milk of lime to make the spray white on the trees. This will destroy and prevent the fungus.

IF BLUESTONE IS WANTED. It is scarce and almost impossible to get this year, but can be mixed with REX LIME AND SULPHUR SOLUTION after diluting with the water. If Bluestone is used with REX, there is no need of using more than one-fourth to one-half the amount that would be used with REX LIME AND SULPHUR SOLUTION.

We shall be pleased to furnish more complete information to fruit growers who write us for it.

We are establishing carload dealers in all fruit growing communities. Where we have no dealers, we will ship freight prepaid from Benicia in fifty gallon barrels at \$14.75 per barrel. When barrels are empty, ship them back to us at Benicia and we will pay freight on empties returned and rebate \$2.75 for each empty barrel returned.

We also make and supply the well-known REX ARSENATE OF LEAD. Also REX STOCK AND POULTRY FOODS AND REMEDIES and famous REX CONDITIONER.

The REX COMPANY, Benicia, California, and Omaha, Neb.

is a law of nature that a plant or animal seriously diseased and likely to die tends to reproduce its kind. An apple tree in a diseased condition will bear heavily; a butterfly pinned to the wall will lay its eggs. So with grape vines struck by the California vine disease—there is a tendency for them to bear an abnormal crop if they have reached a mature and fruitful age. This, however, is not the cause, but the effect of disease, and was mostly noticed among the older original vineyards.

At present the young vineyards in the affected district contract the disease and die before reaching maturity, and without showing any signs of over-production. A vineyard set from perfectly healthy cuttings brought from a district where the disease does not exist will contract the malady and die in three to five years, and often before it has yielded a single full crop. Here we have eliminated absolutely the effect of over-production, and such evidence is procurable from every viticultural center of the older affected districts of Southern California.

Allow me to also call attention to the hundreds of acres of Mission vines which bore heavily in Southern California for 80 to 100 years before this malady made its appearance. Why, during this century of universal culture of the most susceptible grape—the Mission variety—did this grape thrive in the very district where it can not now be grown? Did it suddenly acquire new habits of over-production?

These theories of Ravaz made at long range remind me of that given out by Viala a few years since. He suddenly discovered the coagulation of the protoplasm in the cells of our grape leaves through the application of the French bleaching fluid which he tried as a reagent in the laboratory. These coagulated bodies he pronounced as a parasite, and named it Plasmodiophora Californica. He at once addressed a letter to the United States Department of Agriculture, saying that as he had done the real work of discovering the cause of the California vine disease, all Pierce had to do was to apply some remedy! On the contrary it was shortly shown that any vine leaf treated as Viala treated those he had, would show the same coagulation.

Each man who lost a vineyard from the California vine disease in 1886-1890 formed a theory of his own as to the cause of the trouble, but time and comparison have eliminated most of these views. It is now safe to place the above over-production theory before them, and I am satisfied they will sit as good and discrete judges as to its accuracy.

THE MARKETS

Wheat.

Local dealers are quoting about the same prices that have been ruling in San Francisco for the past few months. A certain amount of wheat is changing hands, with the price very steady at low figures. One week's sales aggregate about the same as the preceding week. The buyers have formed the idea that the yield of the coast has been large and that prices will seek a still lower level. They are, therefore, very conservative in their buying. The only buying that is being done locally is of a hand-to-mouth character and very little or no dealing in a speculative way is being done. The situation is in much the same condition generally, throughout the coast and the past weeks have been exceptionally dull among wheat dealers. The shortage of cars is still a serious matter throughout the northwest, as the wheat cannot be shipped to tide-water as fast as the demand calls for it. In some places this shortage has been so noticeable as actually to threaten large consuming points with an immediate shortage. The railroads claim to be doing all they can to relieve the situation, but as yet no appreciable change has been made. Eastern markets are showing a slight tendency toward an advance in prices, although the alterations so far are but trivial. The export demand, although reported dull, is comparing well with exports of other years at a corresponding date. The exports of the United States for the month ending October 31, 1906, were 17,349,000 bushels as compared to 11,011,000 to the same date last year. It is estimated that the entire export of the United States sales for 1906 will be 164,000,000 bushels as compared to 97,600,000 for 1905.

Barley.

The barley market is in much more satisfactory condition than the wheat market, as a large amount is consumed daily and the demand is thus more constant than it otherwise would be. Buying is free at \$1.12½ for good feed barley, while brewing grades are worth \$1.15 to \$1.17. In fact, local merchants do not easily get hold of enough barley of good quality to satisfy their trade. Holders' ideas are very firm and they sell only in small quantities. The shortage of cars is making itself felt

in San Francisco and is also having some effect on the export trade from coast towns. The California export trade continues large, most of the exports going to the United Kingdom.

Flour.

The flour situation locally is necessarily a hand-to-mouth affair, as no surplus can be stored in the city. The different houses located here report a steady demand, however, and they are kept busy handling the daily wants. The flour coming from Oregon and Washington is limited in quantity for a variety of reasons. The majority of mills on the coast are not running to full capacity, as the profit is not great enough to justify working overtime. The majority of foreign orders yet to fill are old orders and millers do not seem anxious to take any new orders until the old ones are out of the way.

Oats.

The oat market has been fairly firm throughout the week, with some sales at fairly good prices. The few buyers in the market are showing a tendency to buy, however, and as a number of offerings have been made the trade has been fairly active this week. The situation north is in much the same way and holdings are firm at high prices. A large percentage of the crop has been bought up earlier in the season and now the bulk of the crop is in the hands of big operators who are not showing any tendency to sell at present quotations.

Millstuffs.

The market for bran is increasing gradually now, owing to the increased demand locally, and sales are fairly numerous for this feed. Otherwise the situation is uninteresting. Prices are constant and buying is fairly uniform. Bran is selling at \$20 and \$22 per ton for the best qualities and middlings bring \$26 and \$29.

Corn.

The export demand for corn from the United States is, contrary to expectations, found to be less than last year, in spite of the fact that the United States yield has been greater than for many years past. The price is dull and offerings are being made freely from the country. Locally very little corn is consumed except for feed purposes.

Beans.

The Lima bean situation is still interesting, owing to the fact that the price remains high in the face of the large yield that has begun to come into the market. A good portion of the bean crop on the river is still unsold and this is expected to have some effect on the market when it begins to circulate. The estimated yield on the river is placed at 75 per cent of last year's yield and, while there are more bayos than there were last year, there are less Lady Washingtons and pinks. The yield of cranberry beans has been a little above the average but this is compensated by a greater demand and the price has not been effected. Gorbanzas are very strong and are held at advancing figures.

Hops.

The hop market is steady at fairly good prices and, though the rush is over, considerable dealing is yet being done in these. Quotations are as follows: Best California grades, 16 cents; inferior grades, 12 and 15 cents.

Wool.

The wool market has been comparatively inactive for the past few weeks and very little is being done either locally or in the country. The bulk of the crop has left first hands at fairly good figures and wool growers are satisfied.

Seeds.

The local seed market has been brisk for last week and sales are looking up in nearly every line. The alfalfa market is exceptionally firm, owing to the reported shortage. The export trade continues fair and local dealers are well satisfied with conditions.

Bags and Bagging.

Activities are falling off gradually in this line, as there is hardly any demand except for fruit and bean bags. The market has not been altered as to prices.

Butter.

The butter market has been looking up lately and the price for the best has been forced up to 35 cents. The situation is much more interesting south and creameries in the vicinity of Fresno prophesy that butter will go to \$1 per two-pound roll.

Cheese.

Fancy cheese is bringing 14½ cents and the market is firm at this figure. The poorer varieties are plentiful and very little demand is had for such stock.

Eggs.

The best ranch eggs are bringing as high as 54 cents, though the receipts have been a little above the average this week. The demand for fancy eggs is only partially supplied but this is compensated by the fact that poorer grades are much more plentiful.

Poultry.

The poultry market is firm for all good stock and especially for fat young roosters. The turkey market has been influenced by Thanksgiving, but the extra demand was so well anticipated by dealers who got in a big supply on this account that the rise in prices was not so noticeable at last year, though retail prices went to about the same figures. The local market is firm at following prices: Old roosters, per dozen, \$4.50@5; young, \$6.50@8.50; fryers, \$4.50@5; broilers, \$3@4.50; hens, small, \$5@6; large, \$7@8.50; live turkeys, 21@23 cents; dressed, 24@26 cents per pound; ducks, \$6@7 for young, \$5@5.50 for old; geese, per pair, \$1.75@1.50; pigeons, old, \$1.25@1.35 per dozen; young \$2@2.50.

Potatoes.

Arrivals of potatoes have been about normal this week with the exception of Oregons, which are exceptionally short in the local houses. Salinas are active at as high as \$1.90 for the best, and rivers are bringing all the way from 95 cents to \$1.20, according to quality. The market is particularly firm on fancy stocks.

Onions.

The arrivals of onions have been outnumbering the local demand and the market is weak at low prices. Dealers quote 50@65 cents.

Vegetables.

The local vegetable dealers report the market to be in a very good condition with supplies about equalling demands. The supply of tomatoes is falling off largely, both in quality and quantity, but the price has not been materially affected. Quotations for some of the seasonable varieties are as follows: String beans 5 to 7 cents per pound, tomatoes nominal for bay and \$1@1.50 for Los Angeles; squash, 50@85 cents for small crates and 60 cents @ \$1 for large crates; green peppers, bell, \$1.25@1.50; chill, 90 cents @ \$1.25; green peas, 5@8 cents per pound.

Fresh Fruit.

Fresh fruits are becoming more and more scarce as the season advances and now very few varieties are to be had in the local markets. Apples are the leading variety and are selling well at fairly good prices. The quality of fruit has been falling off with late arrivals and a large quantity of inferior grades is on hand. Grapes are still plentiful and are selling at unchanged prices.

Dried Fruit.

The local houses are receiving all the dried fruit they can conveniently handle now, and although the crop, as a rule, has left first hands, offerings are still being made from the country. The prices, already firm, have not been altered noticeably. The packing houses throughout the central part of the state are a little over taxed this year, owing to the lack of packing houses in this city, and notwithstanding the fact that the crop has been generally short this year, packing is a little behind what it was at this time last year.

Raisins.

The central part of the state is exceedingly interested over the great increase in price for raisins. Many of the growers sold as low as 2½ cents, while now there is little doubt that prices will soon reach 6 cents. The good prospect for high prices next year is having a strong influence upon the average of vineyards that are being set out this year. It has been estimated that the acreage of new vineyards will be as large as for last year. The condition of the market generally is satisfactory from the selling standpoint.

Honey.

The honey market is firm at high prices. The supply is strictly limited and only partially satisfies the demand. The best honey brings 16 cents per pound.

Nuts.

The almond situation is the most interesting in the nut market. The price is nearly twice as high as it was at this time last year. The local market is being influenced by the holiday trade and a decline may occur as soon as things settle down again, though no drop can be expected.

Citrus Fruit.

The citrus fruit market is beginning to be supplied with good stock as the new crop comes on. Prices remain up and good business is being done locally. Growers are bringing these crops to market in large quantities in the northern orange districts and the packing houses are running full blast. The crop is proving to be a little inferior in quality and the percentage of culls is greater than usual. The reason for this seems to lie in the fact that the weather has not been satisfactory for proper curing. The prices to the grower are proving to be about the same as last year, \$1.75@2 per box.

THE DAIRY.

AN ALFALFA DISEASE

IN COLORADO.

Alfalfa growers will be interested in an announcement of an alfalfa disease in that state by Professor Paddock of the Colorado Experiment Station and we shall be glad to hear from them if they notice the plants in California behaving in the way he describes. He says:

Complaints have come to the Experiment Station from one locality for the past three seasons of the dying out of alfalfa plants in the spring. The growers could scarcely believe that the trouble was due to winter injury since it had not occurred before under similar conditions, and since dead plants were found alike on high and on low land, and on wet and on dry situations. The presence of numbers of small maggots in the decaying crowns was the most popular theory advanced to account for the dead plants. On visiting the fields early in the spring it was evident that winter injury could not have caused the damage and that the maggots were only present because of the decay and not as a cause of it.

In June of the present year, we had the first opportunity of inspecting the fields during the growing season. The cause of the injury was now apparent as the numerous blackened stems from which a thick juice was oozing plainly indicated a bacterial blight, and subsequent examination has shown this to be the probable cause of the trouble.

The first evidence of disease to be noticed by the casual observer is a short, weak and light colored growth of the first crop, and the stems, even over a large field, may not average over a foot in height at the time the first cutting is usually made. A close examination shows that a majority of these stems are discolored, in fact nearly black, for a portion of their length, and drops of dried juice will be found on many of them. Such stems are also very brittle, and easily broken. The disease apparently does not kill many plants the first year, but in time so many of the plants die that the fields are useless.

The disease evidently runs its course for the season with the first crop and those plants which have sufficient vigor make satisfactory growth for the second and third cuttings and little or no trace of blight is seen during the remainder of the season. But the following spring a renewal of the outbreak may be expected.

The plants begin to die after the blight has been abundant for more than one season as the decay appears in the crowns of the plants and may involve the tap root. The crown buds are thus destroyed or the nutrition may be so interfered with that the plants die.

Almost nothing is known of this

blight as yet, consequently remedial measures cannot be discussed except that it seems to be advantageous to cut the first crop early and to delay the date of the first irrigation until after this time if possible.

PATRONS of HUSBANDRY

TULARE GRANGE MEETING.

To the Editor: Tulare Grange convened in its hall on Saturday the 1st.

The committee on County Mutual Insurance reported that an application to the Fire Insurance Commissioner is now in circulation and will soon be sent to him for approval.

The subject of fire insurance was discussed and it appears that in many of the Eastern and Western States there are grange fire insurance associations. Maine has three, with \$25,000,000 of risks written at a premium of 1-4 of 1 per cent, and New York has twenty-seven with risks written to the amount of \$100,986,495. New York has 635 granges with a membership of 70,000, and through grange influence the State has appropriated \$50,000,000 to build and improve roads. Grange fire insurance companies in New Jersey have \$14,000,000 written in fire risks. In Missouri grange fire insurance is flourishing and the State grange there sends grange promoters to follow Farmers' Institutes.

The committee to report subject for discussion for the first six months of 1907 reported the following and the report was adopted:

1. "From the Growers' Standpoint was this Year's Sugar Beet Crop a Success. This will be discussed by Brothers Montgomery, Hunsaker and Wood.

2. "Rose Culture in Tulare County, Propagating, Budding and Pruning." This will be told of by Bro. Thos. Jacob.

3. "Will a Meat Market On the Rochdale Plan Benefit the Farmer?"—Bro. Weigle.

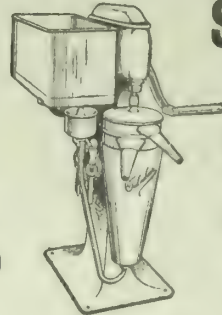
4. Will a Co-operative Fruit Packing House in Tulare Benefit the City and the Farmers in This Vicinity?"—Bro. Barber.

5. "How and When Should Alfalfa Be Sown? How Much Seed to the Acre and Should It Be Sown with a 'Nurse' Crop?"—Bro. F. H. Styles.

6. "What is the Best Breed of Chickens to Raise? Is It Best to Have One or Two Breeds at the Same Time?"—Sisters Lawson and Nelson.

The following officers were elected for the coming year:

Worthy Master, F. H. Styles; Overseer, Bro. Lawson; Lecturer, Bro. Tuohy; Steward, Bro. E. C. Shoemaker; Asst. Steward, Bro. A. J. Wood; Chaplain, Sister Fay; Secretary, Sister Bertha J. Morris; Gate Keeper, Bro. Henry; Ceres, Sister Griffith; Pomona, Sister Lawson; Flora, Sister Nellie Hamilton; L. A. Steward, Sister Nelson; Organist, Sister Ella Styles. J. T.

A FARMERS' COMMITTEE SAYS
TUBULAR IS WORLD'S BEST
CREAM SEPARATOR

The Tubular

Low Can
Lightest Bowl
Simplest Bowl
QUICKEST CLEANED

Self Oiling
Ball Bearing
Enclosed Gears
CLEANEST SKIMMER

A community of farmers and dairymen recently united and appointed a committee of six wide awake farmers to thoroughly investigate cream separators and decide which is best.

Why? Simply because they were convinced that cream separators pay, and wanted to know the best before buying. The committee requested all leading separator representatives to meet the committee and show their machines.

Why did they do that? Because the committee wanted to find out positively which separator actually is best. They didn't want to take anybody's word for it, but wanted to see all reliable separators side by side and decide for themselves.

When that committee met, many farmers were present waiting the decision. The committee carefully examined the different separators, and unanimously decided that the Sharples Tubular Cream Separator is best, excelling all others in fifteen essential points.

The members of the committee backed up their decision by buying for themselves six No. 6 Sharples Tubular Cream Separators right on the spot—one Tubular for each farmer on the committee.

What did that mean? That this investigation had absolutely satisfied the committee that the Sharples Tubular is the best cream separator built—the best in every way. If you buy a Sharples Tubular, you will get the world's best separator.

It is to your advantage to learn all about this committee—its decision—and the world's best separator. Write for our handsome, complete catalog C 131, with leaflet and the committee's sworn statement telling all about it.

THE SHARPLES SEPARATOR CO.,
WEST CHESTER, PA.

Toronto, Can.

Chicago, Ill.

CHAFF.

"Hello, Leo," panted the tigress, "I've been chasing a nice tender little antelope for an hour or more. Did it pass by here?"

"No," replied the lion, licking his chops contentedly, "it didn't pass here."

"When does one cease to be a bride and become a married woman?"

"The day the postman brings her husband the first bill from the dressmaker."

Physician's Wife.—I need a new evening dress.

Physician.—All right, my dear. I'll look over my list and find some fellow who can afford an operation for appendicitis.

Absconded Bank President.—Oh, horror, arrested? I never thought you'd find me in this out-of-the-way place.

American Detective.—G'wan. It was a cinch to trace yer when yer kept sendin' home souvenir postal cards.

USED 10 YEARS—IT CURES.

Laurel, Md., Feb. 15, 1906.

Dr. B. J. Kendall Co.

Enosburg Falls, Vt.

Gentlemen: I have been using your Spavin Cure for the last 10 years, and it cures.

SAMUEL BROWN.

Jones.—Old Griggsby looks worried. I wonder what the trouble is?

Smith.—His only son thinks he can play the races and his only daughter thinks she can play the piano.

"I want to complain of the flour you sent me the other day," said Mrs. Newlywed, severely.

"What was the matter with it, madam?" asked the grocer.

"It was tough. My husband simply couldn't eat the biscuits I made with it."

The Popular Rex Lime and Sulphur Solution.

Fruit growers of the Pacific Coast States will no doubt be pleased to know that The Rex Company of Omaha, Neb., have established a plant at Benicia, Cal., for making their Rex Lime and Sulphur Solution, which was extensively and very successfully used last winter throughout Oregon, Washington, Idaho, Colorado, and many Eastern States. We have taken the time to look into the merit of this preparation and are fully convinced that it is superior to the homemade lime and sulphur wash. Many State and Government authorities have made official tests with it, and endorse it. In addition to this the Fruit Growers Associations of Oregon, Washington and Colorado, after testing it on a large scale, are adopting it, use in preference to any other spray. On account of its being straight lime and sulphur and put together perfectly to give the preparation the fullest limit of merit, and on account of the manufacturers establishing a plant on the Pacific Coast in order to supply it to fruit growers at the lowest possible expense, they are entitled to the favorable consideration of those who intend spraying for San Jose scale, mildew or fungus troubles. The Rex Lime Sulphur Solution is guaranteed to be uniform, while the homemade spray is said to vary from ten to fifty per cent in its strength and value.

Special attention is called to the advertisement on page 359.

TRADE IN YOUR
INFERIOR SEPARATORS

Many users who would like to change their inferior machines of various kinds for a new

DE LAVAL CREAM SEPARATOR

do not understand that while such second-hand machines have no salable value the De Laval Company makes very fair "trade" allowances for them, just to get them out of the way and through this illustration of the difference between good and poor separators stop the sale of others like them in the neighborhood. Nobody is defrauded by their re-sale as they are simply "scrapped" at their real value.

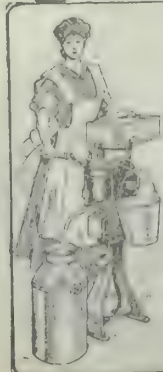
Then there are thousands of DE LAVAL users who should know that they may exchange their out-of-date machines of ten to twenty years ago for the very much improved and larger capacity ones of today. These old machines are refinished and sold over again to those who don't think they can afford the price of new ones.

Write in a description of your old machine—name, size, serial number, and date purchased—or else see the nearest DE LAVAL agent about it.

DE LAVAL DAIRY SUPPLY CO., General Agents
309 Twelfth St., Oakland, Cal. 107 First St., Portland, Ore.
123 North Main St., Los Angeles, Cal. 1017 Post St., Seattle, Wash.

Buying a Cream Separator

A little thought before buying a cream separator will save you a lot of hard work later on. Don't be talked into buying a machine with a high milk supply can—it's like pitching hay to pour milk into one. Besides it does n't cost any more to get an easy running



U.S. Cream Separator

with a low milk tank that a child can reach, a simple bowl that's easily washed, and a set of entirely enclosed gears, protected from dirt and danger. The U. S. holds the World's Record for clean skimming—it is the most profitable machine for you to buy, and will last a life time. Our handsome new catalogue describes in detail the operation and construction of the United States Separator. Many fine and accurate illustrations aid in making perfectly clear to you the advantages the U. S. has over all others. If you're keeping cows for profit, ask for our catalogue No. 148. It points the way to the biggest profits.

VERMONT FARM MACHINE CO.,

Prompt Delivery.

18 Distributing Warehouses.

BELLOWS FALLS, VT.

438

HOME CIRCLE

BOYHOOD'S HAPPY DAYS.

High up on a shelf in the pantry it stood—

In fancy I see it again—

A remedy certain to do much good,
Though fraught with incredible pain.
There is nothing in all of the various
ills,

That mortals are called to endure,
From a sty or a stonebruise to fever and
chills,

That it wasn't expected to cure.

Its flavor was that of some lake down be-
low,

That the imps kept eternally hot,
If outwardly used in two minutes 'twould
show

A blister, more likely than not;
And when, like a martyr who yields to
despair,

You weakened and uttered a yell,
The folks would approvingly nod and de-
clare

"That's a sign it is making him well."

Though I long for the moments of inno-
cent glee,

That only a child can enjoy,
I always think twice before yearning to
be

A careless and frolicsome boy.
Though life's serious cares cause full
many an ache,

And hope only leads to dismay,
I'd rather face all such distress than
take

One dose from that bottle today.

—Washington Star.

THE ONLY WAY.

Of course it was planned beforehand,
he knew who would do it best, I'm sure,
and perhaps if the girls had known what
the prize was to be, they would have
tried harder for it, although I think none
of us would have gotten that one.

It came about this way: Ten of us
girls have a sewing club and meet once
a week. We do not accomplish much,
Ned says, because we do too much gos-
sipping, but then, Ned is horrid, any-
way.

Right across the way young Dr. Thorn-
ton has his office and on a warm day
when the windows were open, he could
hear everything we said, but we did not
realize that until afterwards. We were
all slightly acquainted with him and
were dying to know him better—he is
awfully good looking, you know, but all
taken up with his work, which made him
even more attractive to us.

One day we were busy as bees—if not
with fingers, with our chattering—when
the door opened, and in walked Dr.
Thornton. He held a bundle in his
hand, and after greeting us, walked up
to Maude, who is our president, (al-

though how he knew I didn't find out
until later), and said: "Miss Williams,
I have rather a peculiar request to
make, but perhaps you will overlook its
peculiarity, as you know I am a 'lone
bachelor.' I am in an even more lonely
state than usual, as my house-keeper
is away, and there is no one to do my
mending for me. This bundle contains
ten pairs of socks which need mending
most awfully (the girls looked scandal-
ized), and it struck me today that pos-
sibly as yours was a sewing club, you
would take pity on the 'lone bachelor'
and each darn a pair for me, perhaps
one pair each will be too much of a tax
on you, and I shall not need them until
next week."

Of course we could not refuse, for his
loneliness and (apparent) helplessness
appealed to us.

The doctor stayed long enough for
us to feel that he was not so unap-
proachable as he had seemed. I re-
membered afterwards that he never
once looked toward Claire or spoke to
her during his stay. Claire is our shy
one, with the great brown eyes and
dusky hair with a touch of sunshine in
it—we call her our wood anemone—the
most domestic of us all.

The doctor started to go, but turned
back and said, as in after thought, "I
never thought about payment." We all
protested horrified at his wishing to
pay for what we "considered a pleas-
ure." "Well," said he, "since you re-
fuse payment, I will let you do the
work on one condition—that the one
who darts her pair the neatest shall
accept a prize, and will take whatever
I offer for a prize—of whatever value." We
agreed to this, and he said, laugh-
ing, "Will you consider this promise
binding?" We promised solemnly that
we would, laughing all the while, as
we thought it all an excellent joke.

The next week when we met we com-
pared our work, and Claire's mending,
as we expected, was so daintily done
that you could hardly tell where the
darns were.

Then the doctor came in, and when
we showed him the socks he declared
Claire's the best, and said that the
prize was not quite ready, but begged
to be allowed to call on Miss Claire
that evening to bestow it upon her. She
reluctantly said that he might, and the
doctor suggested a meeting next day,
in order that we might (his eyes
twinkling wickedly) see how we liked
the prize. So next day we met, all
eager to see what the mysterious prize
was to be.

In about half an hour the door opened
and the doctor and Claire came in to-
gether, he looking very happy and Claire
blushing divinely, but looking not less
happy, and what do you suppose?

The doctor said: "Last night I went
to Miss Claire's home with the prize,

BEEF SCRAPS

GUARANTEED: 65 per Cent PROTEIN

RAW BONE

GUARANTEED: 25 Per Cent Protein and 45 Per Cent Bone Phosphate

PURE ANIMAL MATTER

POULTRY FOODS

Write us for price list and samples; they are free.

We want you to see the kind of Poultry Foods that are man-
ufactured from CLEAN, RAW MATERIAL. This means HEALTHY
ANIMAL FOODS for your poultry.

WESTERN MEAT COMPANY

SOUTH SAN FRANCISCO,

San Mateo County

intending to bestow it upon her, but
when she saw what it was she very
strongly declined to take it. I used all
sorts of persuasions, telling her that
she had promised faithfully to take
whatever was offered, of whatever
value. At first she said she had not
said a word of promise, but I held, and
you will all agree with me I know,
that the class had promised for her
as well as for themselves. Last even-
ing I had to give up in despair, but
asked her to sleep on it, and I should
return in the morning to see if she
did not think it would be better to ac-
cept the prize after all, saying also that
we had promised to show it to the class
this afternoon, and must not disappoint
them.

"It took a long time, but I have fi-
nally persuaded Claire to accept this very
poor prize—myself—but perhaps she
can utilize it in some way or make it
over."

We girls were breathless, as we
never even suspected that they were
more than acquaintances, but it turned
out that the doctor had loved Claire
for ever so long, but she had held him
at a distance, so that he never got a
chance to tell of his love. One day the
doctor had been standing at the win-
dow, and overheard the girls talking
about the neatness of Claire's work,
when she was mending a tear in
Louise's gown. He decided to take ad-
vantage of this knowledge, and took
this way to get a chance to offer him-
self to Claire—you see, he was pretty
sure who would get the prize. It was
very clever of him, I think.

That is all. The wedding is to be
the first of next month, and the doctor

insists that the girls shall all be brides-
maids, but I cannot, because, you see,
Ned wants me to make it next month,
so it may be a double wedding.—Boston
Post.

HINTS TO HOUSEKEEPERS

Rub chilblains thoroughly with parafin
oil two or three times and this will ef-
fect a cure.

Do not put leftovers away on a tin
plate. There is sometimes danger of
poison from the tin. Save plates that
have been nicked for this purpose.
Large, smooth clam shells found on any
beach make excellent dishes to bake
leftovers in. Food should never be put
in the part of the refrigerator where the
ice is kept. It is apt to become more or
less tainted by coming in contact with
ice. If broths are to be kept for two or
three days they should be placed next to
the ice, but they must be poured into
glass jars with tight covers.

Tea leaves are invaluable as a means
of cleaning varnished paint. When suffi-
cient have been laid aside, they should
be placed in a tin basin full of water,
and soaked for half an hour. The tea,
when strained, should be used instead
of soap and water to clean the varnished
surfaces.

Used Caustic Balsam 10 Years Successfully
990 Jennings St., N. Y., Jan. 1, 1905.

The Lawrence-Williams Co., Cleveland, O.
I have used your GOMBAULT'S CAUSTIC
BALSAM the last ten years and have been very
successful in curing curb, ringbone, capped hock
and knee, bad ankles and almost every ailment in
the way of lameness in horses. Have a stable of
forty head, mostly track and speedway horses, and
certainly can recommend it. Also find it good for
rheumatism.

OAKLAND POULTRY YARDS

Established 36 Years

Importers and Breeders of All Varieties of Land
and Water Fowls

St. ck for Sale Dept. 31, 361 McAllister St. San Fran-
cisco, Cal.

School of Practical, Civil, Mechanical,
Electrical and Mining Engineering.

Surveying, Architecture, Drawing and Assaying

5100 Telegraph Ave., Oakland, California

Open all Year. A. VAN DER NAILLEN, Pres't.

Assaying of Ores, \$25. Bullion and Chlorination
Assay, \$25; Blowpipe Assay, \$10; Full Course of As-
sayin' g. Established in 1894. Send for circular

CUTTER'S
ANTHRAX AND
BLACKLEG
VACCINES

are given the preference by 80% of Cali-
fornia Stockmen because they have better
results than others do:

Write for Prices, Testimonials and our New
Booklet on ANTHRAX and BLACKLEG.

The Cutter Laboratory

TEMPORARY ADDRESS

Grayson and Sixth Streets, Berkeley, Cal
West of San Pablo Ave.

THE WESTERN ENGINE

SPECIALLY BUILT
FOR WESTERN USE

Improved Construc-
tion, designed to use
cheapest fuel. Pro-
duces the greatest
power at smallest
cost.

Western Gas Engines
and Hoists secured First
Premium, Highest Award,
Sacramento Fair, 1906.

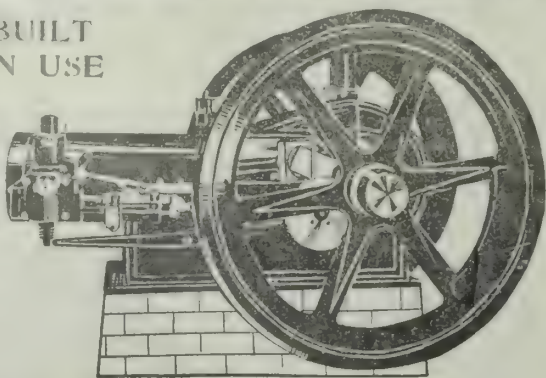
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WESTERN GAS ENGINE CO.

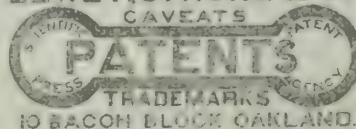
908-932 N. Main St., Los Angeles.

547 Fulton St., San Francisco.

Corner Third and Washington, Sts., Oakland, Cal.



DEWEY, STRONG & CO



HEALD'S

Business College and School of Engineering

The Leading Commercial and
Engineering School in the West

Has branches at Oakland, Stockton, Fresno and
Santa Cruz.

ESTABLISHED OVER 40 YEARS.

80 Teachers; nearly 100 Typewriting Machines;
20,000 Graduates; 1,000 annual enrollment; 500 av-
erage daily attendance; 600 calls annually for graduates
of the college. Mining, Electrical and Civil Engi-
neering departments. All departments open the
entire year. Both sexes. Individual instruction
Catalogue free.

HEALD'S BUSINESS COLLEGE

1451 Franklin Street, San Francisco, Cal.



Better fence
and still better

It takes 50,000 miles of fence every month to keep up with the American farmers' orders for AMERICAN Fence. That's enough every month to go twice around the world—and it's over 80 per cent of all the wire fence made.

There's only one reason why four out of five American farmers buy AMERICAN Fence—it's better fence.

We keep the best Fence brains in the country always at work, seeking constantly to improve

AMERICAN FENCE

And on account of making more fence than is made by all other fence makers combined, it costs us less per rod of fence to work out and make fence improvements than it would cost any other fence manufacturer.

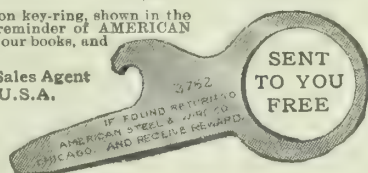
And because we can distribute the cost of improvements over so many million rods of fence in the year, we work out improvement after improvement every year without increasing the cost of AMERICAN Fence to you.

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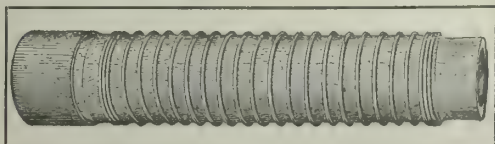
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DOMESTIC HINTS.

Veal Cutlets and Bacon.—Fillet of veal is the most economical. Cut in round pieces two inches across, flatten out with a wet chopper; melt one-half ounce of butter on a plate, add some parsley chopped with an egg, mix all well together; flour the cutlets, dip in the mixture in the plate, then into the bread-crumbs. Cut the bacon in thin slices and thread on a skewer; dry fry the cutlets in dripping, drain on paper. Grill or cook the bacon in an oven. Make a circle of mashed potatoes on a dish, pour tomato sauce in the middle, place the cutlets on the top of the potatoes, and garnish with rolls of bacon.

To Broil Mushrooms.—Have the fire low and lay them on an open oyster broiler, gills down, for a few minutes at first. Then turn them with a fork—it crushes them too much to close the broiler on them—sprinkle a very little salt on them and just before they are tender lay a little piece of butter in the center of each one, where it will melt and run through the gills. Serve them on toast not buttered, as buttered toast has too much taste of its own.

Tomato Omelet.—Three eggs, yolks and whites, beaten separately. Beat whites very stiff. Add three tablespoonfuls of milk and pinch of salt to the yolks, salt and fold lightly into whites. Have one teaspoonful of butter melted in piping hot pan. Cook slowly. Stew three tomatoes until tender and turn over omelet just before folding.

Lemon Rice.—This is made much like an ordinary rice pudding with a sherry glass of well washed rice placed on a baking dish, a pinch of salt added, and two tablespoonfuls of sugar, and if desired, a little nutmeg grated over the top. Dot the top of the milk with little bits of butter, and then add the grated rind of one lemon and one tablespoonful of juice. Bake for two hours in a slow oven, covering the top for the first half hour.

Apple Charlotte.—Cook pared and sliced apples, stirring constantly, in butter, until soft and dry, adding sugar. Line a plain mould with sippets of bread an inch wide dipped in melted butter, one overlapping the other; arrange lozenges of bread similarly in the bottom of the mould, turn in the apple and cover with buttered bread. Bake for half an hour in a hot oven. Serve with sugar and cream, or hot sauce.

Orange Meringue Pie.—Line pie plates with paste, puncture them all over and bake. Fill with the following cream: Stir in a vessel six yolks of eggs, three ounces of sugar, one ounce of cornstarch, the juice of eight oranges and grated rind of one, and three-quarters pint of water. Place mixture on the fire, and keep stirring until it begins to boil. Remove, beat in one ounce of butter, ornament the top with meringue icing or any appropriate designs. Sift with powdered sugar and bake to a nice golden brown.

FASHIONS

LITTLE DRESS ECONOMICS.

A last year's Eton coat may be made to look like quite another garment by adding a new collar, new shaped revers, cuffs and a very close-fitting girdle belt. Fancy velvet in any of the new subdued shades might be used, or plain cloth braided.

It is wise for every young woman to include in her wardrobe this season a jumper waist. These waists are not only very much the fashion, but they make it possible for one to go on wearing a lingerie waist that is a trifle the worse for wear. The jumper waist,

The most important thing in the world to me is a lamp-chimney.

I have been for years and years making the best, and always trying to make them better. I put MACBETH on them and no one ever disputes my claim.

The Index explains how to get a MACBETH chimney to fit every lamp, and how to care for lamps. Sent free to everyone asking for it.

Address, MACBETH, Pittsburgh.

you know, demands a gulmp, and the lingerie waist may act in this capacity admirably.

The woman who feels she needs two new suits this year, a skirt-and-coat costume and gown, and yet who can only afford one new dress, can straighten out her difficulty this way. She can have her coat suit consisting, say, of a brown cheviot plaited skirt and a tight-fitting cutaway coat or a pony model. Then to wear with this suit she can make or have made, two entirely different waists. One of wash flannel, in cream, showing a brown stripe or printed figure, this to wear for every day.

Then for her other waist she should select either satin messaline in just the same shade of brown as her suit, or brown chiffon cloth, and this waist she can trim so effectively that when her coat is laid aside she will have an attractive costume consisting of the dressy waist matching the cloth skirt in color. Instead of using messaline or chiffon cloth she might have her bodice of velvet, trimmed with elaborate buttons, silk braid the same color, or lace.

The finishing touch of the theatre costume this autumn is the theater head-dress. Fashionable women will no longer remove their hat at the theatre. The fact is, it will not be necessary to do so, as there will be no hats worn to remove. The theatre head-dress is the latest and too much cannot be said in its favor.

Every considerate woman will plan her theatre head-dress with a view to the comfort of the man behind. The smaller they are the better. Some are merely made of one ostrich tip caught close to the hair, and fastened to the side with a rose. Others are fashioned of a twist of tulle finished with flower rosettes.

To give a becoming touch to a plain waist, the clever girl is looking with favor on the Princess yoke. It has the effect of being all in one piece, and is among the daintiest of the new dress accessories.

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tells how to make the most money with bees. Contributors are practical honey producers who know how. Interesting—Instructive. \$1 per year; 3 mos. (13 copies) 25c. Sample free.

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SEND \$1.00 FOR A PACKAGE
PREPAID. I DO THE REST.
J.G. WOODMAN-71 PARK PL. N.Y.

AGRICULTURAL REVIEW

Butte.

GOOD PRICE FOR BUTTE COUNTY ORANGES.—The Saturday Bee, Dec. 1: The Butte County Citrus Association has received returns from the first carload of oranges shipped from the packing house in this city. The fruit was sold in Kansas City, Mo., for \$3.50 a box, and netted the growers \$2.50. The growers have received letters from the association, inclosing checks for additional amounts due them. The association when closing up last year's books found a handsome balance, and is now dividing this among the association members on a pro rata of the amount shipped. With this additional amount received, the growers state that the fruit for last year netted them \$1.12½ per box, giving them a handsome profit. The shippers are greatly delayed now in the marketing of their fruit by the shortage of refrigerator cars.

ORANGES HELD BACK WAITING FOR CARS.—The Saturday Bee, Nov. 30: Lack of transportation facilities in the way of a shortage of cars is causing grave anxiety, and, in fact, is seriously worrying the orange growers and packers of both Oroville and Palermo. In neither place have the packers been able to secure sufficient cars to transport their fruit, and it is feared that conditions may become worse.

TO PLANT SUGAR BEETS AT GRIDLEY.—The Saturday Bee, Nov. 30: On Saturday afternoon there will be a meeting of farmers in the opera house in this place to listen to a talk on the growing of sugar beets, their cultivation, care and harvesting, by J. G. Hamilton, the manager of the great million-dollar factory at Hamilton City. Mr. Hamilton will give every possible information on the subject, and will talk about harvesting and profits. He desires to meet all the farmers of the vicinity who have land that is adapted to the growing of beets. The meeting was arranged by the Gridley chamber of commerce, and Mr. Hamilton has agreed to come on that date. Mr. Hamilton will send an expert agriculturist to this place several days before the meeting, who will talk with the farmers and personally interview them.

Contra Costa.

CARNIVOROUS PLANTS.—Contra Costa Gazette, Dec. 1: One of the most interesting of that little group of plants known as "carnivorous," from their curious habit of trapping animals, and apparently feeding on them, is the bladderwort. In July and August its yellow flowers may be seen adorning many of our ponds and ditches. The little narrow necked bladders which it bears under water and from which it gets its name, are veritable traps for the smaller inhabitants of the ditch. The animals most frequently caught in them are those minute crustaceans known as water fleas. Occasionally, however, a young fish is found inside. In a recent number of a German scientific periodical W. Bath describes plants of bladderwort which have caught tadpoles. Some

he found caught by the head, and some by the tail. In other cases the animal had got entirely inside. It is found that the imprisoned animal may live some days inside the bladder.

BIG RETURNS FROM BARTLETTS.—Contra Costa Gazette, Dec. 1: An example of the large returns that may be realized from Bartlett pear orchards on the rich lands of the Sacramento river has been furnished the Bee by a well-known shipper. From 3,000 trees on the ranch of William Ruble, below Isleton, there were shipped to the East this year 10,240 forty-pound boxes of pears. The fruit netted the grower, picked in the orchard and free from packing, shipping, transportation and sale expenses, 97½ cents a box, making a total of \$9,984. Allowing 100 trees to the acre, this net return would give an average of \$332.80 to the acre. Very naturally, in view of such handsome receipts from Bartletts, the growers find it worth while to work hard and spend money freely to save their trees from the deadly pear blight. And the experience of a number of orchardists down the river shows that by watchfulness and care the blight can be and is kept under control.

Glenn.

SUGAR FACTORY FINISHES RUN.—Willows Semi-Weekly Journal, Nov. 30: The big sugar factory of the Pacific Sugar Construction Company at Hamilton City, Glenn county, concluded its first season's run Wednesday night, and the factory will remain closed until the opening of the season of 1907. It is hoped to start the factory next season as early as June, and planting of beets will be made with that object in view. In speaking of the closing of the factory yesterday, J. G. Hamilton said to the Chico Record, that, considering everything, the run had been an exceedingly satisfactory one. To buy the land, build a railroad, erect and equip a six million dollar factory, all in less than six months, was a stupendous task, and it therefore was not expected that a full season's run could be had the initial year. Owing to late planting the factory did not get started as early as was desirable, and this, coupled with the great labor scarcity, has somewhat hampered matters. But the result of the work in the factory this year has demonstrated absolutely the claims that Mr. Hamilton made for this section when he selected it as the scene of operations. The percentage of sugar in the beets, and particularly the purity, has even exceeded his expectations, and leaves no question but that this section is far ahead of any part of the West, in its adaptability for the growing of sugar beets. The result to the growers has also been most satisfactory, and the most skeptical have been convinced that the profits exceed almost any crop to which the lands may be devoted. So favorable have been the returns to growers of beets that many thousands of acres have been pledged for planting next year, and it is hoped to have a crop sufficient to keep the factory in operation from June until December.

Santa Clara.

SOWING SPINACH.—The Gilroy Gazette, Nov. 30: Early spinach is seeded in the fall. The ground should be plowed and made fine, plenty of well-rotted manure applied, and the seed sown in rows about 16 inches apart, which should be done with a seed drill having a small roller to cover and press the earth on the seeds, the depth of planting the seeds being about half an inch. The seed should be sown before cold weather sets in. When the plants are up let them grow until the ground is frozen, and then cover with straw, which should be removed early in the

spring. Spinach is a very hardy plant and is seldom injured by cold.

Sacramento.

OF INTEREST TO FARMERS.—Semi-Weekly Appeal: The Sacramento Valley Development Association is calling the attention of all parties in any way interested in irrigation to Farmers' Bulletin No. 263, on "Practical Information for Beginners in Irrigation," by Professor Samuel Fortier of the United States Department of Agriculture. This bulletin contains forty pages and is brim full of information and illustrations of great value to all farmers and orchardists who irrigate even a very small area of land. It tells how to build ditches, head gater, weir boxes, as well as how to prepare the soil, how much water to apply, etc. This bulletin is by one of the best informed men of the West on the subject and will be found exceedingly instructive and valuable to those who are irrigating at the present time or who contemplate irrigating their lands, for it tells the best ways to do it. This valuable treatise can be secured free of charge by addressing the United States Department of Agriculture at Washington, D. C., and asking for Farmers' Bulletin No. 263.

Yolo.

STEALING A FARM.—The Winters Express: As was expected, the proposition to remove the State Farm from Yolo county is in the air, ready to materialize when the legislature meets. Below is an excerpt from a Sacramento paper that tells the story. Its absurdity will be apparent to any farmer. While it is true the soil is of the best, and will easily grow almost anything, it is not true that an experimental or instruction farm should be on poor soil. California farms are not of that sort, and the man who has a farm so poor that he must be shown to raise anything on it had better give it up. The college farm, like other institutions, is for the benefit of the majority, and the great bulk of farm lands in California is similar to that comprising the State Farm in Yolo county. Should Mr. Gordon have his way and transplant the school farm to some shallow, rocky or alkali soil it would have small patronage, simply because we do not need to teach our young people how to farm such lands. The best that is known in farming will be taught at the school, and when that is done the pupil will know what to do anywhere. Here is what Alexander Gordon tells the Star: "Alexander Gordon, one of the best informed men on land values and soil adaptability in California is convinced that the state made a bad mistake in selecting the Davisville site for the State Farm. Mr. Gordon says that the error will be more in evidence after the farm is in full operation, says the Sacramento Sunday News. In his opinion the practical results expected from the enterprise, and which were in the minds of the promoters of the proposition in the legislature, will fail of realization, as the public will find out before many years. Mr. Gordon thinks that, as far as results go, the \$135,000 paid for the Davisville site might as well have been turned into a bottomless sewer. 'The Davisville tract,' says Mr. Gordon, 'is a piece of the richest land in the state. Anything that will grow in California in the richest ground will thrive there. That is the defect in the selection. What the state owes to its citizens who may desire to choose agriculture for their occupation, is not to show them how to grow things on land that will grow everything luxuriantly, but to show them how to get results out of poor soils. The man who owns or tills rich land like that in the Davisville Farm does not need any help from the state or from any other source.'

A Large Egg Yield

A hen—any hen—will lay a great number of eggs (some more than others) if conditions and surroundings are such as meet the requirements of her nature. Here is where your part comes in. Give the hen a regular daily portion (a penny's worth is enough for 30 hens) of Dr. Hess Poultry Pan-a-ce-a, and she will do the rest.

DR. HESS POULTRY PAN-A-CE-A

is not a food—it is a tonic, specially prepared to give "tone" to the digestive and reproductive organs, so that the maximum of food, over and above the maintenance ration, is used to make eggs. It has also a property foreign to a so-called poultry food. It is a germicide, that is, it destroys bacteria; the cause of nearly all poultry ailments. Poultry Pan-a-ce-a is the prescription of Dr. Hess (M.D., D.V.S.), is endorsed by the leading poultry associations in United States and Canada, and is sold on a written guarantee.

1½ lb. package, 85c.
5 lbs. \$3.50.
12 lbs. \$1.75
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Two thorough bred Shorthorn Heifers, one four years, one eight months old. Also one thorough bred Shorthorn Bull four years old, bred by J. L. LOVE of Malon, Mo. Pedigrees furnished. Apply to A. B. HUMPHREY, Mayhews, Sacramento Co. Calif.

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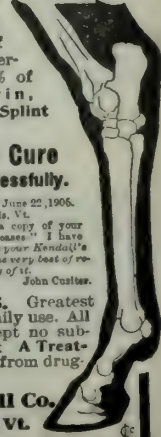
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Gentlemen:—Please send me a copy of your "Treatise on the Horse and his Diseases." I have a stable of fine horses and have used your Kendall's Spavin Cure for two years with the very best results, and cannot speak too highly of it.
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WHAT A MAN AND WIFE DID IN YOLO COUNTY.

A correspondent of the New York Tribune gives the experience of a man and wife who were willing to work and how they made a small farm pay in Yolo county, California.

Four years ago Mr. Baird was running a small grocery store in San Francisco; but he was not in good health, so he concluded to make a change. Accordingly, he sold his grocery store and bought a fifteen-acre fruit farm in the Capay valley.

It had taken about every cent of Mr. Baird's capital to buy the ranch, so he had to use his credit in starting up his farm work. Mr. Baird was sixty-two years old at the time, and, as I have said, was not in the best of health; but having been born and bred on a Vermont farm, he had plenty of Yankee pluck and resourcefulness. He also had a good wife, who cheerfully accepted the situation and took right hold and helped, not only doing the work of a housewife, but assisting at the same time in the care of the farm.

The place was not stocked at the time. There was a fairly good barn, but rather a poor house. But in the climate of California, the house does not make so much difference. Then Mr. Baird, being a carpenter and cabinet-maker with all his other accomplishments, soon with the assistance of Mrs. Baird, made the place quite tidy. Then, by way of improving the barn, he built within one corner of that structure a new granary, 10 by 18 feet on the floor and 8 feet high.

Thirteen acres of the farm were down to fruit and everything was in a thrifty condition, and the trees all in bearing. There were 600 almond trees, 350 apricot trees and 240 peach trees, besides a small family orchard containing apples, pears, plums, prunes, etc. The remainder of the land was in pasture. The fruit trees were seven years old, so, of course, they were just in their prime, and this was one thing that was very much in Mr. Baird's favor.

But as far as farm tools and livestock were concerned, Mr. Baird had not so much as a hoe or a chicken. But everybody was willing to trust him, so he got along very nicely. He moved onto the ranch in the fall, and the first thing to be looked after was the care of the fruit orchards. In the first place, he hired a man with team and plough, and set them to ploughing between the trees. He ploughed the land all over once in January and again in March. In the meantime he bought an old horse for \$15, and went to work cultivating after the plough.

Before he was through he cultivated the ground seven times over, and then the soil was not only in fine condition, but there was not a sign of a weed or spear of grass upon the whole place.

This part of the work all finished and off his hands, he went to pruning his fruit trees, and he worked at it early and late, and after he was all through cutting he carted off and burned not less than forty cartloads of brush, and the cart used was a big hay rack with sides to it, and upon this the brush was piled just as high as possible, so that it would stay on the cart. Besides this brush, which was composed of suckers and small branches, there were a lot of large limbs which, when cut up, made excellent stove wood.

And about that wood Mr. Baird tells what he considers a good joke. Soon after he had finished his job of pruning he went to the city for a few days' rest and recreation, leaving Mrs. Baird at home to run things during his absence. When he arrived home from his trip he found the pile of limbs all cut up and "corded" into stove wood.

He couldn't make it out. He had left no hired man at home, and he knew no tramp would cut up that amount of wood, no matter how good the "hand out" might be, so he asked his wife about it.

"Who cut up all that wood?" said he.

"I did," replied his wife. "Isn't it a good job?" Mr. Baird was forced to admit that the work was satisfactory, and then Mrs. Baird explained how she had driven down to the store and bought a brand new hatchet with which to do the work, so that it might be finished by the time he was at home again.

That first season was a good fruit season; but for that matter Mr. Baird has not had a crop failure since he owned the place. In May a fruit packer came along, examined his almond trees and offered him \$400 for his prospective crop. Mr. Baird took him up; \$100 cash was paid down, the balance to be paid in August. Mind you, that was for the nuts on the trees, the purchaser contracting to do all the harvesting and curing.

That \$100 came in mighty handy, considering the circumstances, and it eased the financial situation up in great shape. Mr. Baird paid off some debts and saved some money to pay for help during the fruit picking season, for he had decided to pick and dry his peaches and apricots himself. As soon as the fruit was in shape for picking he went at it. During that first season he used to get up in the morning just as soon as it was light enough to tell a ripe peach from a leaf and pick all day and up into the evening, until it was so dark that all things looked alike to him, peaches and peach leaves.

This was hard work, but it was in the busy season, and it was to be expected. With Mrs. Baird's help and some hired help that cost him only \$35 he secured that crop of peaches and apricots, and these he sold for \$400 net, so that there was \$800 as an income from the fruit trees the first year.

In the early start, among other things that he had "run his face" for was a dozen chickens, and from these he raised one hundred more. His chickens did well. They had full run of the ranch, besides unlimited outside range. He also bought \$10 worth of bees, and for these he made with his own hands new hives, and the bees showed their appreciation by gathering and storing not less than four hundred pounds of honey, which brought 10 cents a pound in the market. Mr. Baird was so well satisfied with his venture in the bee business that he procured some of the best strains of Italian bees, and he has been improving his stock ever since.

From his bees that first year he received in revenue about \$40; from chickens and eggs, \$50. He kept two hundred pounds of dried fruit to supply his own table, with some left to sell to such of his neighbors as might want to purchase. Then there were other small incidentals, bringing his total income up to quite a handsome figure.

From that on he began to fit up his place all around. Among other things he bought a brand new \$65 wagon for hauling fruit and a new buggy, single harness. He bought a fine mare and colt and these he sold again at a good advance. Now he has another valuable brood mare and colt, and the latter, he says, he would not sell for less than \$500, for it is a mare and of extra good stock.

He has fenced his entire ranch with new fencing, renewed a vacant spot in his apricot orchard, and bought five acres of adjoining land. Two acres of this land he put down to natural grass pasture. The balance he cropped with grain and corn. First he cropped the land to corn, using plenty of manure

and cultivating very thoroughly. Following the corn with wheat he cut a very heavy crop of the latter, fully ten tons from the three acres, cut and put up as hay.

His fruit trees have improved from year to year and prices of fruit have ruled higher each succeeding season. A year ago last spring he thought for a time that his fruit crop would be poor, but by the time that the peaches had got as big as his thumb he found that there was such a heavy crop that thinning would be necessary.

Last season he sold eighty-six hundred pounds of dried fruit, bringing him about \$600 cash. All told he turned off \$1,400 worth of stuff from this place, and footing up his income for the four years he found that the place had actually paid for itself in that time.

Combination Sale

54 SHORT-HORNS

Saturday December 29, 1906

at Woodland, Cal.

R. Ashburner consigns 14 head from his well-known milking herd.

Mrs. W. B. Gibson & T. B. Gibson consign 22 head, being their entire 1906 crop of both bulls and heifer calves.

H. P. Eakle, Jr. consigns 18 head, including the pure Scotch bull Barmpton Lad, reserve junior champion at the California State Fair 1906.

About one-half the above are young bulls with a good proportion of the most approved Cruickshank blood in the top crosses of their pedigrees.

To be held on the farm of Mrs. W. B. Gibson, one and one-half miles from the Depot.

Conveyances will meet all trains.

Sale under cover, beginning at 12:30 p. m.

Write for catalogue.

Col. Geo. P. Bellows, Maryville, Mo., auctioneer.

SIERRA KENNELS.

FOR SALE—At a bargain Scotch Collie dog one year old, sable and white, is a fine companion and worker. Eligible to registration. Price, \$15.00. Kennels at University of Cal. Dairy Barn.

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GRAPES.—California table grapes are a fruit distinct from their eastern competitors, and in the production of table grapes we have a permanent paying industry.

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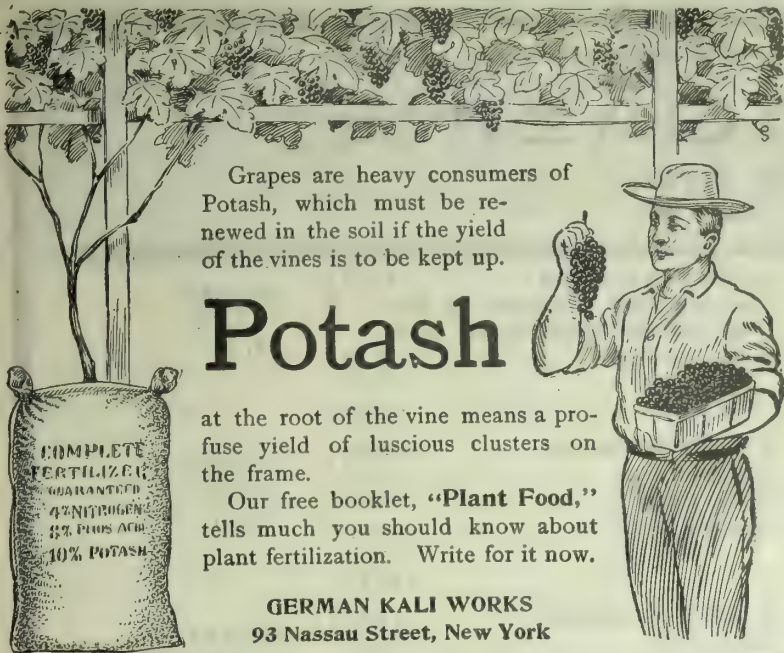
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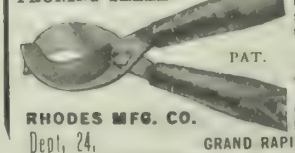
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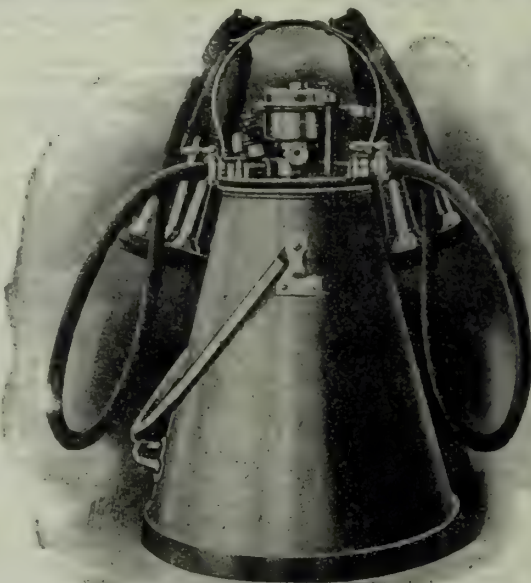
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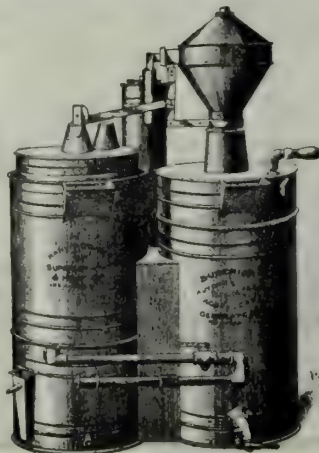
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THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

LXXII. No. 24.

SAN FRANCISCO, SATURDAY, DECEMBER 15, 1906

THIRTY-SIXTH YEAR

SCENES IN AUSTRALIA.

We glance this week at our more distant neighbors in the fellowship of the Pacific, the States of Australia. The view showing the pool under the eucalyptus could be almost exactly duplicated in parts of this State, where the eucalyptus has been longest grown. The picture presents a scene in Cloncurry, Queensland. It is a dry country—hot and infested with flies, so that everyone wears gauze below their hat-brim, and yet occasionally in the primeval forest or "bush," a pool survives under the shade of the big eucalyptus trees. It is perhaps one of those mysterious out-croppings of water from some distant source of supply which the geologists like to explain and which desert wanderers appreciate without much regard for its origin. The eucalyptus knows a good thing in the way of moisture and although the pond may seem to be there because protected by the shade of the trees, we imagine rather that the trees are there, because the water arrived before them.

Another picture shows how the miners scar the face of nature the world over and we doubt if we have anything more picturesque in the way of excavation than this scene conveys. It is an open-cut on the 90-foot level of a mine. The man is about to dump the contents of a car into a mill-hole, whence it will go where it will do most good. This mine is in the desert district in the north of South Australia.

Most interest pertains, however, to the smallest picture of the group, for it recalls all the efforts made to civilize the camel and make it a common carrier in arid parts of the earth distant from its habitat. Considerable expectations were placed many years ago upon the use of the camel as a beast of burden in Nevada and later in Arizona, but so far as we know the expecta-

tions were not realized and the animals dwindled or were remanded to circus service. Uncle Sam has not made any striking success in his efforts to establish beasts of burden from distant parts of the earth. The reindeer could not displace the dogs in Alaska and the camel had to yield to the mule in the hot deserts. In Australia, judging by the picture, more has been done with camels, for they are still in use and the picture shows them on their 200-mile journey from Cloncurry to the nearest railway. Discussing the domestication of camels, we cannot do better than indulge in an account which a British officer gave some years ago of his experience and observation in learning how to break and ride that amiable and useful animal. "You can well imagine that there's a circus around here while the usual riding instruction is going on. When the untamed camels first arrived at our camp I heard a tremendous growling in front of the door, and on going out I saw one of these amiable beasts being led by its keeper, but walking along with every expression of disgust both in its countenance and voice. The man stopped (ditto camel) and attempted to tie the beast's forelegs together, when it reared and striking out with its fore feet, landed on the keeper's stomach and head, sending him flying through space as if shot out of a cannon. The man picked himself out of the ditch with a hand on each bruised part, and the camel, which had never ceasing roaring, was taken in charge by two other more robust natives and led to the tents, or, rather induced to go by energetic assistance of a very sharp iron rod applied in a most vigorous and miscellaneous manner. Similar exhibitions are being conducted here daily, and we are now ready to lead the recently broken camels. Within three or four days they become tractable.

I first formed my opinion of a camel some years ago, when I rode across the Arabian deserts, and I see no reason to alter it in any way. The creature has so many talents, and so many ways of exhibiting them. To begin with, it can kick harder, higher, swifter, and oftener than a mule, and can use all four feet at one time in a kicking match. Then it can bite worse than a vicious horse, and buck in a way to make a broncho blush with absolute shame. No rider ever lived who can stay on that perch seven feet from the ground, during a camel's exhibition of gymnastics. It can run away when it feels like, and is often seized with a desire to slope. Upon an occasion of this kind its rider experiences a sensation between being blown up with dynamite or struggling against the throes of an earthquake until all his joints are dislocated, and he drops, a limp, inert mass, to the ground. This sweet creature has a way of evincing its displeasure that is at least effectual and convincing. It twists its snake-like neck into a circle, and poking its ugly nose into the face of the rider, opens its cavernous mouth and lets out a roar of disgust in such a fetid breath that the elevated human victim is fairly blown into the middle of the coming month (a week being too short a distance). And yet, with all these high recommendations, which some people might consider objectionable, these are the dear animals I am constantly brought into contact with, and for which I am even beginning to form an affection."

A census bulletin just issued says that California leads all the States in the production of canned and dried fruits. The output of the State for 1905 in these lines was valued at \$21,000,000.



Open-Cut for Mining in South Australia



Eucalyptus Trees in the Australian Bush.



Camels Laden with Ore on a 200 Mile Journey to the Railroad.

ANOTHER DECISION ON UNDERGROUND WATER.

An important suit, having to do with the matter of irrigation and of large importance to Southern California and all other sections where the matter of a water supply for the growing of crops is a factor, was decided by Judge Munroe in the Superior Court at Los Angeles this week. The gist of the court's decision was that an owner of land is entitled to sink wells and pump water from beneath his own land for necessary purposes, regardless of how the pumping out of the supply of water may affect others.

The suit was brought by Mrs. Victoria Hudson against two score of ranches, residing between La Puente and Spadra, in Los Angeles county, in which the plaintiff prayed for an injunction against the defendants to restrain them from pumping the water from beneath their land and thus depriving her of a water supply on her own lands. Mrs. Hudson recited that she was the owner of a large tract of land, located on a lower level than that of the defendants, and that the latter, by drawing the water from the ground, destroyed her own supply. Her petition was based upon riparian rights. The court denied the injunction.

Record-breaking exports of agricultural machinery, it is said, are about to be made from New York to Russia by the International Harvester Co. Nine chartered steamships will be dispatched to the Black and Baltic seaports. British, Swedish, and Norwegian vessels will be employed. In addition to these complete shiploads, sixty cargoes will be forwarded by the regular line boats, which bring up the total shipments to North and South Russia close to 100,000 tons this season.

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THE WEEK

Not less than a thousand wide awake and progressive Californians assembled last week for the purpose of promoting the agricultural interests of California by advancing an understanding of what these interests need and by securing strong, co-operative effort toward attaining it. These assemblies were held in three places: The fruit growers' meeting at Hanford, the dairymen in Stockton, and the forest and irrigation people in Sacramento. It is clear to us that three such conventions should not be held during the same week. There is such a breadth of interest among the agriculturalists of this State that many of them desire to take part in the work of more than one convention, which is practically precluded by simultaneous meetings at different points. It would be vastly better to call such assemblies on different weeks. In spite of the collision in point of time, each convention was a success, had a good working membership, and accomplished transactions of great interest and importance. Our columns will be occupied, as space permits, for some time to come in setting forth the carefully prepared papers and addresses which engaged the attention of all the meetings. They will be found helpful in many lines of work and suggestive in many lines of thought for both the general and individual advancement.

The speaker who aroused most enthusiasm at the Fruit Growers' Convention, at Hanford, was Governor Pardee. His address on taxation, showing so clearly that the farmers of California are paying taxes which are equal to about one-tenth of their net incomes and that "no other industry and no other equally extensive class of property in California bears such a burden of taxation," was most appreciatively received. Of course, the Governor proceeded to most carefully demonstrate the truth of his claim and to show clearly how the farmers could be relieved by placing greater burdens of taxation where they properly belong. The uncontrovertible facts are the result of the careful study covering two years of time by the taxation commission appointed by the last legislature on the initiative of Governor Pardee, supported by the State Grange and other organizations. The report of this commission will soon be ready for distribution, and covers the whole subject in detail and can be had by writing to Prof. C. C. Plehn, University of California, Berkeley. The Governor's address will be published at once both in the proceedings of the Fruit Growers' Convention and in a separate pamphlet as provided for by resolution and this can be had by application to the secretary of the convention, Mr. John Isaac, of Sacramento. As we thus plainly inform our readers where they can get these vital documents simply by asking for them, we do not undertake farther allusion to the subject at this time, except to say that the declaration of appreciation of Governor Pardee's work for just taxation and of his devoted and intelligent administration of the affairs of the State during his term as Governor was the most enthusiastic and outspoken ever made by an industrial organization in this State.

Another matter over which the Fruit Growers' Convention was deeply moved was the labor question. A better labor supply is clearly essential to the life of our fruit industries. Sincerely as our growers would prefer

loyal and efficient service by those of Caucasian blood, it is incontestable that such labor is not to be had in adequate quantity and at a price which the present margin of profit in fruit operations can allow. In the development of the West it is evident that white persons endowed with adequate energy and skill can do better on their own account or in service of industries which can afford to pay more than they can at farm labor. This is true of the whole United States, consequently California cannot depend largely upon a supply of white labor for the common work of agriculture. California fruit growers are actuated by just as high regard for the welfare of Americans as is any other class of our population, but they cannot endure the loss of their livelihood and investments by a sentiment which, under present conditions, is impracticable because the labor which it aims to advance and encourage cannot be had. The convention, therefore, after most free and pointed discussion, adopted the following resolutions:

Whereas, farm labor is becoming increasingly difficult to obtain, and in California especially the great fruit and wine industries are threatened with disaster unless some remedy be found to get more labor; therefore, be it

Resolved, That the fruit growers of California, in convention assembled, favor such modification of the Chinese exclusion act as will permit the enactment of laws making possible restricted immigration of laborers irrespective of nationality.

This declaration of the fruit growers is already being misunderstood and misrepresented, as, perhaps, might be expected. Leading journals are proclaiming that the fruit growers have declared for unrestricted Chinese immigration, and are berating them accordingly as un-American and disloyal. The fruit growers, as above resolution shows, did nothing of the kind. The situation as it confronts them is very simple: they have been deprived of the most skillful, devoted and trustworthy laborers they ever had, the Chinese. They have had furnished them a large supply of careless, pre-occupied, and untrustworthy laborers, the Japanese. The fruit growers cannot understand what interest of the country is served by forcing them to struggle along with an inferior Oriental; if they must have an Oriental, why not the best for their purposes? When we say this we do not intend to impeach the Japanese as such; they are restless, enterprising, ambitious, and successful. They are better at their own undertakings; they have so many eyes for their own interests that they have short sight for their employer's interests. Under present conditions they are, of course, indispensable; the fruit growers have no issue against them; our agriculture cannot get along without them, inferior as they are from the employer's point of view. But while we have them in any quantity and while another untried Oriental people, the Hindus, are coming in without restriction, why should not a certain number of a tried and approved Oriental people, the Chinese, be admitted? That is the way the California employers of farm labor look at the matter.

The declaration of the Fruit Growers' Convention for a restricted admission of Chinese was not unanimous. There was, in fact, a considerable minority vote against it ostensibly actuated by two convictions: one that it was a useless contention, because it could not prevail in public mind and Governmental policy; another that restricted emigration was impossible; that the Chinese wall, which some speakers moved over to the United States for rhetorical purposes, would crumble and disintegrate if any one should be allowed to make a small opening at the top. Another figure of speech was that a trial of restricted immigration would be like the cut in the bank of the Colorado river made by the settlers in the Imperial valley, which let the whole river in upon the country. There is unquestionably force in these points made against the resolution which was adopted and the fruit growers are not disposed to belittle them. But it is the situation which stands large in their view. They are in extremity to gather and prepare their products profitably; they are obliged to use poorer tools

when they know of better tools, which is a hardship which only a hampered and distressed producer can submit to. They must be allowed to declare their convictions and experiences like men and they should not be subjected to misrepresentation and malignment for so doing. Their situation is one which the public must earnestly and respectfully reckon with. There is no more conservative, loyal, and truly American element of our population than the class which derives its livelihood from agriculture. If they are wrong in their declaration against discrimination in favor of Orientals which are, for their purposes, inferior, they must be shown that they are wrong for some higher reason than those which they advance. Abuse by those who cater to interests and policies which are even less American than the Orientals themselves will not shake them in their convictions or determinations.

The regents of the University of California at their regular meeting on Tuesday of this week accepted the bid for the construction of two buildings—a creamery and a live stock pavilion on the University Farm at Davisville for the sum of \$30,000. The former is to be a fully equipped creamery for commercial manufacturing as well as for instruction and will be fitted out with the best machine and appliances for such work. The live stock pavilion will also serve as a general auditorium, and so with these two buildings it will be possible to begin instruction next fall providing additional equipment and maintenance is provided by the coming legislature. Meantime the balance of the last appropriation, about \$10,000, will be used to purchase live stock for breeding, working animals, tools, and machines, and in making minor improvements on the farm. Propositions for the above expenditures from the head of the agricultural department of the University have been before the Regents for several weeks, and they agreed to them just as soon as they could decide upon their wisdom and desirability. During the last few weeks, however, there have been the wildest statements in the interior journals that various unwise things were contemplated and they were forcibly denounced. It would have been unnecessary to indulge in these vain imaginings if the writers had taken the trouble to ask just what propositions were being considered. Half our troubles come from what Josh Billings called, "Knowing so many things that ain't so."

QUERIES AND REPLIES.

BLIGHT OR SUN BURN.

To the Editor: I have a walnut orchard about two miles south of Nipomo and have only harvested a half of a crop. I have lost at least 50 per cent on account of sun burn or blight. What is the difference between sun burn and blight? A good many of the nuts have fallen, it seems, unmaturing and look black all over. Again, a good many have blackened on one side. Is there any advantage in spraying or pruning? Would you advise thinning out the limbs so there would be free access of air passing through the tree? Would not the tree or fruit be more exposed to the sun in this case, or would the free passage of air through the branches of the trees hinder sun burn? My orchard is in sandy loam, no subsoil, no water to irrigate, but I have to depend on the rain fall. Is there any fertilizer that I might scatter around the trees that would do any good and help fill out the nut? Would hauling two or three barrels of water to the tree do any good just before the evaporation of all the moisture had taken place?—GROWER, Mendocino county.

It is impossible to tell just what is affecting your walnut trees without specimens. It is hard to judge by any description. The probability is that you have the blight and if you will send up nuts next year as soon as you notice any blackening of them we will endeavor to determine the matter for you. The walnut blight generally attacks some of the nuts very early in the season, the little nut being blackened when hardly larger than a pea. There are also later attacks which destroy the whole nut and bring it to the condition which you describe. There is no method of spraying or pruning which seems to effect this disease. If your trees are not thrifty the application of stable manure and of

water during the dry season would be very desirable, and even a small amount of water would help them.

HARDY GRASSES.

To the Editor: We have a little land that we wish to sow to grass, and as I am a newcomer, I apply to you for information as to what kind of grasses to sow. Part of the land is low and rather wet, under water part of the winter. Would Alsike clover do well there? Then we have some land that I think would grow alfalfa, if it does well here at all. There is also some land that is too high and thin for any of these. Would Bromegrass or "Bromus inermis" do here? What do you think of these for this latitude, or are there others that you would recommend?—BEGINNER, Lake county.

On your lower land, somewhat subject to overflow, Australian rye grass seems to be the safest to prescribe for perennial pasture, although Alsike clover is showing some success on low lands in the northern part of the State. It is very doubtful whether you can get a satisfactory growth of any perennial grass on your higher, drier lands. Australian rye grass has proved to be better than "Bromus inermis." You will have to experiment a little on your own account to ascertain how dry your lands actually become during the summer season, because that will regulate the success of a perennial grass. We shall soon publish a very interesting account of trials of grasses by Mr. Albert F. Etter, of Humboldt county, which will make many valuable suggestions for your part of the State.

ALFALFA IN THE ORCHARD.

To the Editor: A local company has one hundred acres of apple orchard planted to alfalfa. The trees are looking well and had a large crop of apples this year, but badly damaged by worms. The trees never have been sprayed to prevent codlin moth. The man in charge is going to spray in February, while the trees are dormant, and intends using the Bordeaux mixture. As I understand it the Bordeaux mixture is for fungi and not for insect life. Don't you think the arsenical sprays more effective for codlin moth than either the Bordeaux mixture or lime, sulphur, and salt? Will the drizzle from the trees when sprayed with Paris green injure the alfalfa for feed? Don't you think the trees ought to be spaded around when an orchard is seeded to alfalfa and a little fertilizer used when a tree shows signs of weakness? Knowing the great benefits the fruit growers of California have received from scientific investigation, I will ask you to kindly give me the instruction that you would deem necessary.—READER, Inyo county.

Spraying with the Bordeaux mixture will have no appreciable effect upon the codlin moth. It is a fungicide, as you state. The accepted remedy at the present time is spraying with lead arsenate several times during the growing season of the apple, from the fall of the blossom petals until the fruit is sufficiently advanced to render further protection unnecessary. If spraying with arsenicals for the codling moth is done properly, there will be exceedingly little drip from the foliage, and this amount will not render the alfalfa under the trees poisonous to stock. To use a coarse spray which causes much run-off from the foliage is not only wasteful of material, but also renders the application less effective. The spray should go upon the foliage in a fine mist and stay there.

When alfalfa is grown under fruit trees it would be desirable to spade around the tree to prevent the ground from becoming hard baked. This practice of growing alfalfa in orchards is, however, new on this coast, where the clean culture of fruit land is generally better and it must be admitted that the best practice of growing alfalfa in orchards is not yet fully made out.

PREPARING LAND FOR FRUIT.

To the Editor: I want to plant fruit trees on land that has been used mainly for hay and grain during the past few years and is somewhat run down. I want to enrich and bring it up to a high state of cultivation. I had thought to summer fallow it this first year to clear it of the weeds, but it is not exceedingly weedy, and several of the farmers around have advised that I plant corn, keep it well worked and in that way clear it of

weeds. Then I want to fertilize it. The distance makes it expensive to haul stable manure to it. How would it do to plow soon now and sow a crop of wheat, then about April next plow the green wheat crop under and plant cow peas and as soon as they get a good growth plow them under? Then plow enough during the summer next year to keep all weeds down and the ground soft?—AMATEUR, Napa county.

Your plan for securing a winter growth of green stuff to plow into the land which you expect to set next year with fruit trees is a good one. We believe, however, that you will have to rely mainly upon the green crop which you get during the rainy season. Unless the land is quite moist you would not get very much of a growth of cow peas after plowing in the young grain. It would be better to substitute a growth of legumes for the growth of grain which you mention, and then you would be practically sure of securing a considerable weight of nitrogenous growth. This you can do by sowing ordinary field peas, or burr clover, as soon as you can get the ground into good condition. Plow this in in the spring as deeply as possible and then cultivate shallow during the summer to kill weeds and keep the surface loose.

REVIVING OLD VINEYARD.

To the Editor: We have one acre of grape vines some fifteen to twenty years old. They are seven feet apart each way. They have never borne well; most of the vines bear very few grapes. Some say it is best to take out every other row so as to have them 7x14. What would you advise? We raise for home use.—READER, Vallejo.

If your grape vines are healthy and you are quite sure that they are not attacked by Phylloxera, or some form of disease, it would certainly be advisable to promote their growth by reducing the number and by the application of stable manure deeply plowed in and followed by a thorough cultivation next summer. If your vines simply need more food and better opportunity for growth this treatment will greatly improve subsequent crops. Although stable manure has to be used carefully on grapes designed for wine making, it can be used to advantage in moderate amount for increased yield and larger size of table grapes.

COPPERAS WILL NOT DO.

To the Editor: There is no bluestone in this market. Is there any substitute for it in bluestoning wheat? Would copperas answer the purpose, and, if so, kindly state the proportion to be used relative to an equal part of bluestone.—GROWER, Stockton.

Copperas is not a satisfactory substitute for bluestone. It is a very weak fungicide and is not worth using. The proper substitute for bluestone is the formalin treatment, of which a full account was given in the Pacific Rural Press of December 1.

IMPROVING A CEMETERY.

To the Editor: We have a cemetery which has long been neglected. I have been trying to get the people interested in improving the ground. Will you kindly offer a suggestion as to the proper variety of trees, shrubs, and plants to use for this purpose, both for planting on graves and for general planting? The soil is light, with no possibility of any irrigation at present, and hardy varieties that will grow in a dry location will be necessary. — SUBSCRIBER, San Benito county.

We have no particular information concerning the planting of cemeteries. Perhaps some reader can help with his experience, but it is a question which must be largely settled in each district for itself, in accordance with experience as to which trees and shrubs are most satisfactory in the locality. The way to accomplish such improvement as you suggest would seem to be to collect those who are interested in the property and try to have them take up some co-operative plan and work together toward a very desirable end. The kinds of trees and shrubs to be selected would be those which

have proved themselves to be best in the locality and in the town gardens, or in connection with the farm houses in the vicinity. A committee could make up a list of desirable things from such observations of what is known to be satisfactory. In many even of the smaller places there are gardens of florists who take pains to inform themselves along these lines and for a fair consideration will plant and keep in order cemetery lots. They should be encouraged by patronage.

GARDEN GROWTH OF FRUIT TREES.

To the Editor: I desire you to answer a few questions relative to the selection of some dwarf fruit trees which I desire to train espallier on the fences in my back yard. I shall not have room for more than seven or eight trees and I earnestly desire that they shall be of the choicest varieties adapted to local conditions of soil and climate, I may add quality appeals to me stronger than quantity. Will you advise me as to variety you recommend in apple (I am very partial to Gravenstein and Baldwin), pear, peach, plum, apricot, and cherry, advising me if any of these fruits are unsuited to my locality?

The dwarf stock of California nurseries seems to be very limited, can you advise me of any nursery nearer than Eastern States which can supply dwarf fruit trees?—SUBURBAN, Berkeley.

Dwarf fruit trees are very difficult to get in California, because all our plantings, even in amateur gardens, have been for years of standard and not dwarf trees, and it does not pay our nurseries to do much with them. You can succeed very well with standard trees with the espallier training. The varieties of apples which do best in Berkeley are the Red Astracan, Gravenstein, and Yellow Newton Pippin (early, medium, and late). The Baldwin is very little grown in California, the Esopus Spitzenberg would give you much better results. All the other fruits you mention do very well in Berkeley, except that late peaches do not seem to have time to mature, and earlier varieties, like the Alexander, Hale's Early and Lovell, would, therefore, be better than later kinds.

WALNUT PLANTING.

To the Editor: I am interested in a tract of land of 640 acres, situated southeast of Redding in Shasta county. Can you put me in the way of learning whether the location and climate and soil of that land is adapted to the growing of walnuts?—OWNER, San Francisco.

For success with the English walnuts you must have a good depth of soil without tight clay or hardpan; a good deep loam which frees itself from excessive water in the winter time and still retains moisture enough to keep the trees growing well during the dry season. Dry, shallow uplands are not suited for a good growth of the tree, unless you get the irrigation just right. Bottom lands along deep creeks which give drainage are usually very good, but bottom lands in which water stands near the surface for a considerable period are not good. If you will read carefully the first page of our issue of December 8 you will get suggestions as to ways of examining the soil yourself to ascertain its suitability for deep rooting trees.

SPRAYING FOR PEACH BLIGHT.

To the Editor: As bluestone is scarce and dealers are expecting supplies to arrive by December 31, I wish to know how late spraying can be done to advantage against the peach blight? — GROWER, San Joaquin county.

Experience so far indicates that a spraying for peach blight before January 1 is much more effective than a later spraying, although there is some experience to justify expectation of good results by spraying during the first week of January. This subject is new and the University is at present conducting experiments to determine some points which it is very desirable to know. It seems, however, to be very clear that early spraying is effective; later spraying, which would be in the first part of January, is less effective; and spraying after the middle of January is ineffective against the blight, although it may be useful in the control of curl leaf.

HORTICULTURE.

THE WORK OF THE HORTICULTURAL COMMISSION.

From the opening address of Hon. Ellwood Cooper, State Commissioner of Horticulture at the State Fruit Growers' Convention.

This is the 32d Fruit Growers' Convention and the fifth held under the auspices of the California State Commission. The first held by the commission was in Los Angeles in May, 1903; the second in Fresno, December 8, 1903; the third in San Jose, December 6, 1904; the fourth and last in Santa Rosa, December 5, 1905. This last convention was as usual well attended and of wonderful interest. The essays were of the highest type on fruit subjects.

The Fruit Trade.—I regret that I cannot make as favorable a report on the result of the sales of deciduous fruits as the previous year. A great deal of the fruit was not delivered in sound condition, was much damaged by decay, the supposed cause by some growers being improper icing. The oranges brought better prices than the previous year. The lemons sold at satisfactory prices and the result was very encouraging.

The olive industry remains as reported at the previous convention, not encouraging for oil making but with an increased demand for properly cured pickles. There is a scarcity of good, sound, ripe olive pickles. The demand comes from every part of the United States, without finding a supply.

The nut crop was not heavy but the prices good. All will be cleaned up and none left over for the next season. There is no increase of walnut blight but a new defect in the nuts, many of the shells being imperfect, having holes or openings that would prevent bleaching and making them unsalable as first-class nuts. This defect, without further investigation, would indicate the want of material to make a perfect shell. In Santa Barbara district as much as 10 per cent was reported in a few orchards.

The prune crop was fairly good and the present prices satisfactory. Raisins have advanced, selling higher than for several years, owing to a short crop in Spain caused by continued storms there.

To return to the subject of the refrigeration of deciduous fruits I was informed by Mr. A. H. Jones, the freight traffic manager of the Southern Pacific, vice William Sproul, resigned, that the S. P. were building their own refrigerator cars and that during the period of an insufficient number to do the California business, the company would rent cars, but run them as S. P. cars and they would be properly iced at every point. This will eliminate the friction and dissatisfaction heretofore existing with the Armour private car line.

Pear Blight.—The pear blight in one or two localities is very bad, but generally less damaging than the previous year. Prof. M. B. Waite has returned to California to inaugurate a vigorous campaign against the hold-over blight, and is very sanguine of successful results.

Labor.—The most serious problem that confronts the fruit grower is labor. Without greatly increased numbers the present area that is planted to fruits cannot be properly managed. California cannot progress without an increased number of workers. We had immigration last year on the Atlantic shores of 1,100,000—and of a class that involves a heavy tax to care for, while the best workers for California are excluded without any organized plan for supplying others.

Pure Food.—I refer to my address at the Santa Rosa convention, pages 10 and 11; also to the report of the committee, page 190.

As the United States Congress has passed a pure food law, it is the duty of every State in the Union to pass a similar one. The governor-elect in making his canvass has declared himself in favor of a pure food law. Every fruit grower should urge the assemblyman and senator from his district to support such a measure.

Insect Pests.—The most formidable enemy that the fruit grower has to contend with will at an early date, I hope, be decreased sufficiently to cause but little damage and uncertainty of the crop from this cause will be eliminated. We have now in California, parasites for nearly every pest that has been a serious detriment to the growers of fruits. The greater part of the past year the effort of the searcher, Mr. Compere, has been directed toward transporting the parasites of the red and purple scales, from the Orient, to be propagated here and distributed through the orchards of California. Many difficulties have occurred in this effort, the great distance and climatic changes destroying the parasites before reaching our shores. Experience, however, has taught us how to overcome the

difficulties and we hope soon to be propagating them in California. The commission has been devoting every energy in the propagation of such parasites as are now known and demanded by the fruit growers. The parasite of the codlin moth has claimed our special attention. The first great difficulty was to get worms; this was mentioned in the address at Santa Rosa convention.

Mr. Cooper's View on Parasites.—I was successful in making an arrangement with the Department of Agriculture in New Zealand and had five shipments of worms from that country. We had the disastrous earthquake in San Francisco which almost destroyed everything in the Insectary. What we could gather together we moved at once to Sacramento, where we have a small Insectary, and are successfully propagating many of the parasites. We need a much larger place. Owing to the wording of the bill appropriating money for the parasitic work we have been hampered, and could not erect a suitable Insectary.

This we will try to remedy in the coming legislature. We are now prepared to propagate the parasite of the codlin moth and will distribute throughout the State sufficient numbers to end the destruction of apples and pears by this insect. I beg to call attention to the fact that parasitic insects will not work successfully in orchards where spraying or fumigating is practised. There is a transition state between the two methods of destroying the pests. If the orchardist feels that the growing crop must be saved by spraying or fumigating and trust to the possibility of the parasites getting established for the succeeding year, he will find that he can continue his remedies and make the expense from year to year and scrub and wash his fruit.

Parasites will not work successfully under those conditions.

Quite a controversy arose in Western Australia concerning parasitic work in that country, as reported in their Journal of Agriculture, published in September last. One or two entomologists and their supporters contending that it was a useless waste of money. This opposition became so formidable that the Government appointed a commission to take testimony and examine into the subject. In the report of the opposition they laid down as the basis of their theories the following: "This is an old abandoned scheme founded on unnatural and impossible working principles, making a vain attempt to force nature to over-reach immutable laws contrived and welded by an all-wise and beneficent Creator."

"Our present day naturalists versed in this knowledge declare this precious scheme to be diametrically opposed to the working of the sublime laws of nature."

We in California have claimed the very opposite. It is the foundation, the fundamental principle upon which our every effort has relied for success. We believe that in nature everything is balanced, and that it is our duty to study the natural law and seek relief through nature's remedies. The commission not only decided in favor of the parasitic work, but recommended that one or more competent agents be employed to meet the searcher at various points in foreign countries, and care for and bring to West Australia the beneficial insects collected, so that the expert searcher would not lose his valuable time in transporting his collections. I had decided upon this method before receiving the Journal, and was happy to learn that others had seen the necessity of such a course.

Fruit Improvement.—The agricultural journals of the Northwest and Middlewest have published much in the past few years about breeding corn and breeding wheat, and have stated the great improvement made in the quality of the corn and wheat, as well as the increase in production on measured acres of land.

In fruit growing in California we have proceeded in a hap-hazard way, without any care in the selection of seeds. I am fearful that we will have to go back and begin again on scientific principles. The selection of seeds from the matured perfect tree and from perfect fruit and raised on new land might result in trees that would resist the blights now making such havoc in our orchards.

My proposition would be to get the wild pears from the mountain district of China, where no disease was ever known, or of Europe, and propagate new stock from the seeds. Also to get the wild peach seeds from Georgia and propagate new stock. These could be budded or grafted with the varieties wanted, taken from trees where there had been no infection. I have in a very small way, merely for experiment, ordered some wild pears for the above purpose and propose to do the same thing with the wild peach.

It appears to me that it would be good policy for the State to take up this matter. It would not require

a large appropriation, and it should be under the control of the State Horticultural Commission for two reasons: First, the searcher for parasitic insects, who travels to all parts of the world in his line of search, and who knows where these wild fruits grow, could by a small outlay have them gathered and shipped to Sacramento. Second, The employees of the commission who are in the interest of protecting fruit trees and fruits from infection could safely be trusted with this work. A clause in the bill appropriating money for parasitic investigation authorizing this work would be sufficient to make the experiment.

THE VINEYARD.

TABLE GRAPES IN CALIFORNIA.

By Mrs. Minna E. Sherman, of Fresno, at the State Fruit Growers' Convention at Hanford.

The poetry of the vineyard is found in its symbolism, think of the clinging tendrils reaching out appealingly to seize a support, grasping it, at first softly as a baby's fingers, then maturing to hold the heavy vine with the grasp of a man. The grapes ripen, the winepress is ready—for the vintage has come. The world laughs for it is again young, once more is the joyous rule of the god Pan, for the grape has given up its liquid sunshine, the years roll back to the days of Greece. Yet, further on comes the symbolism of the Bible with the beauty of the vineyard, the strength, and then the sorrow of the wine press, and again the enduring strength of the perfect wine. Literature abounds with the grape symbolism and has endeared them to the human heart. These thoughts are rather for the evening tide, when the lamp is lighted and the closely drawn blinds shut out the day's work.

Land for Grapes.—It is now daylight, noon tide—and let us away to the vineyard. The day is for work and the night time for dreams. First comes the land, to some is given the opportunity to select the ground for their vineyards, to others, myself included, the land was already owned, it became necessary to study the best trees and vines for its capacity. In selecting land for a vineyard—in an irrigated country—it should be level enough for the water to flow readily along the furrows. If it is not level make it at least level enough, that by a reasonable amount of labor the water can be used. The first and second years' growth of the young vines is greatly increased, if they are irrigated in June.

The land should be deeply plowed both ways, and well harrowed before planting. Use every care to have the rows straight, and set a short whitewashed stake at each vine, the horses will then see and avoid stepping on them in cultivating the vine. These stakes are usually made by cutting a bundle of three or four foot plastering lath in three pieces. The newer vineyards are planted with the rows considerably wider apart than the older ones. It is a wise economy, for heavier tools can be used, with more horses, and less men, wages are not only higher, but careful men are few. Subsoiling is to be recommended for quick and permanent results.

Planting.—The vines planted in the wider rows after the fourth year are found to fully occupy the soil and the tonnage of fruit is not lessened. It has been a matter of common observation that if the crop on the vines along the avenues were used to estimate the amount of grapes in the vineyard the estimate always was too high. The increased space making the vines along the avenues more productive. The distance the roots extend can be observed by digging in the center of a sixteen-foot avenue, the roots will be found extending from both sides, and meeting. The harrow should be freely used, it needs to follow the plows to break up any clods and to smooth the soil. The moisture from the rainfall is too valuable to be lost, for the water from ditches carries into the vineyards Bermuda roots and Johnson grass seeds. Humus, not irrigation is the needs of our soils. The earlier grape growers filled the soils with water to its detriment, we today can do better by filling the soil with humus to conserve the rainfall, and then have the cultivation of the dust mulch perfect during the dry season. If there had been less water in the ditches, we would have better vineyards around Fresno, for the alkali would not have been raised to the surface by excessive irrigations.

Fertilizing.—Humus is added most readily to the soil by growing cover crops and plowing them under. As a summer growth cannot be maintained to advantage in a vineyard, the fall sowing of burr clover is resorted to as being a self-seeding plant that has already the proper bacteria in the soil. Before resorting to cover crops humus is added to the soil by the use of barnyard manure. The vineyard is trenched

between the wide way of the vines, after plowing back and forward in the same furrow, the "V" is put in, a ditch 24 to 30 inches deep is made, manure is filled in nearly to the top. The earth is then thrown back by the "V" and the revolving harrow makes the land smooth once more. This trenching should be done early in the season, and repeated every fourth year will keep the land open and porous.

Root Pruning.—The root pruning the vines receive by the deep furrow causes them to form new root ends down deep in the soil. Many vineyards suffer from drying out in the summer time because their roots lie at the surface. When the vineyard is four years old force the roots downward by cutting off the surface ones. Set a sharp plow down to five inches and run close to one side of the vines. The next season do the same on the other side, until the fourth year it is not well to do this pruning as the vines are not firmly anchored in the soil and its foothold may be disturbed too much.

The roots of a vine, absorb at the tips where the root hairs are found, the rest of the root becomes like the stem or trunk, a mass of cells, through which the food is passed out to the growing portion. Cutting of the ends of the roots causes new growth and more root hairs,—the same as taking off the tops of an old orchard tree renews its growth. Now while the roots must be deep down—where it is cool and moist—they need air. The difference in a soil that contains humus is that it lays lightly and holds air. Without abundant humus the dust mulch cannot be formed, to form it at all the cultivation must be deep and thorough. The cultivators must be strong tools, those used in most of the vineyards never reach more than three inches in depth. The tools are too flimsy to stand more power in front of them, so money is lost by running them to cut weeds, for that is about all they do. We saw Mr. Teague using at Lemoore a cultivator heavy enough to go down ten inches and strong enough to stand the draught of four mules. It is a riding tool, has been modified and strengthened from an Eastern pattern (by Mr. Teague) to meet the needs of a lemon orchard. He purchased two. The marked improvement in the work it does, over the smaller, lighter cultivator, shows in the young vineyard that today is nearly as large at two, as other vineyards are at four years old. About October first, before any rain had fallen, the dust mulch was perfect up to the surface, the moisture was nearly to the top, the earth was friable down seven inches. This big cultivator ran only one way of the vineyard, this left a core that was cross cultivated by the ordinary vineyard cultivators, the soil in this core was hard and dry at three inches from the surface.

The commercial fertilizers, bone meal, and Thomas slag are put on the land, and put into the plow furrow at the first plowing. In the spring the nitrates are put into the ground after the growth starts. One year commercial fertilizers, two years barnyard manure is broadcast and the fourth year the vineyard is trenched and manure put in deeply. In a healthy vineyard this will keep up the vines to a maximum production and balance the leaf growth with the fruit products.

Sulphuring.—The use of sulphur to control mildew is universal in all vineyards, this is applied when the vines are just beginning to break bud, again when the foliage is out six inches, and sometimes the third time if mildew shows at all. The sulphur acts by the fumes given off by the sun heat, if it is cold and dark weather the mildew travels fast while the sulphur does not volatilise.

In growing red grapes, like the Emperor, sulphur cannot be used late in the season, without marring the beauty of the fruit, wherever it strikes a berry it makes a light spot that is a blemish. The Emperor grape matures late in the season and may have several showers fall on it, before the temperature is low enough to prevent mildew. We have used Bordeaux mixture for this, I advise this practice with due caution for the University professors do not endorse it. They think it useless to control mildew. I gave in once and had four carloads of mildew grapes to cull out for the winery. The sulphuring was attended to regularly and plenty of it used. Last year the Bordeaux mixture was carelessly made, it could not be seen on the vines, as the result we had to buy extra sulphur at \$70 a ton in Los Angeles after the San Francisco disaster. The vines mildewed and many grapes were culled in the packing house this year. Some years we never use any sulphur for the vines at all. No mildew showing we do not hesitate to let the Bordeaux mixture have the credit, for when the vines are showing mildew on the next vineyard, the conditions are certainly favorable for it. The new French sulphuring machine will be here in time for next sea-

son's use and we hope it will overcome the objection the white men have to using sulphur.

Varieties.—The varieties commonly shipped to the East are the Thompson, Seedless, Sultana, Malaga, Muscat, Tokay, Chonachon, and Emperor. In smaller than carloads are the Rose of Peru, Black Prince, Verdal, Colmar, Black Muscat, and a few others. The Thompson Seedless and Sultana are raisin grapes, but since the seeding of Muscats has become a commercial success, the demand has lessened for them, and the amount shipped green has largely increased. When planted on sandy loam the fruit ripens early, both varieties are light green in color, shading to amber, the bunches are large. While the shipping of these varieties pays well they have never commanded the fancy prices paid for Malagas, Tokays, or Emperors. The pink form of the Sultana, sent out by the Government as Sultana Rosea, has not yet proved heavy enough cropper to be largely planted. It is a beautiful grape, but has as yet to make its way to market.

In a good vineyard the culls should be light. The entire crop should be sent through the packing house when it is on the ranch. Then the culls can be weighed and some definite idea as to what is being done arrived at. If the culls exceed more than ten per cent the grower should watch the pickers and packers closely. If the fault is not found there then the attention must be turned toward the vineyard.

Breeding Vines.—The pedigreeing of a vine is as important as the pedigreeing of an animal. The Emperor grape has been a favorite of ours for many years. When the culls were very heavy one year, the thought came (probably suggested by the success in grading up a dairy herd), that the vines need culling. I started in the next season two weeks before picking time and marked every vine that had merchantable fruit, fruit of high color, size, and large bunches, with a stroke of white paint on the trunk of the vine. Then next season I repeated the work, using red paint. The vines having the two colors were used to furnish nursery stock for a new vineyard. When the roots were set out only the strongest were used, the result was an increased tonnage with a large per cent of fine fruit, and the culls less than a quarter. The marketing of the vines in the second vineyard was again repeated for the cuttings for a third vineyard, when this vineyard came into bearing three acres produced as much as four of the original vineyard.

The nursery man never seems to think that a vine is an individual, but takes the buds or cuttings from any tree or vines so that it is true to name. The weakest is mixed with the strongest, until the average production is reduced greatly. Many varieties of fine strawberries have been run out by the lack of care. While the careful going over the vineyard as described cost nearly a month of hard labor, the first year increased production paid for it handsomely. The dairy-men who are classed as ignorant are fully aware of the necessity of making every cow do her duty, it is now time the learned fruit grower follows the dairy-man's wise example.

Packing.—The Tokay and Emperor packing calls for greater skill than the packing of green grapes like the Malaga. The red grape packages must have even coloring and the bloom must be preserved. The bloom is injured by careless picking and hauling in the small forty or fifty-pound picking box. The large raisin sweat box with four inches of clean hay covered with a heavy sheet of paper makes a good carrier for them from the vineyard to the packing house. The pickers cut the bunches and hold them by the stems never touching them on the berries, they lay them with the stem up carefully along in the sweat boxes one layer only.

The wagons have springs under them and the teamsters are warned to drive slowly. Two men lift these boxes and carry them from the wagon into the packing house, stacking them across each other, log cabin style to leave air space. After twenty-four hours the grapes are ready for the packing tables, as the stems are softened enough not to snap. The large boxes are then sent into the packing house and a woman stands ready to pick the clusters out of the boxes before they go to the ordinary packers' tables.

Constant watchfulness is necessary to keep the ordinary packers from putting into the crates poor fruit, they seem to think they are doing you a favor to make as many crates out of a given amount of fruit as possible. They cannot understand that it is expensive business to ship fruit East. That poor fruit is worth something in the pig pen, but nothing with a crate and refrigerator charges added when sent off in the car. Over and over until I think they must have it driven into their brains I say, "If you are not certain it is good, put it in the cull box, for it is better to be sure than sorry."

Loading.—A man that is often overlooked is the car loader, as he wheels the fruit into the car he can give it some ugly jolts. Every grape that fails to keep—is bruised by rough handling, often by the nailing down of covers on fruit that is packed too high. Eggs are really tougher than grapes, we do not consider them so because they make a troublesome mess when broken. The grapes make their troublesome mess later and show up in bad shape to the Eastern buyers. The railroad handling of the refrigerator cars is much rougher than it used to be, the heavier engines and long trains bump them around—so that even with the heavy export shock we use on our grapes—nearly every car shows one or more broken crates.

Grape Sales.—When I first began to pack grapes the bunches were clipped up and fitted into little baskets and put into a double crate holding eight. We refused to have the double crates after the first season, the second season we refused to cut up the big bunches to fit the small baskets, I took the baskets and cut down a side of each, laid it across the bottom of the other basket and fastened it there with a double pointed tack. This made two baskets then to a crate. They sold for surprisingly high prices. The next season the baskets were purchased in Chicago in advance. One morning I came over from the packing house and hunted up the pieces of baby ribbons around the house, I then decorated ten crates and sent them to Eastern friends. One crate was put into the car for the kind auctioneer that had encouraged the packing of the clusters. When the car reached New York, a telegram came "put ribbons on all the clusters" only one car was left to be packed out. The Fresno stores never had such a run on baby ribbons before. That car sold for the highest price ever received for a car of grapes at that time, over \$1900. Since then we have sold for over \$2000 a car, and one year a car sold at the rate of \$3000, for the grapes. It unfortunately had other fruit in it. We have had years when three quarters of the crop were clusters, one car that had only fifteen crates, that were not clusters. At times we have used a half crate for the finest clusters, and mark them Imperial, in that package there are never more than two bunches to each crate and these must be perfect in color with large berries, these are decorated with twenty or thirty yards of baby ribbons of a becoming shade.

Bunch packing is again coming into use for the trade has at last recognized that the faced pack is a very homely package, the grace and beauty of the grape is entirely lost in the mechanical regularity. The name is all that is new in the bunch pack. It is simply the plain Cluster as distinguished from the Fancy Cluster and Imperial Cluster.

Over-production has been constantly the cry ever since I began to grow grapes. This has been held up at every fruit growers' meeting, we have found in the green fruit shipping that it was lack of distribution that kept our fruit from selling. In the early nineties we shipped from the ranch ten cars of Emperors; our previous shipment had never exceeded seven cars, the last car slumped. The auctioneer wrote that the market was absolutely over-stocked and the trade could not handle more, he was really troubled for fear we would send in more next year. When the lists were returned the grapes were seen to have been sold to people outside the larger cities. Since then these smaller places have been heavy purchasers of fruit. For when their local dealer was tempted by some that sold cheap, to buy it, as a speculation, the next year his customers demanded that he bring in some more like it.

Unsatisfactory Labor.—The secret of a successful trade is honest packing, but I confess after the two last years' experience I am not sure I can ever make the pack I used to with the girls at the tables. The packing house was then a delight, every one vied in doing good work, all was orderly, no strikes, no rough people anywhere to annoy, the "Bloom was on the grape" and on the packers, but the women are gone. I suppose they all made money and got married. Any way they are scarce. In the old days the joy of the vintage was there, the packers sang at their work, the joy spirit lifted us all above drudgery. The last two seasons "a plague and curse to them" the Japanese have been the bulk of our packers, I have yet to see the best packers among them that I could not excel in two days with a green hand.

The real issue today, gentlemen, is not growing, selling, or marketing the table grape, but labor, men to work the vineyards and packers that can be trained to do intelligent work. In the San Joaquin valley today the Jap. is the only one packer easily secured, he is a high priced piece of inefficiency that is neither ornamental nor useful, but must be endured.

FORESTRY.

GROWTH AND USE OF THE EUCALYPTUS.

By. Dr. W. H. Miller of Hanford at the State Fruit Growers' Convention.

The word eucalyptus is from the Greek and means well concealed and refers to the pods of the tree containing the seeds.

Eucalyptus, or commonly called gum trees, belonging to the natural order Myrtaceae growing natively in Australia and adjacent island, but now grows exotically in most adjacent countries whose climates permit. There are more than one hundred and fifty species which differ greatly in growth and quality of timber. Many are dwarfs or shrubs, while others rank among the largest and tallest trees in the world, very closely crowding if not exceeding our own great sequoia in magnitude. Baron von Muller, of Australia, speaks of recorded heights of over 400 feet and diameter of 35 feet. One tree furnished a log 220 feet to the first limb, 12 feet in diameter at the top and 30 feet at base, but the growth of these trees does not warrant the opinion that they will reach such dimensions elsewhere. The native wood of all eucalyptus belong to the hardwood family, but considerable differences occur in the species as to the degree of hardness and strength—the iron barks being usually much heavier and harder than other division known as stringy barks. This title is given them because they shed their bark in long fibrous or stringy bands. Iron barks do not shed their bark, or do so in flakes or scales.

Uses of Eucalyptus.—In answer to the most common question one hears, "What are you going to do with them?" People seem to forget that a large forest tree has its uses. If one would think a moment you can scarcely enumerate its uses, but some of them are these: This timber when sawn makes flooring equal to maple, and maple floors are worth something—when made into shingles they resemble slate and are almost as durable; the finest quality of hardwood furniture, including all kinds of inside hardwood finish; all parts of the woodwork for wagons and agricultural implements and for building railroad coaches, and the construction of ships.

These trees furnish also superior poles for telegraph, telephone, and electric light wires; timber for the building of bridges; piles for wharves, and railroad ties. Any railroad company will buy all you have to sell for this purpose, and farmers may use them for fence posts. Wood, also, is becoming higher from scarcity and these trees make splendid wood. Every farmer should have a timber lot and raise his own wood. In fact, wherever hickory or oak is required, eucalyptus can take its place.

As a source of honey their bloom is of great value, producing a splendid quality of honey and protecting beemen against the loss of their broods from drought, since they are in bloom every month of the year.

As a source of oil, the leaves and twigs of the blue gum are rich. This oil in its purified form is becoming more widely used as a household remedy, as it cures many common complaints and is far safer and better than patent medicines for sores and the healing of wounds. Its antiseptic properties are excellent, being non-poisonous. The crude oil is used in steam boilers to prevent incrustations from taking place. The oils from some species are sweetly fragrant and are used for perfuming soaps.

There is no tree on the globe that gives beauty and grandeur to a country equal to these stately trees, ever green and ever aspiring. Scattered and neglected in the hap-hazard planting of this State as they are, to remove them would sadly blemish her beauty. It would no longer appear the comely and charming California. Go through the districts of meagre forestation and judge for yourself. So as an ornamental and shade tree, for the sheltering and protection of stock against storms and winds. It is needed for wind-breaks to orchards and vineyards. It is of great value for the foresting of barren mountain sides; the relief of blistering suns and the modifying of climate. It has no peer, marvelous and diversified as its uses are. The most distinctive characteristic of this genus is its rapidity of growth, averaging under favorable conditions about 12 feet per year of wood, whose tensile strength equals the best hickory, and producing a tree in twenty years equal to an oak that required more than 200 years to grow.

Of the seventy-five or more varieties growing in the United States, two species only have been planted in quantities for commercial purposes, and these to no great extent. They are the blue gum, globulus, and the red gum, or rostrata. The other varieties are little

known. The State and United States Governments are carrying out experiments to determine desirable varieties for recommendation, but individuals and private corporations are lending great help in this regard and very soon proper kinds can be selected with safety, so when planting is done on an extensive scale trees suitable for climate and lumber can be secured without danger of failure; it costs to plant trees and later on to learn that the wood is not desirable or they will not endure the climate.

The varieties we have found that will not stand the frost or heat of Kings county (and this perhaps means the San Joaquin valley) are diversicolor, punctata, cornuta, salubris, citriodora, maculata, and corynocalyx, or sugar gum. There are, perhaps, many more, but they have not been tried by us. Of those that have shown hardness of growth in this climate, tried by us, are as follows: They are named in the order of their sturdiness; common names given also when they have any:

Rudis, robusta, viminalis, rostrata, or red gum, terebinthifolia, or gray gum, globulus, or blue gum, crebra, or narrow leaf iron bark, siderophloia, resinifera, and stewartiana.

The Rudis has been planted somewhat extensively in this section as an avenue and shade tree and it certainly commends itself as a shapely and hardy tree. What little investigation we have made of its wood seems most excellent, close-grained, and hard, taking a fine polish. Its rate of growth seems good. It is claimed, however, that it does not maintain its early fast growth very long.

The Rostrata, or red gum, is a grand tree. No one can make a mistake in planting it. These two varieties for ordinary use are the best at present to plant in the San Joaquin valley, making all around first-class timber, proof against frost and delight in sunshine; can withstand drought and thrive well in alkali soil.

The Terebinthifolia we hope will prove better than either of these, growing more rapidly and much straighter grain and with equal strength. The Rostrata has a bad fault of wanting to grow crooked. This can be corrected by cutting off at the ground level when one year old, then a shoot will grow up straight and with very little loss in time. This cutting process holds good for most all varieties. The great majority of eucalyptus when cut at any age send up shoots very rapidly, reproducing themselves in much less time than was required to grow at first. So, when a plantation is once established, crop after crop may be harvested indefinitely without replanting.

Planting.—Young seedlings for planting in the field should be about fifteen to twenty inches high, and best not to plant later than April. February is the best time for planting in order that a full season's growth may be had. It enables them to withstand the severe frost that we usually have. When planted water should be poured around them to settle the dirt well, and by irrigating them during the summer a much better growth can be obtained, although they do well in this section without watering after planting.

The Viminalis is a hardy tree, grows rapidly and stands the climate. An example of this tree may be seen on the Old Kanawyer place, in Grangeville. Two years ago this tree was measured and found to be 126 feet in height, with a circumference of perhaps 20 feet. The wood, however, of this species is not of the best, nor is the wood of the blue gum equal to other varieties and this tree when young is likely to be killed by frost.

The pioneer eucalyptus man of California is the Hon. Ellwood Cooper, of Santa Barbara, who is to be here at this meeting. To him belongs the credit of delivering the first lectures and writing the first book upon eucalyptus in this country, also systematically planting about 200 acres of the different species of this tree, and I am told that it has been for a long time a source of handsome income, although his planting was upon land not well adapted to other purposes, being mostly hillsides and ravines. If the efforts of Mr. Cooper are taken up and continued by interested and able men, the permanent benefits to California and the Southwest are incalculable. If the San Joaquin valley from Tracy to Tehachapi was avenues and blocked off with these trees what a delightful trip it would be through it, and yielding an income of \$2000 per acre, every six years. Indeed, how charming. (We cannot see how any such estimate of income can be supported. Ed.)

To those who may wish to plant it is perhaps cheaper to buy the young plants from some reliable nursery man than to undertake to grow from the seed, as it is difficult and requires special care and training to successfully grow from the seed.

We have now growing on our experimental farm

about 40,000 seedlings, ranging in height from 2 to 25 feet; the oldest being 18 months old.

THE RANGE.

CALIFORNIA INTERESTS IN ARIZONA.

Sulphur Spring valley, which stretches away 150 miles to the south, is the most important cattle region in Arizona, according to a correspondent of the Breeders' Gazette. Thirty miles north of here the veteran cowman, Col. Hooker, still holds forth at his Sierra Bonita Ranch and while he has not near so many in numbers as a few years ago he makes up in quality for the quantity, as his herd today is better than ever before. Monk Bros. of Los Angeles have a large herd near here. The Ryan Bros. of Montana used to run a big outfit at Wilcox, but have cut down their herds to a very small holding lately.

W. H. McKittrick of California has a large herd here and also the Riggs Bros. All through this section farming has made but little impression on the face of nature, nor will he ever unless climatic and soil conditions can be greatly changed.

All the cattle along here have been contracted for to California parties at prices around \$12.50 for yearlings, \$16 for twos and \$19 to \$22 for threes and up. California seems to be short on cattle if one is to judge by these shipments.

Wilcox and Tucson used to furnish thousands of cattle for the northwest ranges. John M. Holt of Montana and others used to buy great numbers here every spring, but in the last five or six years their cattle have all gone west into California and the northwest trade seems to have died clear out.

North of here about 50 miles the Chiricahua Co., the C. C. C., controlled by J. V. Vickers of California, has its ranges. They are mostly on the Apache Indian Reservation, but own a large body of farming land along the Gila River near Solomonville, where they put up great quantities of feed every year. This outfit has spent lots of money in good bulls and has an unusually fine herd. They also in connection with Vail and Gates own a large pasture near Texline, Tex., where they ship their surplus steers every year.

All along here from Tucson to Deming the country is well stocked up—rather more so than is safe, they all tell me. Yet only three years ago this whole section lost fully 40 per cent of its cattle. How soon rangemen forget their lesson and fly into the face of Providence regardless of past experiences!

Lordsburg, N. M., is the center of another good cattle country. North of it about 100 miles in Arizona, Col. Joe Hampson of Kansas City and Old Mexico runs a splendid herd of cattle. He ranges mostly on the eastern end of the Apache Reservation in about the roughest piece of country in the West. A wagon road is almost unknown on his range and about everything they use is packed in on pack mules, while the round-up outfits work the year round with a pack train.

At Deming I find everybody in this section and clear up above Silver City has also sold to California buyers. Several thousand steers are to be shipped to the beet sugar factory at Oxnard, Cal. Several thousand more are going into the Imperial country in the Great Salton Sink of Southern California, where the Southern Pacific Railroad is having such a fight with the Colorado River. Many thousands are going to the alfalfa country around Bakersfield, and even as far north as Fresno and the Sacramento Valley shipments will be made. This California movement of cattle will be a relief for the Eastern cattle markets, as it will keep that many from being dumped onto the market when it is already loaded up with Texas and New Mexico stuff.

CHAFF.

Suddenly the summer man gave a start and hastily removed his arm from the waist of the summer girl.

"W-what's the trouble, George?" she asked in alarm.

"Why," he replied nervously, "those boarders up in the beach hotel have been training opera glasses on us for the last ten minutes. I bet they are saying this is the funniest comic opera they ever witnessed."

The summer girl smiled.

"Don't worry, George. You can depend on it that I don't think it is comic opera."

"And what do you think it is, dearest?"

"Grand."

And after that the ripples of mirth that floated down the hotel veranda failed to disturb them.

Mrs. Littlewit (proudly)—Only just think! Charles has gone to address a public gathering.

Friend—I didn't think he was a speech maker.

Mrs. Littlewit—Nor I; but he's been called upon to make a statement before a meeting of his creditors.

ENTOMOLOGICAL

Wheat.

The wheat market has been active this week, only in the buying and selling of small lots. Prices, although a little variation is evident each day, are not moving materially either way. Futures are a little more active than one week ago, but even now, the day's transactions are a very small item. Most of the dealers here are only handling enough grain to supply immediate wants and claim to be making a very small profit on what they handle. Millers are showing much the same attitude and are only buying enough to keep the mills partially busy. The railroad conditions have improved considerably since last week, although little wheat is reaching coast towns. The situation is much the same throughout the State and even throughout the United States. Dealings in Chicago and New York are only a part of what they regularly are at this stage in the game, and although slight alterations in market values take place every day, the average price does not vary more than one or two points a week. The export demands are fair but not as heavy as they should be under such favorable conditions. The crop of the United States, although estimated to be 50,000,000 bushels in advance of last year, has been so firmly held by growers that the actual volume in circulation is only slightly more than last year. The price, however, in the two years varies greatly. The Eastern markets, at this time last year, were quoting 86 and 88c per bushel, while this year the best grain is only bringing 74c and 79 cents.

Flour.

The flour market has been in good shape locally, even better than outside the city. Prices hold up well at first figures and supplies are moving fairly well. Speculation is being decidedly neglected, as no one seems willing to take the apparent risk of a still further decline in prices. The mills are still very conservative in their buying and are not at all anxious to take orders that are more than can be easily handled within a day or two. Locally the market is pretty well stocked, and although speculation is practically at a standstill, home consumption is proving to be great enough to justify the somewhat increased receipts.

Barley.

The barley market is much more active locally than is the market for other grains. The daily receipts and exports of barley make up the bulk of the total daily movements and, although prices are unchanged and have been about the same for a month or two, the movement is quite free and, if anything, a little more brisk than was the case a week ago. The barley crop has largely passed into second or third hands. A number of growers are still holding, but the barley thus held is not expected to influence the market this year, as it will probably be held over until the opening of the market for the 1907 crop.

Oats.

The reports of a number of dealers show that business in this cereal is fair. The price, although it has not been altered for some time, is satisfactory. The daily receipts just about equal the demand locally and as the cars seem to be more numerous now the anticipated shortage along the coast has apparently been avoided. The entire yield of the State, if it were all in circulation and equally distributed throughout the State, is sufficient to more than supply California's needs and would justify some export trade. However, the circulating crop is sufficient to relieve all dangers of a shortage, and even if the holdover does not reach the market until next year, there will probably be no shortage in this State.

Corn.

The corn market locally is largely a nominal affair, although elsewhere the market is well established at somewhat low figures. The supply locally is scanty and sales of consequence are made only rarely. This is a little remarkable as the supply over the United States is larger than ever before, but, is undoubtedly due to the dilapidated condition of the local warehouses.

Feedstuff.

Dealers are finding that this part of the business is in a very favorable condition. The daily consumption here is enough to make a good business, and as comparatively few dealers are now handling feedstuff, and the supply is not too plentiful, the market is strong at good prices and is only partially supplied. Local quotations are about the same.

Bags.

There is very little doing now in the bag market, although some dealers are finding that the daily demand, although much decreased since the end of harvest, is making about all the business that can successfully be handled.

Feed.

The seed market is interesting in the fact that it is so steady. The demand remains just brisk enough to keep the market stiff at somewhat advanced prices. These are: Brown mustard, \$4.25 to \$4.50; yellow mustard, nominal; flaxseed, \$3; canary, \$4.50 to \$4.75; alfalfa, 13c; rape 1c to 3½c; timothy, 5c to 5½c hemp. 5c; millet, 3½c; brown corn, \$18 to \$20 per ton.

Wool.

This being between clips, the wool market is a little quiet, but good qualities are still in demand. The bulk of the last clip has left first hands at prices somewhat lower than were demanded by growers, and higher than at first offered by buyers.

Hops.

Number one 1906 hops are bringing as high as 14c for California grades, but the prices for ordinary grades are from 11c to 14c per lb. Considerable lots of hops are reaching California from Oregon and Washington. These are proving to be of an inferior quality and are only worth from 10 to 13c in the local market.

Hay and Straw.

The arrivals of hay for the week were only 2226 tons, a drop of 500 tons from the light receipts of last week. The market is in a bad condition, with the demand in excess of the supply, and prices correspondingly high. Bad weather and the scarcity of cars continue to make the situation about as bad as it can well be. In general the conditions are the same as they have been for some time with little prospect of a bettering of the situation.

Beans.

The steadiness in Limas, which has held out so well, is still the most important feature in the bean market. There is considerable shipping going on daily, but the market is comparatively quiet this week in nearly every line. Limas are worth \$4.25 to \$4.45, with no tendency toward decrease, but rather a tendency toward a higher basis.

Butter.

The butter market is a little weak this week on account of heavier deliveries and the fact that retailers are over-stocked with an inferior quality. The price has been up and down, but is now settled at 36 cents.

Cheese.

Cheese has fallen 1c a pound for the best qualities. The latter is now bringing only 14c, and the market is not active at that.

Eggs.

Eggs, on account of the unusual supply of cold storage goods on hand, have gone down to 46c. The fall, however, is thought to be a temporary one, and the price is expected to go up again when the surplus of inferior stock is disposed of.

Poultry.

The arrival of four cars of Western chickens has weakened the market to a certain extent, although it is still firm at rather high prices. The demand is chiefly for large heavy stock. Pigeons and squabs have been neglected this week and the market is weak in consequence. Fryers and broilers are very firm and the supply is limited.

Potatoes.

The market is steady this week, but it is at a little lower level. The unusual arrivals of Oregon Burbanks have forced the market down. Fully fifteen carloads have arrived from the North already this week, and there is a good prospect of several more within a few days. Rivers are firm and the best are held at good prices. Rivers are worth \$1 to \$1.25; Oregon Burbanks, \$1.40 to \$1.65; sweet potatoes, \$1.25 to \$1.50.

Vegetables.

The vegetable market has been a little weaker this week, heavy arrivals from Los Angeles having lately put the general market on a decline. Only the best string beans and green bell peppers have held up. String beans are now worth from 8c to 12½c; green bell peppers, 8c to 12½ cents.

Fresh Fruits.

The market is over-stocked with apples and unless the present rate of receipts fall off within the next two weeks a material drop in prices is inevitable. The fact that the greater part of this year's apple crop has been packed in papers is helping to hold up the prices. Grapes have held up throughout the week and bananas and cranberries have been exceptionally firm. Persimmons are rather short and are bringing from 50c to \$1 per box. Cranberries sell for about \$1.14 per barrel. The best apples are bringing \$1.50 per box and Christmas packed, \$2.50.

Dried Fruits.

The dried fruit market is firm in every line and prices are unchanged at high figures. The enormous demand for prunes is surprising dealers and the price has advanced. Prices for the leading varieties are: Apricots, 15c to 18c; evaporated apples, spot, 6½c to 8½c;

peaches, 10c to 13c; pears, 9c to 12½c; figs, nominal; prunes, 4-size basis, 3c to 3½c; large size basis, 4c to 4½ cents.

Raisins.

The raisin situation, although still active, has apparently reached its limit for a while. The market is still exceedingly firm at high prices and, after this temporary lull, a still further increase is anticipated. As now established prices are: Seeded, 8½c to 10c; loose Muscatels, 7, 7½ and 8c for 2, 3 and 4-crown, respectively; Seedless Sultanas, 7c; Thompson Seedless, 7½c for unbleached; London layers, 3-crown, \$1.85 per box, 2-crown, \$1.75 per box.

Honey.

Honey is still high and scarce. There is no reason why the present quotations should decline and dealers are satisfied that prices will at least hold their own until the next crop comes in.

Nuts.

A large part of the nut trade here continues to be of a retail character, although market prices are fairly well established. The market is higher now than it has been for some time and no tendency toward a decline is evident.

Citrus Fruits.

The local markets are beginning to fill up with oranges and lemons, but the market value has not been changed. Several carloads of oranges are now arriving daily.

THE GOAT FLOCK.

THAT DOG "OSO".

In the Pacific Rural Press of October 20 we gave an interesting account by Mrs. F. A. Pierce, of Merlin, Oregon, of her dog "Oso," which was described as a "goat dog" and we asked for more information about "Oso" and what a "goat dog" was, anyway. Mrs. Pierce kindly answers our questions in the Oregon Agriculturist as follows:

I am glad that you as well as others would like to know more about Oso. I never heard of a breed of dogs known as the goat dogs. Oso is the get from four distinct breeds: The Scotch collie, the bulldog, bloodhound, and the Australian shepherd, better known as the glass-eye or blue shepherd, as near as I can get it. While it took some careful breeding and training to make him what he is, yet he is very intelligent and learned how to manage the goats through his own sense; as no one has ever herded the goats a day with him.

Strangers who see him ask how did you train him, and say they have heard about such dogs but he is the first one they have ever seen. His get are much easier trained than he was; in fact it is hard to keep them from going with the goats. We kept two pups to train with the goats, and let Mr. W. C. Fry have a third at the age of one month and three weeks. She had had no training with the goats. We never let her go with them alone, as we had intended to raise her around the house for an all-round dog. About a week after we let Mr. Fry have her we found her out herding a small bunch of our goats that had strayed from the main barn. Later we put Snider, her brother, to herd 75 head of goats, some of which were not used to him, but some one, or Oso, would go and help him to bring them home nights. Thursday, October 25, they went by Mr. Fry's place and Mada, his pup, could not stand the temptation, so she went too. The strange goats, at sight of her, started out straight up the road. Some people that saw them say the pups tried to turn the goats back but they would not turn. Mr. Pierce followed them for five miles the first night and said it looked in many places like the pups had tried to turn the goats. We have searched and offered a reward but have only got back 45 head. The pups both went with the other 30 head and after five days Mada went to a miner's cabin about seven miles away. She was nearly starved to death. They heard the other pup barking farther up the mountain. I suppose he was with his goats. It seems hard to find them when they get out in the mountains. You can hear of them at so many different places. I hope one of the goats will die or something will happen so Snider won't starve to death trying to keep track of them. This seems like a fish story, but it is all true. People around here call them thoroughbred goat dogs, and why should not they have the name when they have the game. The pups mentioned were four months old on the 12th of November.

We have been a long time trying to get these good qualities in a dog for the purpose of herding and caring for goats out on the open range, as no man can keep track of goats when he cannot see ten feet ahead of him for brush.

THE DAIRY.

VENTILATION OF DAIRY BUILDINGS.

One of our readers recently asked for a description of King's method of ventilating dairy buildings, and the matter will doubtless interest many others who desire a rational method for securing a very desirable end. Prof. F. H. King recently gave an outline of his method before the Missouri Board of Agriculture, from which we take the following:

A good ventilating flue should possess all of the essential features and surroundings which are necessary for a perfect chimney. To produce the strongest draft it must be straight, either round or as nearly square in cross-sections as possible, because then the friction is least; the walls must be permanently airtight, so that no air may enter except from the stable; its top should rise well above the ridge of the roof; and it is best, though not necessary to place it as near the center of the stable to be served as practicable.

The flue may be placed at one side, at one end, at one corner, or even on the outside, just as chimneys are sometimes, but this should always be avoided if possible. Whenever the length of the ventilator must be unusually short, or it must be placed in an unfavorable position for strong draft, then it should be made large enough to make good the other defects.

Construction of the Flue.—Galvanized iron makes the best flue; but double-tongued-and-groove lumber with an acid and water-proof paper between may be used, but the lumber should be well seasoned and unusual care should be exercised by the carpenter in making tight joints everywhere.

The top of the ventilator should be provided with a storm shield. This may be in the form of a simple roof; or it may take the form of some revolving cowl which reinforces the draft as well as forms a shield. When the simple roof is used care should be taken to place it high enough above the end of the shaft so that there is left an abundant outlet across which the wind may at all times have a free sweep. The old and long used hop-house cowl is an effective form.

At the lower end the ventilating shaft should reach to or near the floor and should be provided with its main inlet for taking up the foul air at the bottom, and the size of this inlet should be nearly equal to the cross-section of the shaft itself.

The ventilating shaft should be also provided with an intake just below the ceiling and this should be provided with a door or lid so that it may be partly or completely closed at will. The object of the inlet at the ceiling is to make provision for the escape of the warmest air at the ceiling at times when the stable may be too warm, or at times

when there is but little wind movement outside and the drafts may need to be reinforced by the addition of the warmest air of the stable.

It is important, in securing adequate ventilation, that provision be made for the same volume of air to enter the stable as leaves it. Indeed such provision is imperative. Just as it is important that the walls of the ventilating shaft should be tight, admitting no air except at desired points, so is it important that the walls and ceilings of the stable shall be tight, excluding all air except at points where definite provision is made for its entrance.

Saving Heat.—In order that the heat of the animals may be utilized to the best advantage in keeping the stable warm, and because the air is used at the level or near the level of the floor, and further because the waste products of respiration are breathed by the animals to the floor, while the coldest air of the stable is also there, we draw the air out of the stable at the level of the floor.

But the body of each animal acts upon the air of the stable, heating it, enabling it to rise to and accumulate at the ceiling where, if it is sufficiently tight, it is retained, heating the ceiling, which then comes to act exactly like a heated radiator sending its warmth back upon the animals upon the floor, thus keeping the stable at a higher temperature than would be possible were the warmed air permitted to escape all at once at the ceiling.

Now to use the heat accumulated at the ceiling of the stable to the best advantage, the fresh, pure, cold air must be brought in at the level of the ceiling and caused to mingle with it as completely as possible, so as to be warmed by it before it drops to the level where the animals use it.

To secure an even distribution at the ceiling, provision is made for the fresh air to come into the stable at a considerable number of small openings just under the ceiling on as many sides of the barn as practicable.

In order to prevent the warm air escaping at the ceiling through these intakes, they must be carried downward by some construction so that the air is forced to enter them at some level on the outside four or more feet below the level of the inside. When this construction is adopted it acts on the principle of an air trap, for the warm air of the stable cannot readily pass downward.

Admitting Fresh Air.—A suitable size for these intakes is four or five inches by 14 or 16 inches, the long axis being horizontal. They should be placed at every nine to 12 feet along the wall and be provided with lids hinged on the lower edge so as to regulate the amount of air entering the stable, deflecting it upward to the ceiling and causing it to

fan out and distribute well through the warm air of the stable.

It is particularly important that these fresh air intakes be placed on every side of the stable in order to take advantage of the wind pressure to aid in forcing the ventilation.

It is important to recognize that there are three important factors or forces, each of which should be brought into requisition to the fullest extent possible in maintaining the air movement through the stable.

First, the wind pressure against the side of the building, which tends to drive air into the stable through any openings on the windward side; this increases the pressure of the air in the stable and so forces it to flow out and up through the ventilating flue.

Second, the wind in passing up and along the roof sweeps with increased force across the top of the ventilator, as it does across a chimney, producing an outward suction, thus reinforcing the wind pressure on the side of the building.

Third, whatever rise in temperature the air of the stable experiences, making it warmer than the mean of the air outside, causes the column in the ventilation shaft to be lighter than a corresponding column outside, and hence it is forced upward and out by a force equal to the difference in weight of the column.

There are those who maintain that the last factor is the chief if not the only one which is operative in causing draft in chimneys, and these insist that the air should be admitted to the ventilating flue at the level of the ceiling.

The universal daily experience with every properly constructed and placed chimney proves beyond a doubt that the temperature factor is secondary and not primary in producing draft; for always before the fire is lighted there is a strong draft and it increases in strength with the velocity of the wind across the house.

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Dealer—Only this, madam, and it really is quite a success. On arising in the morning you touch a spring and it turns into a washstand and bath tub. After your bath you touch another spring and it becomes a dressing case, with a French plate mirror. If you breakfast in your room a slight pressure will transform it into an extension table. After breakfast you press these three buttons at once and you have an upright piano. That's all it will do, except that when you die it can be changed into a rosewood coffin.

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Look through a microscope at milk set to cream in pans or cans and you'll see how they rob you. You'll see the caseine—the cheese part—forming a spider web all through the milk. You'll see this web growing thicker and thicker until it forms solid curd. How can you expect all the cream to rise through that? It can't. This



caseine web catches a third to half the cream. You stand that loss just as long as you use pans or cans for they haven't enough skimming force to take out all the cream. But, just the minute you commence using Sharples Dairy Tubular Cream Separator, you stop that loss.

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HINTS TO HOUSEKEEPERS

When the drawers of bureaus, tables, or other furniture stick, or cannot be opened or shut without difficulty, try wetting the surface of a piece of common soap and rub it over the parts that stick. This will make the wood slippery and in most cases the troubles will be remedied. This is also a remedy for doors which in new flats or houses are likely to settle or apt to scrape at the top as the building settles. Use soap on them, and it will save the trouble of calling in a carpenter.

Dirty hair brushes are an abomination. As hot water and soap soon soften the bristles, and rubbing completes their destruction, use soda dissolved in cold water. Soda having an affinity for grease cleans the brush with very little friction.

Should grease be spilled upon the floor of the kitchen, cover it at once with cold water. This hardens the grease and prevents it from soaking in. It can then be easily scraped up.

Some good Samaritan of a dentist once told his patient that a pinch of baking powder in a cup of water, used as a mouth wash just before going to the dentist, would make the teeth much less sensitive. It sounds almost too easy, but anything that will mitigate the agonies that go with the dentist's chair is worth while testing.

An enterprising amateur gardener says that watercress can be grown in a garden as well, or almost as well, as in the proverbial flowing water. It must, however, be planted in such close proximity to a spring or water supply that it can be watered twice a day. The cress thrives best when sown in a sort of sunken bed, with a ridge of earth around it to keep in the moisture.

Rice is invaluable for cleaning carafes

and oil and vinegar cruets. For the oil cruet use warm water and a little washing soda to remove the oil. Then put in a tablespoonful of rice with warm soap-suds, shake vigorously, and rinse in clear water. Do not use the soda in vinegar cruets. For a water carafe use at least two tablespoonsful of rice and several lumps of soda.

Half a lemon dipped in salt will do all the work of oxalic acid in cleaning copper boilers, brass tea kettles and other such utensils.

Ashes are not only good for currant worms, but are also good for bugs on cucumbers and squash, or cabbage plants. It should be applied before the dew is off. A good authority states that moth balls placed among young cucumbers and squashes will cause the beetle pests to disappear. This seems a curious remedy, but it is said to be an effective one.

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CHAFF.

Esmeralda—Have you heard what the doctors are saying about motoring? It gives you what they call the automobile mouth—spoils the mouth for kissing.

Gladys—That isn't true, and I know it. Harold has been running an automobile for years!

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Uppardson—What impressed you most during your trip abroad?

Atom—The touches I got everywhere I went, of course.

Young Wife—Passing big confectionery store)—Isn't this the place where you used to buy that delicious candy?

Young Husband—Y-es, my dear, but the store is always crowded, and we may have to wait. I know a little place around the corner where we can get served at once.

Y. W.—How much did you have to pay for the candy you used to bring me, dear?

Y. H.—It was \$2 a pound, but around the corner you can get the same kind for 25 cents.

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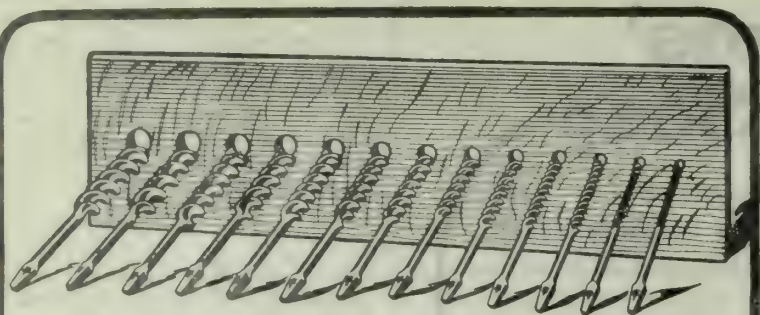
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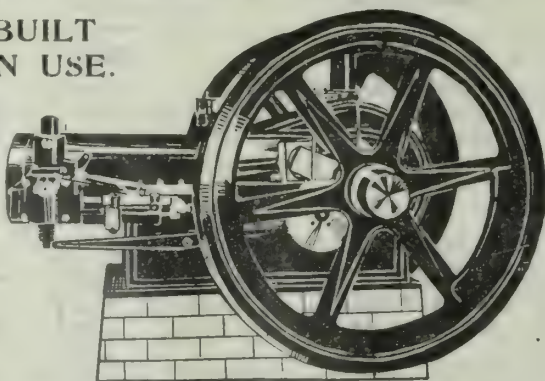
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HOME CIRCLE

OLD SHOES.

How much a man is like old shoes!
For instance: Each a soul may lose;
Both have been tanned—both are made tight

By cobblers—both get left and right.
Both need a mate to be complete,
And both are made to go on feet.
They both need healing; oft are sold;
And both, in time, turn all to mold.
With shoes the last is first; with men
The first shall be last, and when
The shoes wear out they are mended new.

When men wear they're men dead, too!
They both are trod upon and both
Will tread on others—nothing loath.
Both have their ties, and both incline,
When polished, in the world to shine;
And both peg out. Now would you choose
To be a man or be his shoes?

THE PURLOINED LETTER.

Jake Davenant had succeeded in concocting a very clever trick—at least he believed he had, and that was why he looked so well satisfied when he presented himself at Mrs. Bramleigh's small informal reception.

The Bramleigh's were occupying an exquisite but tiny dwelling a little out of the city, and on this particular evening one of the children had unfortunately fallen ill; not seriously enough to interfere with the festivities, but necessitating the temporary shutting off of the upper rooms; consequently, the guests were invited to lay their wraps on the broad settee that had been placed at the lower end of the entrance hall, and which was sufficiently large to accommodate them all with a little crowding.

As Jake discarded his overcoat and entered the room he cast a quick, apprehensive glance through the company. Yes, she was there, and he was not; everything was all right thus far; the letter that reposed in his overcoat pocket would be mailed that night, probably on his way home with Gladys; and a grim smile crossed his somewhat sinister lips as he thought of the irony of the situation; how she would look on, while he slipped the letter in the box that would be destined to destroy her last hope, all unconscious of that fact.

Matters had been growing complicated until the unfortunate inspiration that enabled him to get that letter of hers into his own possession. He had originated the trouble by causing it to be intimated to Archie Clare that his sweetheart was playing fast and loose with him, and giving too much time and favor to himself—Jake—and when Gladys in the fullness of her heart wrote to her lover for an understanding, he had managed thus far to waylay those letters so that Archie never received them. Meanwhile, he continued his visits to Gladys, deplored with apparent sincerity Archie's estranged feelings, stating that he had no reason to be jealous, as he was well aware that he, Jake, was engaged to Allie Bayne. The engagement to Allie Bayne was a fiction of Jake's imagination; Gladys was the girl he wanted and was determined to get; and he planned, after the estrangement with Archie was complete, to work upon her sympathy, first by telling her that Allie had thrown him over because of his efforts in Gladys's behalf, and then win her consent to marry him by way of compensation.

But it had become impossible to waylay any more letters, and the first thing he knew one would actually find its way to Archie that would spoil everything; so he resolved upon a bold coup, and one evening when Gladys remarked:

"Whatever else Archie might do, or think, he has always been a gentleman, and I have a right to expect that he would at least answer my letters," he replied:

"It has occurred to me, Miss Watson, that possibly your letters may have miscarried; at any rate it is worth making one more effort to come to an understanding with Clare. He is a first rate fellow, and I am sure will be reasonable. You write a letter, now, and give it to me, and I will undertake to deliver it into Archie's own hand; then we will see if he will answer it."

Gladys accepted the proposition eagerly; the letter was written, and Jake carried it home with him. That was four days before the party at the Bramleigh's, and needless to say, Gladys had received no reply as yet.

Jake had intended escorting Gladys to the party, but finding himself delayed unexpectedly, he had telephoned her to go alone and he would be there later and escort her home.

He crossed the room and spoke to her, and then Tom Connors pounced upon him.

"Come, old man, you are just the one we want to complete our table at euchre. We're sure to win with you on our side."

Jake looked hesitatingly at Gladys.

"Go with them," she said indifferently. "The dancing will not begin for some time yet, and I am very well entertained."

"Very well; I will play one game and then return to you," said Jake, trying to throw as much significance as he could into the words. Five minutes after he had left her there was a new arrival, and Gladys, looking toward the door felt her heart stand still as she saw Archie Clare. To find her here and know that Jake was her escort, would convey the very worst impression to his mind. The only way was to escape before he saw her. It was early and she lived near; she would leave Jake to his euchre and go home alone. She felt as if all the masculine creation were equally obnoxious to her just then.

As Archie came into the front parlor she slipped away and out at the back to the rear of the hall; found her hat and long, dark coat with trembling haste, put them on, and slipping past some who were strangers, gained the door, opened it and glided out, without attracting any attention. She ran nearly all the way home; reached it panting; hurried up to her room and sank into a chair, at the same time thrusting her hand into her coat pocket for her handkerchief.

Her hand did not close over the handkerchief, but it did close over a letter, and taking it out to see what she had forgotten to mail, she read in her own handwriting:

"Mr. Archibald Clare. Kindness of Mr. Davenant."

"What does this mean?" she exclaimed in amazement. "How did this letter, given to Jake four days ago, come into my pocket, and—opened! The seal has been broken. And—goodness!"—taking up the end of the coat and examining it—"It is not my coat at all, although it looks a little like it; it is—Jake's, and he has forgotten all about the letter on which so much depends. But how comes it in his possession, open—let me see!"

She thrust her hands into the pocket a second time, and brought up a second letter, provided with a stamp, and addressed in a hand that copied hers, almost exactly, to Archie at his address. This letter was sealed, but I am sure my readers will agree that Gladys was justified in doing exactly what she did—

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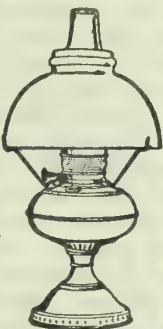
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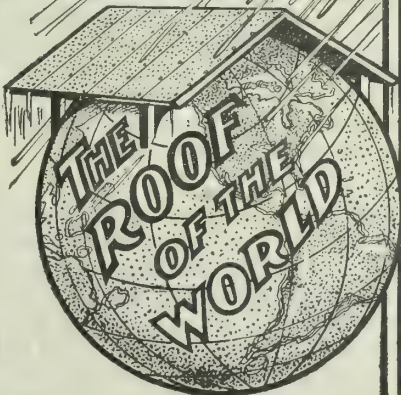


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CAVEATS



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opening it and reading it to the end. Her cheeks flushed and her eye sparkled during the reading; first with indignation and then with joy; then she fairly flew downstairs to the telephone.

Just about that time the telephone in Mrs. Bramleigh's house rang, and to the person who responded, the question was put:

"Is Mr. Archibald Clare still at your house? Yes? Will you please ask him to step to the telephone?"

In another moment Archie was at the instrument.

"Is that you, Mr. Clare? Can you hear me if I speak real low—I want you alone to hear what I say. I am Gladys Watson; I was at the Bramleighs a short time ago, but left and came home, and accidentally carried away a coat that was not mine. Will you please get my coat"—here followed a description—"and bring it to me right away, and without letting any one know that you do so? I have made a most delightful discovery—for us—and I want to share it with you. It will clear up all the trouble we have had. You will come—right away? Oh, thank you! you have made me so happy. I will be watching for you—good-bye."

He came a short time later and she received him in the coat she was still wearing, and scarcely giving him time to speak, hurst forth:

"You will guess half, Archie, when I tell you that this coat, which I inadvertently substituted for my own, belongs to Jake Davenant, and when you read these letters, I think the mystery that has parted us so long will be solved."

She handed him first the one she had written, and which brought tears of love and joy to his eyes as he read its sweet, pathetic appeal for an understanding of the trouble that had crept in between them; then she handed him the one Jake had expected to mail, in which her handwriting was so cleverly imitated, and which in the most adroit manner gave Archie to believe that she had transferred her affections to Jake Davenant, and charging him in turn with making love to Allie Bayne, by what she claimed was incontrovertible proof, requesting him to return at once various little trinkets that she had given him, and that on receipt of them, and not sooner, she would return his few insignificant presents.

"Now, Archie," Gladys said, when her lover had ended the second letter, "this note"—indicating the genuine one—"is the last of four previous ones sent you; and it was at Jake's own suggestion and promise to put it into your hands himself, that you could not claim it had miscarried, that led me to intrust it to him. Did you ever receive any of those letters?"

"I did not," answered Archie. "That scoundrel must have contrived to intercept them all. And, oh! my darling Gladys! how I have treated you! how can I expect that you will ever forgive me!"

"I have loved you all the time, Archie!" was her simple answer. "And now," extricating herself from his ecstatic embrace, "is not this a case of poetic justice? Let us add the finishing touch."

"What are you going to do?" asked Archie.

"You'll see," was the smiling answer; and the next moment she was again at the telephone.

"Is that the Bramleighs? Is Mr. Davenant still there? Will you please ask him to come to Miss Watson's? She had to leave some time ago, but she wants to see him particularly. He will be here? Thank you; good-bye."

Mr. Davenant was just getting ready

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to leave when his summons came, having missed Gladys some time before and feeling very much put out about it. When he went to find his coat, however, it was missing and he had to borrow one of his host.

He presented himself with creditable promptness at Miss Watson's home.

"Come in, Mr. Davenant," said Gladys. "I must confess to inadvertently carrying away some of your property; allow me to restore it. Here is your coat, and this"—handing him the letter he had forged—"is also yours, I believe; the other I shall take the liberty of retaining, as it is mine, and has not been delivered by you as you promised to the party to whom it was intended. Archie, do you wish to say anything to Mr. Davenant?"

As Archie stepped forward, Jake cast one guilty, terrified look at him, and then snatching his coat, literally turned and fled. And he never came back where they were likely to meet him.—Mrs. E. H. Hough.

The old negro had put on a clean collar and his best coat, and was walking majestically up and down the street.

"Aren't you working today, uncle?" asked one of his acquaintances.

"No, sah; I'se celebratin' my golden weddin', sah."

"You were married fifty years ago today?"

"Yes, sah."

"Well, why isn't your wife helping you to celebrate it?"

"My present wife, sah," replied the old man, with dignity, "ain't got nothin' to do with it. She's de seventh."

Kimball Carrow has the reputation of being the champion absent minded man in Bedford, Mass. On one occasion he called upon his old friend and family physician, Dr. B. E. Sawyer. After a chat of a couple of hours the doctor saw him to the door and bade him good night, saying: "Come again. Family all well, I suppose?"

"My heavens!" exclaimed Mr. Carrow, "that reminds me of my errand; my wife is in a fit!"

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AGRICULTURAL REVIEW

Colusa.

VINEYARD OUTLOOK—The Williams Farmer: The Arbuckle Planter says: "The prospect is flattering for Arbuckle and College City to be in the midst of the most extensive and productive vineyard belts of the State. College City already has about 600 acres of bearing vines, and Arbuckle will have within a year more than half that number of acres of growing vines. Following is a list of those who will go into the industry the coming winter: C. B. Morrison, forty acres; H. C. Strong, forty to eighty acres, purchased of Balfour & Garrette; Henry Alph, who recently purchased the forty acres formerly owned by Frank Covington, and who is now erecting a barn on the premises; Geo. DeBolt, twenty acres; Wm. Tourte, the remaining portion of the thirty-three acres, about twenty acres being already in growing vines; Dr. Alexander, of Woodland, will probably plant forty acres of vineyard; J. H. Ayers, who purchased the seven acres of J. R. Black, will finish planting it to vines. All these tracts are on the Reddington land and within one mile of town. Added to this may be mentioned Balfour & Garrette, who figure on planting a large acreage to wine grapes. C. E. West will plant 60 acres near town. H. A. Meckfessel figures on planting 80 acres to grapes. Ed. Riley will plant cuttings this winter for about 100 acres of his hill land, which, in time, will be A1 grape land. Harry Dobkins, who already has eighty acres of grape vines three years old, will plant 100 acres more this winter. Mr. McMillan, who owns the old Dunnigan ranch six miles southwest of town, will probably plant eighty acres to vines. Rev. Carroll, the Oakland Baptist minister who preaches here every two weeks, is pleased with the outlook and talks of heading a colony by purchasing small tracts of Balfour & Garrette and settling desirable families thereon. From this it will be seen that we have made no idle boast, when it is taken into account that the vineyards of this vicinity produce the highest grade of raisin and wine grapes grown elsewhere in the State."

Kings.

WANT CHINESE HELP—Sacramento Union: At the state fruit growers' convention session this morning the programme as published was carried out, with the exception of an excursion by rail to Lemoore, which was changed to a drive about the country in carriages and automobiles. Resolutions were passed endorsing Governor Pardee's address regarding state taxation. The convention also adopted a resolution asking that the law restricting Chinese immigration be altered to conform to the restrictions as applied to other immigrants, thus permitting fruit growers to procure Chinese laborers. A resolution proposed by S. Sbarbaro requesting the legislature to pass a law permitting wine to be sold without license in the interest of temperance was defeated. A resolution favoring the abolition of free seed distribution by the general Government and the expenditures of the money heretofore appropriated in that direction to be used toward distributing rare seeds, bulbs and plants which might prove beneficial, was passed. A resolution favoring liberal appropriation for the agricultural department of the state university and the appointment of Wickson director to succeed Hilgard was carried. A resolution asking the legislature to pass a general insecticide control law, similar to the fertilizer law and provide for the scientific study of the nature and operations and various insecticidal substances was adopted. On

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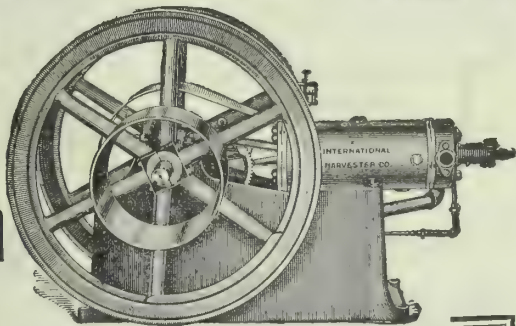
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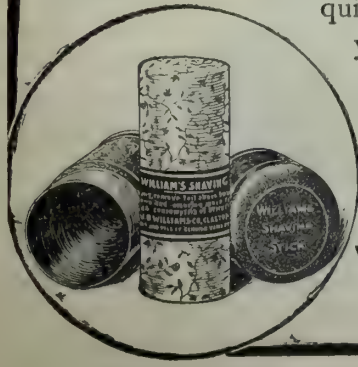
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Dept. A, Glastonbury, Conn.



Saturday the visitors and citizens will attend the Tulare county citrus fair at Porterville.

Solano.

WILL MAKE WAR ON PEAR BLIGHT.—Solano County Courier: Professor M. R. Waite of the United States Agricultural Department and several of his associates have been paying an extended visit to this section for the purpose of inspecting the pear trees of the local orchards, which are being attacked by blight. Professor Waite is of the opinion that the process of cutting out the infected parts of the trees is the best means of eradicating the blight, and the local orchardists are following his suggestions. An organization of the different orchardists in the county is contemplated so that the blight may be given proper expert attention. Owing to the pear blight in Solano county affecting a great number of orchards a large factory is being built at Benicia which will manufacture a chemical spray to be used on the trees. Heretofore the chemical spray has been manufactured in the East.

San Benito.

FRUIT PESTS IN OTHER COUNTIES.—The Hollister Bee: The Pajaro Valley Orchardist Association has declared itself in favor of continuing the campaign against fruit pests for another season. With this object in view, two committees have been appointed to petition the Supervisors of Santa Cruz and Monterey counties for an appropriation of \$2000—\$1000 for each county—to engage the services of W. H. Volk, the entomologist who organized the campaign against the codling moth, for another year. It has been demonstrated that good work can be done for the fruit industries of the two counties for \$2000, and the matter will be presented to the supervisors at their next regular meeting in December.

Sutter.

PEACH TREES IN DEMAND.—Sacramento Union: It is stated by reliable fruit men that the demand for young peach trees for planting in the famous peach region adjacent to Yuba City will be greater this year than in years gone by. In fact, the demand has spread into sections heretofore unknown to be good peach soil. The canneries are yearly increasing their output of fruit and the demand for peaches is exceeding the output. It is understood that local nurseries the California Cultivator gives the following good advice: The greatest care should be exercised, as there are several pests and diseases existing in some of the Eastern sections which we have not got in California. Among these are the Eastern peach-root borer, the peach yellows, peach rosette and little peaches, all serious pests of the peach sections, none of which have yet obtained a footing in California. It is the duty of our horticultural commissioners, aided by the county inspectors, to be sure that the trees are imported only from sections in which the above-named diseases do not exist, and that they are thoroughly inspected before they are allowed to be set in orchards. We cannot grow too many peaches in California, but in the wild rush to import pest or disease may wipe out the entire industry and annul the very object for which we are working.

Bone Spavin And Wind Puffs Entirely Cured.
Cattaraugus, N. Y., March 7, 1905
The Lawrence-Williams Co., Cleveland, O.:

Something over a year ago my twelve-year-old mare had bone spavin, and a two-year-old colt had puffs on her hind legs. I treated them with GOMBAULT'S CAUSTIC BALM. The colt was cured last April, and I sold her for \$100. The twelve-year-old is entirely cured. She raised a colt and I have worked her ever since last haying, and she shows no lameness whatever.

J. R. PRINCE.

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Glenn County - California

FOR SALE IN SUBDIVISIONS

This famous and well-known farm, the home of the late Dr. Glenn, "The Wheat King," has been surveyed and subdivided. It is offered for sale in any sized government subdivision at remarkably low prices, and in no case, it is believed, exceeding what is assessed for county and State taxation purpose.

This great ranch runs up and down the west bank of the Sacramento River for fifteen miles. It is located in a region that has never lacked an ample rainfall and no irrigation is required.

The river is navigable at all seasons of the year and freight and trading boats make regular trips.

The closest personal inspection of the land by proposed purchasers is invited. Parties desiring to look at the land should go to Willows, California, and inquire for P. O. Elbe.

For further particulars and for maps, showing the subdivisions and prices per acre, address personally or by letter

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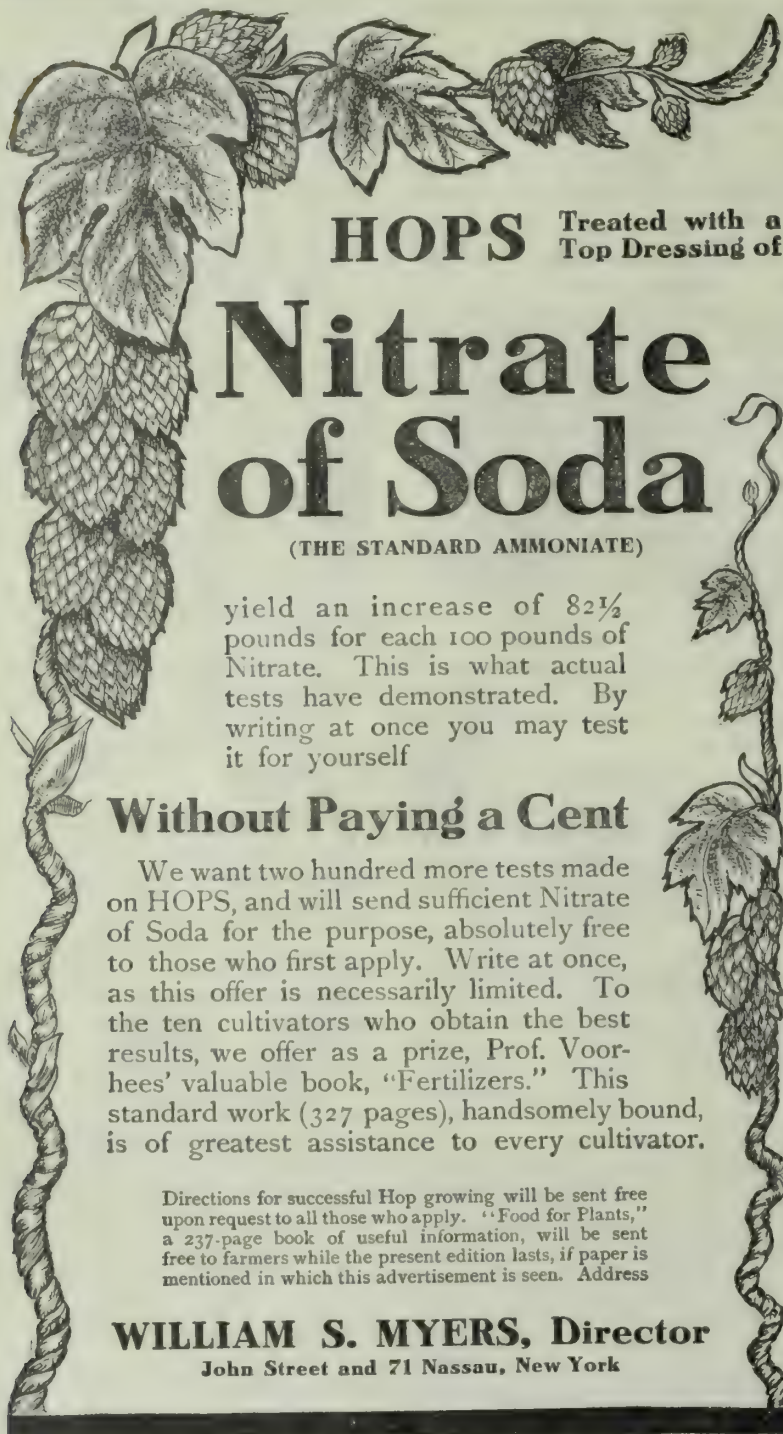
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We still have a few thousand of Fancy Navel and
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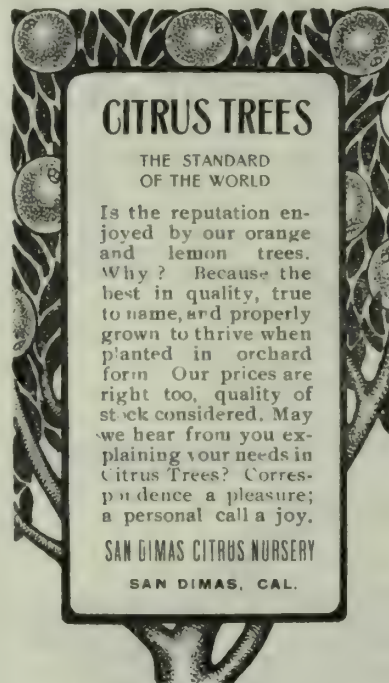
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For over thirty years, Cox's Seeds have the standard for Purity and Quality



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Advance orders may be placed any time and trees shipped when desired

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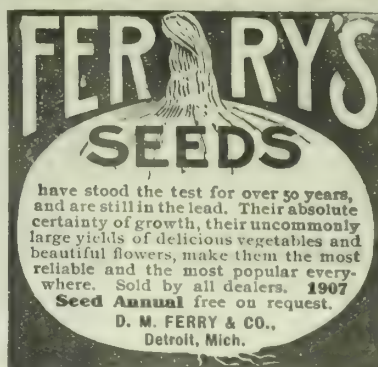
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In Pears: Bartlett, Brusse Clari-gean.

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In Quinces: Pineapple, Orange.

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Brittle, tender, broad, thick—the best of all the yellow pod bush beans. Stringless. Beautiful golden color and delicious flavor. Vigorous, reliable, and an abundant producer. 1-lb., 25c; packet, 10c.

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Glorious in flavor, gloriously sound, a glorious grower and a glorious shipper. Lilly ships tons of this cabbage seed across the continent, as this variety, perfected on Puget Sound, is admitted to be the best cabbage grown. Even rounder and more solid than the

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Dark, rich green, well-filled pods, creamy and delicious; enormously productive. Propagated in Washington, and the best early pea ever offered to western growers. Especially valuable for market gardeners, commanding the highest prices through the season. Large packet, 10c.

CRIMSON GLOBE BEET.

Close grain flesh, very sweet, tender, blood red, delicately zoned with white. Exceedingly smooth surface. Finest in form, flavor and color. Free from woody, fibrous roots. Grows uniform in size—about three inches through. Matures early. Pkt., 10c.

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Best of all the yellow varieties. Very sweet, close in texture, golden yellow, solid, very smooth, attains large size, has small core, and adapted to all soils; under good cultivation yields 25 to 30 tons per acre. Ready for table at all times during growth. Equally valuable for stock. A market favorite. 1-lb., 25c; packet, 10c.

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The larger it grows the solidier it gets; twice the ordinary size. As hard as a bullet, while tender and deliciously crisp. Retains goodness long after maturity. 1-lb., 40c; packet, 10c.

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Six 10c packets, with Flower Garden packet, 50c.

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Above prices are postage paid.

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Plant Lilly's Best Northern-Grown Seeds, grown on this coast for this coast, and be sure of profit. You will find that the saying, "Best for the West" is true in every case, and that Lilly's Best Seeds will give you best results. The above are only ten varieties of Lilly's Best vegetable seeds. For information as to the full line, write for

LILLY'S 1907 SEED CATALOG,

Which will be sent free, postpaid, on request. Lilly's 1907 catalog surpasses all previous books in attractiveness and completeness of plant information. It is thoroughly dependable, and besides containing descriptions, price lists and culture directions of thousands of varieties of seeds, bulbs, roots and cuttings, it is a handbook of information on poultry foods, poultry supplies, stock foods, fertilizers, garden supplies, sprays, horticultural supplies, etc. If you want one, free, mark an X in the white square.

HOW TO ORDER.

Mark an X in each white square opposite the variety of seed you wish to order, mark the quantity in square or on margin, figure up the total, clip out the ad., and remit in same envelope with the clipped ad. Be sure and write your name and address plainly, filling in the following blank:

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CHAS. H. LILLY Co.

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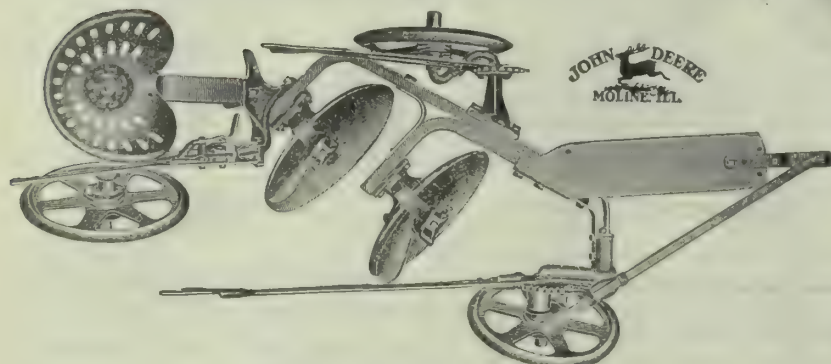
Enclosed is \$....., for which please send me \$..... worth of Lilly's Best Vegetable Seeds, as marked above.

Name.....

Address..... R P.-12

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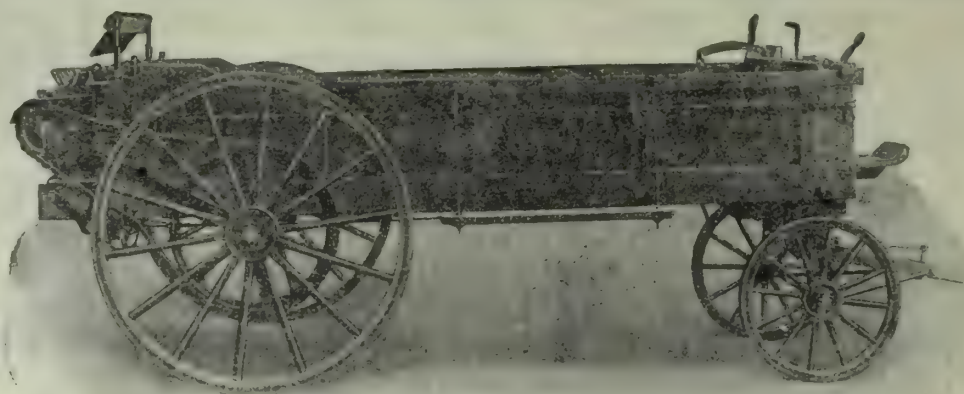
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Made in sizes from 50 to 100 Bushels

Successful Farmers use Success Manure Spreaders

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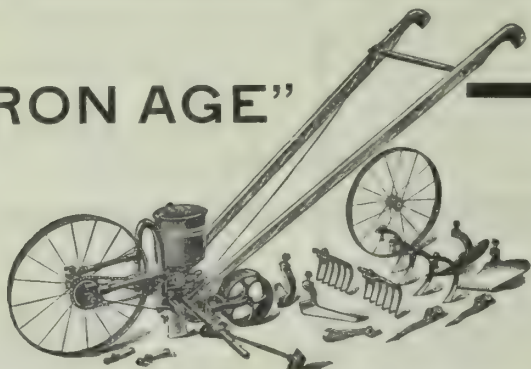
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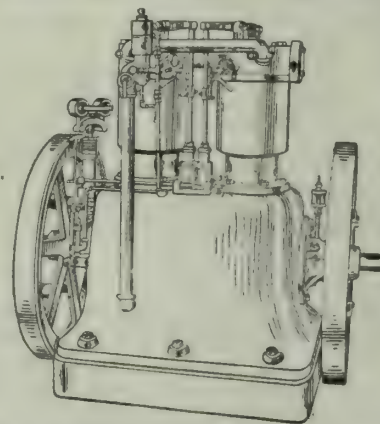
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Water and Oil Tanks—all sizes

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THE PACIFIC RURAL PRESS

AND CALIFORNIA FRUIT BULLETIN.

LXXII. No. 25.

SAN FRANCISCO, SATURDAY, DECEMBER 22, 1906

THIRTY-SIXTH YEAR

GLIMPSES AT OAK UPLANDS.

California is rich in local species of oaks and they distribute themselves widely over the valleys and up the mountains, sometimes a single species largely predominating, some times several species occupying the same area. The oaks of California have been quite fully worked up by our botanists and botanical literature has much about them. Oaks have also a special aspect which enrolls them among the native forage plants of the State. This subject was recently studied by Mr. W. W. Mackie in connection with his work at the University of California and a special publication going into the matter quite fully can be had from the Experiment Station in Berkeley. We have in mind at this time merely to take a few glimpses at wild upland pastures in the northwest corner of the State, on which oaks are found and the pictures on this page give very clear suggestions of their character.

The ranges covered by Mr. Mackie's investigations are those situated in Lake county, in eastern Mendocino north of Ukiah to Humboldt county, in the western parts of Colusa and Glenn counties, and in southwestern Tehama county. These northern Coast Ranges are broken up into many ridges, all running northwest and southeast. Between them are small, narrow, gravelly valleys, with very little cultivable soil. The mountains and slopes are composed of shales or loose soft rocks, often volcanic in formation. The soil formed by decomposition of these rocks on ridges is very shallow and poor—seldom as deep as four feet and commonly two or less. The decomposition of these shales is hastened by the growth of chaparral, herbs, and grasses, and on these poor, shallow, rocky soils the browsing oaks are found. In the sedimentary or alluvial, or even the colluvial soils washed from these mountains, none of the browsing oaks are found. These oaks, therefore, are good indicators of poor, shallow, and rocky soils.

This area is typical of all the northern Coast Ranges,

and, in regard to oaks, may be taken also as a type of the southern Coast Ranges. Thus the browsing areas of the Coast Ranges alone cover about one-third of the State. Adding to these those areas of the lower foothills



Signal Peak, Mendocino county, and its oak pasturage.



Sanhedrin Mountain, Mendocino county, showing White Mountain oak pastures.



Blue or Rock Oak in its natural range on Eel river, Lake county.

of the Sierra Nevada, which are occupied in part by many of these same species of oaks, we have, as the entire region enriched in many places by browsing oaks, about one-half the State area.

The largest picture on the page shows the blue oak (*Quercus douglassii*) at home. The tree reaches, in favored localities, a height of 20 feet, but is commonly found as a small tree about 12 feet high, or as a shrub from 4 to 6 feet in height. It is oval or round in appearance, and is covered densely with dark bluish leaves. The leaves are obovate to oblong, with lobes commonly increasing in size toward the apex. In young trees and shrubs the leaves are inclined to become spinescent. The acorns, borne in shallow cups, are oval to ovate-acute, and are about 1 to 1½ inches long. In altitudes, this oak is limited to the low foothills and dry valleys where the soil is hard and rocky, and never ranges upward to the higher slopes and valley. It is found most abundantly in the dry foothills of the inner Coast Ranges, but extends from Mendocino county and the upper Sacramento valley through the Coast Ranges and Sierra Nevada to Tejon Pass, in Kern county, from whence stunted individuals extend to the margin of the Mojave Desert. In the southern Coast Ranges it reaches its maximum height of fully 30 feet. On account of the dryness of its leaf, only goats and sheep browse on the blue oak; but the acorn mast, which is plentiful and quite certain, is excellent feed for hogs, cattle, sheep, goats, and often for horses.

The two smaller pictures show the white mountain oak (*Quercus garryana*). Two forms of this species, differing only in range and height of individuals, may be distinguished. The typical form is a tree from 30 to 70 feet in height, with erect rigid branches. Its leaves are oblong to obovate, 4 to 6 inches long, with coarse lobes. The acorns are sessile or shortly peduncled, oval to slightly obovate, about 1 to 1¼ inches in length, contained in a shallow cup. It ranges from Vancouver Island southwestward through western Washington, Oregon, and the Coast Ranges of California, to Santa Cruz. It is the only oak used for lumber on the Pacific Coast. "The other form of this species is a mere shrub from 2 to 6 feet high, but identical with the larger form in every other particular. It is this form of *Q. garryana* that stockmen turn when seeking "browse" in their mountain pastures. It is gregarious over hundreds of acres on the ridges, peaks, and higher slopes in the most exposed places of the northern Coast Ranges. It forms thickets to the exclusion of nearly everything else. This species, almost unaided, supplies pasture for thousands of sheep and goats, as well as cattle and horses, and not only keeps them up, but actually fattens them. The stock keep whole ranges of it eaten down often to within less than two feet of the ground. Aside from the value of the leaves, the acorn, which is quite sweet, forms a rich diet for stock. The mast is usually sure and abundant.

Pacific Rural Press

Published Temporarily at Berkeley, Cal.

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Advertising rates made known on application.

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DEWEY PUBLISHING CO. - - - - - Publishers

R. J. WICKSON - - - - - Editor
EDGAR RICKARD - - - - - Business Manager

THE WEEK

The ample rains have sufficed to bring the land into good working condition and there is a rush of men and teams to be seen everywhere as one flies through the valleys during daylight hours. Everyone is expecting a good productive year and hurrying to avail himself of it to the extent of available help. Aside from grain work, there is a large area being fixed up for alfalfa and for vine and tree planting. The high prices for fruits is inducing all who think they can handle trees well to increase their acreage and this with the hosts of new planters is making things very lively in the nurseries. Although great sales of popular varieties have been made there are some places where supplies can still be had on late orders and all planters should keep close watch of our advertising columns for chances of this kind.

Farm labor seems to be the liveliest agricultural subject these days and though we expressed ourselves quite freely last week, there must be recurrence to the subject. An announcement of the organization of farm laborers which just arrives sounds very much like a proclamation which we noted last year but possibly it simply means that the volcano announces another period of activity. The account is that last week at Dallas, Texas, there was launched upon the peaceful sea of agriculture a new union, to be known as "the United Brotherhood of Rural, Horticultural and Agricultural Wage Workers of America." The declared object the organization is to secure better and more standard wages; more uniform hours of labor and the protection and elevation of such laborers and their families. The eligibility to membership is as follows: "All white male persons of over fifteen years of age and of good moral character shall be eligible to membership in this organization, who believe in a Supreme Being, who acknowledge the jurisdiction of the organization and who are engaged as laborers for wages on farms, ranches, nurseries or in any other rural or agricultural pursuit."

This coupling of loyalty to the "Supreme Being" and to the jurisdiction of the Union may, and we hope does, indicate a very reverent state of mind and an appeal to everlasting justice. If such is the real foundation of the organization the farmers need not particularly fear it; they will simply have to place it in the same class with fire, flood, bug and the weather, all of which are classed as "acts of God," and which have to be guarded against and avoided by all possible human means. For it is probably good doctrine that the Supreme Being designs mankind to enjoy and be thankful for favorable dispensations and to develop manhood, wisdom and strength by fighting bad ones. Evidently, the Creator had no idea of developing a race of beings which should be fed on pap from cradle to grave and, if so, the farmer is one of the finest manifestations of his purposes. His whole career is, in a sense, "agin natur" and he has been overcoming forests and wild beasts, weeds and weather ever since civilization pulled him out of the sea of savagery. Among his fellow men he has always been the most shining example of bless-

ing those who, economically, cursed him and of praying for those who, in an industrial way, despitely used him and persecuted him. Of course, under this classification of the organization of farm laborers, the farmer can feel no more obligation to encourage or promote it than any other manifestation of nature which is in conflict with the success of his pursuit.

But although we claim that the foregoing is a warranted deduction from the "me and Gott" declaration of the new organization, we do not by any means insist upon it. The farmer is above all humane and reasonable in his view of things and he would concede to the farm laborers the right of organization, of Godward appeal and of loyalty to each other—in fact, he has to concede, as things are, almost everything that any one thinks it worth while to claim and struggles on for whatever margin he can find in a fence corner where everyone has overlooked it. If his opinion about the new organization should be asked, as it will probably not be, for who cares what it is, he would hopefully say that when farm laborers organize under the divine banner they should insist upon their members doing some things which God approves in addition to securing better wages and more uniform hours of labor. He would advance the golden rule which is a godlike message; he would also insist that rendering unto Caesar the things which are Caesar's is just as binding an injunction as rendering unto God the things that are God's. If an organization of farm laborers will really secure the "elevation of such laborers and their families," why then the laborer will be juster in his demands, truer to the enterprise which yields him a livelihood and broader in his consideration of the rights of his employer, as well as his own. This would be an ideal accomplishment and the farmer would rejoice in the success of such an organization. He will not condemn or prejudice it. He will wait patiently to see how it works and if it works ill, why he will still be patient and see how he can grant all that it demands and still find standing room for himself on the face of the earth.

A local phase of organized farm labor has manifested itself by a strike of vine-pruners at Fresno, involving, according to report, about 200 men, who make this statement: "We believe that we are justified in asking from the vineyard owners an increase in our wages, from \$1.25 per day and board to \$1.50 per day and board, or from \$1.75 to \$2 per day without board. The cost of living now is much greater than it was a year ago. Houses which rented for \$5 per month a year ago now cost us \$9 per month and wood which cost \$6 per cord a year ago now costs us \$8 or \$9 per cord." The report in the Fresno papers is that the vine owners are disposed to make this concession. It is quite true that living expenses, in the vicinity of the larger towns at least, has notably increased and that workmen must get more for their time or be forced to migrate to San Francisco at considerable disadvantage to themselves and to the rural industries needing their services. We have no idea at all that rural employers will be unreasonable, but they should at least be as enterprising as their workmen are and work together to ascertain the exact economic truth and determine what their industries will stand. The Fresno question, owing to multiplication of nationalities, etc., is quite complex and should be carefully looked into. If forced to higher expenditure, the employer should have some guarantee of capacity and efficiency. There is something for employers to do in their own behalf in this whole matter and they should not be slow about getting at it.

Present international affairs seem to give new acuteness to everything Japanese. The telegraph says that the U. S. Department of Agriculture has ascertained that camphor can be made in this country and that we need not be dependent upon the Japanese for it, also that in making camphor it is not necessary to cut down the trees, for it has discovered that camphor can be

made from leaves and twigs which can be gathered without killing the trees. We suspect that the "intelligent reporter" has been getting his work in so far as heralding a discovery is concerned. The knowledge is, in fact, very old, though the announcement of it may be timely and interesting. There are camphor trees in California probably not less than forty years old and they are pretty widely distributed, good rapid growers and desirable for shade and ornament. Camphor was made at the University of California from the leaves and twigs of a tree grown in Berkeley over twenty years ago. On the basis of the local demonstration, the proposition to produce camphor has freely arisen and been looked into. The trouble has been that there seemed no chance of profitable competition with Asiatic producers of camphor. The Japanese expanded in camphor on Formosa when the price was high and made so much that in spite of the world's increased use of camphor the price has fallen notably. This fact renders American camphor still less likely to be profitable. What we can do because of natural fitness is not the measure of what we can profitably do industrially. We have to be always dinging this fact and shall probably have to do so so long as "new product" boomers refuse to look into economic conditions.

We notice that some of our friends occasionally use the term "experimental station" in referring to establishments for agricultural experiments. It is an error. There is nothing experimental about the establishment itself. There was, perhaps, more than half a century ago when such establishments began, but they have long since passed the experimental stage and have demonstrated their value. The proper term to use is "experiment station"; that is, a station for experiment, which does not involve a question as to the efficiency of its work.

We have just received a personal note from Mr. David Lubin, the delegate from the United States to the International Institute of Agriculture. Our readers will remember that the initiative in this world movement was taken by the King of Italy. Mr. Lubin writes from Rome that the Institute is now materializing and he has visited the site of the building to be known as the Palace of the International Institute of Agriculture, on the grounds of the Villa Borghese, and saw the men at work. It will take about a year and a half to complete it, but the corner stone will soon be laid and Mr. Lubin expressed the hope that some of his California friends would be present. The building is to be one of space and dignity and is the gift of the King of Italy to the organization which he established.

We frankly acknowledge that we never expected to live long enough to see agriculture become so fashionable that the dissipation of farming for fun would become so prevalent in any State that the economic standing of the real thing would be endangered. And yet that seems to be the way of it in Maine, where the buying of abandoned farms by city persons, who convert them into summer places, has assumed such proportions that it has been called to the attention of the State Agricultural Department. Commissioner Gilman says in his opinion this movement, if continued, would reduce materially the total agricultural output of the State. In recent years hundreds of rich New York and Massachusetts persons have bought up farms and occupied them during the summer, cultivating only such land as they wished for the raising of flowers and garden vegetables. That policy is not in line with that advocated by the agricultural department. Vigorous efforts have been made, aided by the authorities of the University of Maine, to interest rural communities in the possibilities of farming and fruit raising. Trains have been sent throughout the State bearing lecturers, who talked to the farmers on scientific agriculture. They seem to want to save the State for real farmers and not for those who play at farming. It is a novel and interesting situation.

QUERIES AND REPLIES.

RECLAIMED LAND FOR VEGETABLES.

To the Editor: Do I need to have analysis made of the soil of some reclaimed marsh land with the view of ascertaining if it can be adapted to truck farming? It is at present in hay and will run in a good season four tons to the acre. If it can be used for small farms my purpose is to cut the tract into five and ten acre lots. It consists of 400 acres and as far as I can judge does not vary in quality of soil.—OWNER, San Francisco.

Analysis of your soil is not necessary. The fact that it will grow so much grain hay shows that the soil has been sufficiently freshened to render it hospitable to other plants and the availability of it for truck crops can be safely inferred. If it were a question of deep rooting fruit trees, etc., the ascertainment of the ground water level would be essential, but this consideration does not rule with reference to many truck crops. If the land is well cultivated and freely fertilized, as is always done by market gardeners, not only will any extra heaviness of the soil be overcome, but its content of plant food may be intelligently regulated. It seems to us that you could proceed with your enterprise with confidence if other conditions are favorable.

LIME IN CALIFORNIA.

To the Editor: I am trying to obtain some information as to the effect of lime used on orange groves in your State, and would be greatly pleased if you would give me the desired information.—READER, North Dakota.

Very little lime is used on the orange groves in California, and that generally where there has been quite a free application of stable manure or the plowing in of considerable green stuff grown for fertilizing purposes. Under such conditions the use of lime is often desirable. As a rule, however, California soils are very richly supplied with lime and the addition of these substances as a plant food is, therefore, unnecessary. Prof. Hilgard has described a very interesting condition of affairs resulting, it is believed, from excessive occurrence of lime in the soil, and detailed examination of the question is now being pursued by the University Experiment Station.

ON FERTILIZERS.

To the Editor: I wish to experiment with fertilizers on the orchard this season. I wish to know if it is absolutely necessary that a complete fertilizer, or one consisting of potash and phosphoric acid, should be applied before spring. If so, is it necessary to plow it in? We are having very heavy rain and it is very doubtful if the ground will be fit to plow before spring. In any case, I have always found that when the orchard is plowed in winter, it is necessary to plow again in spring. It seems to settle harder and always turns up harsher and more intractable than if not touched till spring. Further, if plowed in winter, the fertilizer would be brought to the surface again with the spring plowing. I have some air-slaked lime left from last winter and wish to apply on some very tough adobe. How much shall I use and when? Is it necessary to plow this in at time of application? How much copperas should be given per tree as an annual application? Does it matter when this is put on? —ORCHARDIST, Capay Valley.

It undoubtedly would be more desirable under the conditions which you describe to make application of the fertilizers at the spring plowing. The growth of green stuff which you plow under will have a tendency to overcome the running together of the soil which you describe. In places where the spring rainfall is very short an earlier application is necessary because of the desirability of movement of the soluble matter into the strata.

You can use lime on adobe in any quantity from 500 to 1000 pounds to the acre, and it should be applied as early in the rainy season as possible and need not be plowed in. It can be left on the surface for subsequent plowing. The desirability of the application of copperas at all is a local question. You can make interesting experiments by using two or three pounds to each tree;

scattering well on several trees and marking for subsequent observation as to whether any effect is produced. This can be applied at any time during the rainy season.

REDWOOD SHAVINGS.

To the Editor: I wish to know something in regard to shavings from redwood, whether injurious to trees and plants. The people around here have been putting these shavings from the mill around strawberry plants and in the garden generally. As yet we find no result, either good or bad. We know that redwood carries a strong acid-like substance and before we use it too much would like to find out its properties, etc. Will you kindly enlighten us in the matter, as it is in great plenty here and makes a mulch (if not injurious) that would be easy to apply?—SMALL FRUIT GROWER, Mountain View.

There is no danger from the use of redwood shavings or sawdust so far as direct injurious effect upon seeds or plants is concerned. As, however, the material is very slow to decay, it is apt to render a light soil too loose and disposed to dry out too much, while on a heavy soil it may have a beneficial effect by promoting friability and mellowness. You have to regard first the effect upon the soil, which, of course, may produce indirect effects upon the plant which would not be desirable.

MAZZARD AND MAHALEB.

To the Editor: Will you kindly tell me what the difference is between Mazzard and Mahaleb cherry stock? I have been trying to get Mazzard cherry stock at several places at the East this fall but have not been able to find any so far. I can get Mahaleb stock but I do not know whether they were a good stock for this country. I have written to other Eastern dealers, but they are out of Mazzard stock this year. Can you tell me where I can get any of them?—GROWER, Campbell.

The black Mazzard and the Mahaleb are two wild cherries of Europe, both of which are used for roots on which to bud the improved varieties. The Mahaleb is believed to be the more hardy root—less subject to adverse soil conditions. As the places in which cherries are chiefly grown in California have a depth of soil and moisture conditions of the most favorable kind, the Mazzard, being a freer grower, is chiefly used as a stock for cherries in California, although there is at present a disposition to use Mahaleb in more trying situations in this State. You can get any amount of young trees grown on Mazzard root in our California nurseries. The reason why you cannot get the stock from Eastern nurseries is that the Mazzard is relatively much less in that part of the country than it is in California. We do not know any way in which you can get these seedlings except by direct importation from France, or by correspondence with California nurserymen who may have surplus supplies on hand.

CHANGE OF LEAVES OF BLUE GUM.

To the Editor: The common eucalyptus (eucalyptus globulus, I think), which is grown quite extensively in this State, has at maturity a rather elongate leaf. However, when young, the leaf is of oval shape. Why this different form of leaf at different stages of development?—READER, San Francisco.

It is impossible to explain why the eucalyptus changes its form of leaf as it attains greater age, or why it has a different arrangement of them on the leaf. One can only conjecture, and theoretically demonstrate, possibly, that the change of leaf form better suits the older tree than would a retention of the form assumed earlier in its life; but we cannot demonstrate the thing any more clearly than we can some other of the secrets of nature. Such behavior is, however, not restricted to the eucalyptus; some of the acacias manifest it; the seed leaf of some of the palms is different from the mature forms; and many other plants behave that way. Unless inclined to speculation, the best answer that can be made to your question is that it is natural for these plants to grow that way. But you might perhaps have asked even a more puzzling question and that is why young shoots from an old stump or trunk go back to the style of leaves which come first from the seedling and then change again to the mature form?

PROSPECT IN EUCALYPTUS PLANTING.

To the Editor: Where can I find the fullest information on the subject of eucalyptus trees, their planting and culture? I intend to set my ranch out to these trees, and I am desirous of procuring some information upon the subject, also something that would indicate what would be the profits of such forestry.—OWNER, Modesto.

The best general work on eucalyptus culture was prepared by the late Professor A. J. McClatchie, of southern California, and published by the Bureau of Forestry of the United States Department of Agriculture, for sale at cost. It is a very interesting publication of 300 or 400 pages fully illustrated and can be had for \$1.00 by application to the Superintendent of Documents, Government Printing Office, Washington, D. C. The most suggestive accounts of eucalyptus planting consist of papers read at the University Farmers' Institutes at different parts of the State, and published in the Pacific Rural Press during the last few years. We really do not know what to expect as an estimate of future profit from eucalyptus plantations. At the Fruit Growers' Convention at Hanford an enthusiastic eucalyptus propagator placed the profit at \$2,000 per acre for each ten years' growth. At the same time there are many acres of eucalyptus trees on the hills adjacent to Berkeley and Oakland which could probably hardly be given away, because the high price of labor makes handling of the trees cost more than their present fuel value. This subject is one of those upon which we have to acknowledge ourselves beaten in any attempt to prophesy. We would like more information on the subject.

LONGEVITY OF APRICOT TREES.

To the Editor: Will you tell me as to the ordinary fruit-bearing age of the apricot tree? The orchard I have been looking at with a view to purchasing has large trees, is well trimmed, but has a good deal of gray moss.—ENQUIRER, San Francisco.

The apricot tree in California is long-lived and there are many instances of tree not less than forty years old still in satisfactory bearing. Of course, the tree should be kept vigorous and growing new wood by regular pruning. The moss is objectionable but can be readily removed by spraying the tree while it is dormant; with concentrated lye—one pound to six gallons of water. Such an application will not only kill the moss but give the bark a renovated appearance which is very pleasing to look upon.

EUCALYPTUS PLANTING.

To the Editor: Kindly inform me as to the name of the best eucalyptus tree for timber purposes, as likewise the most suitable for planting in creek bottoms in Santa Clara county.—SUBSCRIBER, San Jose.

The blue gum, or Eucalyptus globulus, is the most rapid growing variety in California in all places where it is not subject to frost injury. This, we believe, to be the case in the section you mention. If, however, you can learn by inquiry of injury to the globulus you should plant Eucalyptus rostrata, or viminalis, or rudis, whichever trees you can get to best advantage. All these varieties are more hardy than the globulus.

THE BEAN WEEVIL.

To the Editor: What can be done for the bean weevil? I tried to kill it by heating the beans in the oven and I succeeded in doing so but the beans would not grow. Will beans eaten by weevils grow anyway?—READER.

The work of the bean weevil, unless carried too far, will not prevent the germination of the seed, but such seed is not approved. The egg is placed in the bean, while growing, and an easy way to kill it, on a small scale, is to subject the seed when gathered to the action of heat, being careful, however, not to heat higher than 130 degrees F., nor to maintain the heat too long. Otherwise the seed will be killed. An effective way to kill insects in the seed is to put it in a tight box or barrel, place a couple of ounces of carbon bisulphide in a saucer on top of the seed and cover tightly with sacks. The vapor of the bisulphide will kill all insect life in the seed. There is no satisfactory way of preventing these insects attacking the plant in the field, except to be sure that the field is not continually restocked with insects by planting seed that contains them.

HORTICULTURE.

THE CHOICE OF STOCKS.

(By A. D. Bishop, of Orange, at the California Fruit Growers' Convention, at Hanford.)

The question as to whether we are giving sufficient attention to the stocks on which we are growing our orchards is ever presenting itself to my mind, and the answer, based on experience and observation, is always in the negative, although relating mainly to the business of the south and the citrus industry, as that is work in which I am engaged. To those who know more than I do, or who practice all that I may suggest, these lines are not addressed, but when I see people continually doing things that were done twenty years ago, that experience has proved impossible of success, or read the advertisements with extended headlines setting forth the great success of certain individuals working under especially favorable conditions and circumstances (and realize that when compared with the whole or partial failures, they must be multiplied by the hundreds.) Seeking to induce people of the world to come and settle among us, with whom we may divide our holdings or improve the vast territory as yet unused. We wish them to be contented and to be contented they must be at least partially successful, and to that end must start off right.

Still, we see people of long residence digging one variety of trees and planting another until we have seen the same land vacant three or possibly four times, and when they ask you the best way to start a walnut grove and you tell them by all means to plant a nut of the American black or giant California in the place where he wishes the tree to grow and when a proper size, graft with a scion cut from a bearing tree producing the character of nut that pleased his fancy, that always produced a plentiful supply of staminate blossoms and ripened its pollen at a time that the pistillate blossom was ready for fertilization.

Oh, well, it is the reply, I know that is correct, but I am in a hurry. I cannot wait for that. I want trees now. And he buys what he can find, possibly none that exactly suit, and when they commence to bear, they produce all forms of fruit from good to bad while some produce nearly nothing.

A few years ago, more than fifty per cent of the hybrid walnuts were afflicted with black knot at the surface of the ground, before they had been planted in the orchard three years; whether while this was caused by injury in cultivating as many contended or not it is not as prevalent now as in the past.

The transplanting of the walnut is a greater shock to the tree than to most deciduous trees, and I believe more so to the black walnut root.

We have the annual spectacle of people planting grape cuttings in a territory where the mysterious California vine disease is prevalent, which show signs of the disease by the end of the first season, and at the end of the third are practically all dead, without having produced a bunch of grapes; when it is a well-known fact that there are varieties immune to the disease and that all varieties grafted on resistant roots, while not immune, their lease of life will be prolonged to yield some degree of profit.

It is a peculiar thing that none of us ever contemplate any additional plantings until suddenly seized with an inspiration to plant some special varieties and still more peculiar that many others are afflicted with the same inspiration about the same time, which results in a great scramble for trees, but if you suggest to a man that it is not safe to plant orange or lemon budded on sweet seedling roots, and especially on land of the character which he has in contemplation, owing to the liability of gum disease, he tells you this is all I can get, and as I wish to receive some return for this work myself, I cannot wait. When he should know, if he has been a resident for only a few years, that by the second year he will have commenced to doctor some at the ground's surface; the next he will begin to replace and at the tenth year a large per cent will have been replaced; and if attended to faithfully some will have been replaced at least three times, and I have witnessed the replanting of more than ten per cent at the beginning of the second year. Now, if on the day the orchard was started he had planted seed of the wild or bitter orange of the West Indies, commonly called sour-stock, and grown roots on which to bud, he would surely have a more profitable orchard at the end of the tenth year.

I find in the published report of a farmers' institute held in the city of Santa Ana in 1892, that A. D. Bishop recommended the use of sour stock as a preventive of gum disease. It was theory with me at that time because of the natural condition under which it grew and the not entirely dissimilar condition which we create

by irrigation. I consider it now to have become a well proved fact, and while gum disease is much more destructive on some classes of soil than others, it is present everywhere and on the increase; some twenty-five years ago it was unknown, and we may well ask ourselves if it is unreasonable to expect citrus trees to develop troublesome and destructive diseases since that is the common history of many agricultural plants, both annual and perennial, when grown for a considerable period in the same field or territory.

Nurserymen, like people engaged in other commercial enterprises, are working for the profit that is in the business, and while striving to supply the public with what they demand, they are growing such trees on such roots as will insure the largest and best looking trees in the shortest possible time, and for that reason a large per cent of the stone fruit of orchards are of the peach, a root of short life and full of trouble in its susceptibility to attacks from insects and diseases.

If a part of the effort now being expended in the creation of a new variety were devoted to the creation of the stocks immune to any serious troubles that affect the industry, it would undoubtedly result in lasting benefit.

The great advantage in using sour-stock is in its magnificent deep growing root system, its immunity from gum disease to the top grown upon it provided it is budded high enough to prevent its more tender bark from coming in contact with the ground, and I have yet to find the first block of nursery stock that conforms to that condition, all being budded so low as to lose all advantage from the resistant stock, probably because the grower would have been compelled to keep the stock a year longer to have gotten them of proper size at 12 and 16 inches from the ground.

[In the discussion which followed Mr. Bishop's paper, it was strongly held that the peach root could not be considered short-lived in California, if the soil was suited to it and the top kept thrifty by regular pruning for renewal of wood.—ED.]

THE VINEYARD.

INCREASING THE BEARING OF THE MUSCAT.

(By Prof. F. T. Bioletti of the University of California Agricultural Experiment Station at the California Fruit Growers' Convention.)

The statistics of the raisin industry of California, which I have been able to obtain are somewhat indefinite. A comparison of the various estimates indicate, however, that there are approximately 70,000 acres of vineyard devoted to raisin grapes and that the average crop during the last ten years has been about 45,000 tons, or 1.56 tons of dried grapes per acre per year. The variations between different years are considerable and the variations between different vineyards even greater.

Some of these variations are due to weather conditions and differences of soil which are beyond our control. Others, however, can be controlled with more or less certainty. The object of this paper is to show some of the ways in which some unfavorable conditions can be removed and the crop increased at present, and to suggest some methods which promise further improvements for the future.

The principal causes of deficient crops are the following:

1. Unfavorable weather—Spring frosts, cold or wet weather during blossoming, excessive heat during ripening, rain during the drying season.
2. Vine diseases—Oidium, coulure, vine-hoppers.
3. Improper cultural methods—Lack of cultivation, rise of water level, bad pruning.
4. Impoverishment of the soil—Lack of phosphates, humus, lime, rise of alkali.

I will not attempt to cover the whole of this ground but will simply make some suggestions regarding proper methods of pruning and of the control of the diseases, oidium or mildew and coulure or dropping of the grapes.

Diseases.—The oidium or mildew of the vine is a disease to which many grape growers of the San Joaquin valley have given no attention. While it never does such complete damage here as in many districts, it is often a serious factor in diminishing or deteriorating the crop. It is one, however, which is completely under the control of the grower and, in most parts of California, at comparatively small cost.

If the grower in the San Joaquin valley will sulphur his vines properly at the right time he will have no injury from mildew whatever. One sulphuring during blossoming time might in normal seasons be sufficient if everybody sulphured every year. As it is, a wiser plan is to sulphur once during the first warm weather

of spring when the vine shoots are six to eight inches long and a second time when the vines are in full bloom. After blossoming it will seldom be necessary to sulphur muscats at all, except in exceptionally moist locations or seasons.

The method of throwing on the sulphur by hand or with perforated cans should be abandoned. It is wasteful of time and material and does not do the work effectively. Some efficient form of dust sprayer should be used. Unfortunately, no efficient hand machine seems to be made in the United States suitable for this purpose. Several are made in Europe, however, and they will more than repay the cost of importation the first year they are used, in saving of sulphur alone. This was well shown by tests made by the experiment station this year. The estimates of the amounts of sulphur used per acre in the following table are based on these tests:

Best dust sprayer, 1st, 5 lb.; 2d, 7½ lb.; 3d, 10 lb., total 22.5 lb. at \$2.50, cost of sulphur, 56 cents.

Can shaker, 1st, 7 lb.; 2d, 30 lb.; 3d, 50 lb., total 87 lb. at \$2.00, cost of sulphur \$1.74.

Hand, 1st 12 lb.; 2d, 40 lb.; 3d, 75 lb., total 127 lb. at \$2.00, cost of sulphur, \$3.54.

Sublimed sulphur of good quality should be used with the dust sprayer for the best results, while a cheaper form is almost equally good for the other methods, as much more is used if the vine is properly treated, and, unless the sulphur is of very bad quality, there will be enough fine material in the amounts indicated to do effective work. Even though we use cheap sulphur with the usual methods, the cost of the material for three sulphurings will be about \$12.00 for the shaker and \$30.00 for hand sowing more than for the dust sprayer on every ten acres.

This does not show the whole gain, however. If the sulphuring is done thoroughly enough to be effective there is a gain in time and labor with the dust sprayer. The principal gain, however, is in the better work done. The machine sulphuring would be preferable even though it cost twice as much, as the control of the mildew is made much more certain.

A small quantity is just as effective as a large, providing some sulphur reaches every part of the canes and leaves of the vine. If we can see the sulphur on the vine from a distance of twenty feet, too much has been used. If, on close inspection, we cannot find particles of sulphur on every part of every leaf the sulphur has not been properly distributed. It is impossible to avoid both of these defects except by the use of an effective machine distributing the sulphur by means of a strong current of air.

Coulure.—The raisin muscat is particularly subject to a disease or accident which is commonly known as "coulure." This consists of two forms; the dropping of the blossoms without setting, which we call early coulure, and the dropping of the berries when they are small, which we call late coulure. The early form is the most usual and serious in the case of muscat.

Many theories as to the cause of this trouble have been advanced, but it is only lately, through the researches of Messrs. Viala and Pacottet, that the real origin of the coulure of the muscat have been discovered.

The discovery has made it possible to increase the crops of this grape in the graperies of Paris, more than ten fold. The means used are inapplicable to large vineyards in the open air, but a knowledge of the facts brought to light by these investigators may enable us to devise methods of control suitable to our conditions. The cause of the dropping lies in the peculiar structure of the flower itself.

The flowers of most cultivated varieties of grapes are what the botanists call "perfect." That is, each flower has the two elements which are necessary for the development of the perfect fruit. These elements are the pollen contained in the anthers and the ovules contained in the pistil. Unless the ovules are fertilized by normal pollen the pistil will not develop into a normal grape berry.

There are several defects in the muscat flower which make this necessary pollination more uncertain than with most varieties and it is only under the most favorable conditions that the ovules are properly fertilized.

In the first place, owing to the shortness of the filaments supporting the anthers, the position of the pollen is such that it may all fall off without reaching the stigma, which is a part of the pistil through which the pollen tube obtains access to the ovule.

In the second place, the pollen is not powdery as with most vines, but waxy and with a tendency to cohere in masses. This renders its distribution by wind and insects much less certain. The pollen grains are, moreover, often imperfect and most of them are incapable

of germination and performing their function even if they reach the stigma.

The means which have been adopted in Paris graperies for overcoming coulure is the artificial pollination of the blossom with the pollen of staminate vines. Certain American vines used as phylloxera resistant stock are sterile because they have imperfect pistils. Such varieties, on the other hand, have very abundant and vigorous pollen which owing to its dry, powdery nature is easily collected and distributed. The variety chosen is the Aramon Rupestris No. 1. The Rupestris St. George, which is also a sterile vine could be used for the same purpose.

The pollen is collected and if necessary kept until needed between sheets of dry blotting paper. During the week or ten days in which the muscat is blossoming the pollen is blown on to the bunches three times a day by means of small bellows. The result is that graperies which formerly produced only from 25 to 75 lb. of grapes to each 200 square yards, now produce from 900 to 1100 lb. in the same space. The muscat bunches, moreover, which were formerly loose and straggling are now so compact that it is necessary to thin them.

It was found that this artificial pollination, in order to be effective, must be performed when the temperature was favorable, that is, about 77 degrees F.

Another necessary condition was found to be a dry atmosphere. If the air of even the soil was moist a drop of liquid formed on the end of the style. Two or three drops would form and fall during the day and carry off all the pollen which had settled before the pistil had been fertilized. When the moisture in the air did not exceed 50 per cent the fertilization took place satisfactorily.

This method, while effective and profitable in a hot house, is, of course, inapplicable to vineyard conditions. It offers us some suggestions, however, which may be useful.

We would do well to follow the practice, which is common in the raisin districts of Spain, of planting certain proportions of varieties with strong pollen in connection with all muscat vineyards. These varieties should be planted in such a way as to facilitate cross pollination as much as possible. It is impracticable to mix the varieties thoroughly, but it would probably be sufficient if every tenth row, for example, were of another variety. The pollinating varieties must blossom at the same time as the muscat and must have strong pollen, as evidenced by the regular setting of their grapes. I would suggest the Palomino, a heavy bearing sherry grape of good quality, or the Perruno, useful for the same purpose and also a first-class white shipping grape. The malaga also might be used, but I have no data as to its time of blossoming.

The moisture and temperature conditions are difficult to modify, but something can be done even here which may help. The mean temperature for the month of April at Fresno for a term of twelve years has been 60.8 degrees F., varying from 54.7 degrees F. to 67.1 degrees F. The temperature during the last two weeks, when blossoming usually takes place, will be slightly higher than this, which indicates a day temperature which is sufficient for the proper setting of the grapes. The average moisture for the same period in April has been 58, or somewhat less than this for the last two weeks, which is also favorable.

The later the vines blossom, therefore, the more likely they are to set well, as the weather will be warmer. Little can be done to delay the blossoming. Some slight effect might be obtained by spraying the vines before they bud out, with whitewash.

We can control the moisture conditions to some extent by avoiding cultivation during and just before blossoming. The air is moister near the soil than a few feet above, so that the vines with a head two or three feet from the ground should set their fruit better than those flat on the ground. High vines will also blossom a little later than low ones.

Probably some improvement in the setting of the fruit could be obtained by a careful selection of cuttings. The Huasco grape, which was imported from Chili and has been growing for many years at the Tulare experiment station, differs in nothing from our muscat except that it sets its fruit a little better. By selecting cuttings from vines which set their fruit well, especially from those which blossom a little later than the average, we might modify some of the defects of the variety.

Pruning.—With many varieties it is possible to regulate the number of bunches which a vine will bear by the method of pruning adopted. If we cut off everything but the water sprouts or canes coming from old wood, we remove nearly all the buds which are capable of producing blossoms and, therefore, prevent all possi-

bility of a good crop. If, on the other hand, we are careful to leave only fruit spurs or canes coming from wood of the previous year's growth, we give the vine the opportunity to produce a large number of blossoms and, therefore, if all other conditions are favorable, a large crop.

With the muscat the bearing is less easily regulated by this means, as, usually, all canes have fruit buds and we will obtain blossoms even though we leave nothing but the water sprouts.

It is for this cause, probably, that muscat vines are more carelessly pruned than any others. With this variety the results of bad pruning do not always show the first year in diminished crops. A great deal, however, can be done in improving the health, vigor and, consequently, the bearing, even of muscat vineyards, by intelligent and careful pruning.

If we examine a vine in many old muscat vineyards in winter we will find that it consists of a gnarled stump rising six or eight inches above the soil with a diameter of twelve to eighteen inches. On this shapeless mass of wood will be found from eight to twenty short spurs, usually around the edge or coming from below the ground, while in the center will often be found an abundant growth of toadstools, showing that a great part of what is called a vine consists of dead and decaying wood. Such a vine cannot produce regular and abundant crops.

While spring frosts are to some extent responsible for this peculiar condition, the main cause is lack of care and system in pruning. The proof is that some vineyards, more carefully handled, have vines of normal shape.

A muscat vine, like any other, should have a distinct stem or trunk. This trunk should be smooth and without spurs or scars. This trunk makes it possible to plow, cultivate and hoe close to the vine without injuring the arms and spurs. It facilitates the removal of suckers from below the ground and holds the bearing wood high enough up to keep the grapes from touching the ground. How high this trunk should be will depend on various conditions. A smooth stem twelve inches in length from the surface of the ground to the branching of the arms is sufficient to give the advantage mentioned. The only reason, in the case of the muscat, of having a longer stem, is the slight protection it gives from spring frosts. The nearer the shoots are to the ground the more liable they are to injury from freezing. It is perhaps not practicable to raise the vine much higher than indicated, however, on account of the shading of the drying trays which would result. Sultanina (Thompson seedless) grapes, however, are dried in vineyards where the vines are trained up four feet or more.

At the top of the trunk four or more arms should branch out symmetrically. The more even and symmetric the vines the better the grapes will be distributed and the more evenly and perfectly they will ripen. The pruning, control of mildew and all cultural operations will also be much facilitated.

Another great advantage of this form is that it is less subject to injury, and any injury it does receive is less likely to permanently affect it. If an arm is broken off by accident the wound can be sawn off smoothly and painted. Even if this is not done, it is much less likely to decay as the position of the wound high up in the dry air makes it less susceptible to the attack of wood rot fungi which quickly enter wounds surrounded by moist air near the ground.

Muscat vines pruned high and kept vigorous are more likely to set their fruit better, because they will blossom a little later and the air will be less moist.

Some of the most serious causes of deficient crops in certain muscat vineyards have not been considered in this paper. Much improvement would result if we could control the rise of alkali and seepage water. This, however, is too big a subject to be properly treated on the present occasion and the methods to be adopted are still uncertain, or only in experimental stage.

Other Points to Be Investigated.—The ravages of the vine hopper are responsible for serious injuries to the quality and quantity of our crops and demand thorough investigation. The agricultural experiment station is planning a series of tests looking toward the control of this pest. These tests will be commenced and carried out, as completely as our resources will allow, during the coming season.

The fertilization of nearly all our vineyards will sooner or later be necessary and many of them are in urgent need of it at present. This is a subject which we are now investigating and we hope before long to be able to give some definite recommendations in this respect. Most muscat vineyards would undoubtedly be benefited by application of complete fertilizers and especially of phosphatic and nitrogenous manures. The

main subjects for investigation are the relative cost of the various obtainable forms and the amounts of each which it will be profitable to apply.

In conclusion, while waiting for results in those lines which demand further study, much improvement can be obtained by more careful pruning and complete control of the mildew, and where new vineyards are started, avoiding the planting of large areas of muscat vines without a mixture of varieties producing good pollen.

THE BOTANIST.

A STUDY OF FORAGE PLANTS AT ETTERSBERG, HUMBOLDT COUNTY.

(Written for the Pacific Rural Press by Albert F. Etter.)

[First Paper.]

In again undertaking a general account of my observation on forage plants in Humboldt county, to take the place of one previously prepared but which was burned in your office in the San Francisco fire, I beg permission to preface my notes with a few general remarks that I may be better understood by the general reader.

I ask them to overlook in my writing, common, everyday expressions, for I am not a college graduate nor have I ever seen the inside of a high school. When I left school rather young, I felt quite convinced that what the average school-teacher knew of nature and agriculture was not remarkable. Even today I feel that I am striking very near the truth when I say that the average country pupil is in closer touch with nature than is his teacher, and that the best foundation of an education for the average child is the training to observe the ways of nature, and develop self-reliance and originality, and thus enable him to gather in facts and forge his way in the world and not travel always with a borrowed light, or always be waiting for someone else to lead the way.

As for Ettersberg, the experimental place from whence this article comes, it has appropriately been called an oasis. And as for the author, he is an immature bachelor, laboring under those same difficulties that the old settlers record of Adam when he was wandering about in the Garden of Eden and worrying about what he was going to do with his surplus vegetables and fruits. All summed up, this is probably due to a lack of time on one side and a lack of confidence on the other.

The Beginning of Ettersberg.—When I began to carve out a home here, in the mountains, eight miles northeast of Shelter cove, on a homestead, eleven years ago, I received all sorts of advice as to what I could do and what I couldn't do, but mostly of the latter. My only excuse for not taking well-meaning advice, kindly offered, was that I had a way of my own to try first, and if that didn't succeed, well, just keep on trying to find a solution, ever remembering my teacher's old saying that "all problems being very simple of solution, providing you went at them right." My own program in forging ahead here by experimental agriculture is only an example of the value of this kind of work for the progressive farmer, and plainly indicates that there are many problems that a farmer can work out for himself when even the best informed are unable to lead the way for him.

For example, take our tan oak land. Much of it will not grow anything immediately after the timber is removed, and I was told that it would not, before I started in. I took this advice lightly, because I thought that if it were capable of growing such good timber, there ought to be a way to bring it around all right for other products. The first year I grew some of the smallest grain I ever saw. Only one or two grains in a head and many of the heads forgot to make any seeds at all.

Samples of the soil were submitted to Professors Hildgard and Loughridge of our State University and lime was recommended. I had already learned the value of even a light dressing of stable manure. So the question then stood thus: Lime and a lack of funds to buy it with on the one hand, and a ranch rapidly growing up to brush again on the other. Here was the very simple and altogether practical solution. We made the finest manure of the brush by pasturing goats on it and the land is now coming in better grass year by year, where the goats are pastured, and each succeeding year we are able to obtain more manure than the year before. One who visits Ettersberg now and notes the vigor and luxuriance of the orchard and grasses, the small fruits, the ornamentals and flowers and vegetables, can scarcely realize that the billy goat is the key to it all, and stands for all the difference between variety, luxuriance and abundant promise and the failure that had been marked out for Ettersberg by people

who had tried it and knew what they were talking about.

Goat's Manure Produces.—Right here I cannot refrain from pointing the way to the successful and practical utilization of many a brushy hillside which under present management not only produces no revenue, but, on the contrary, while often conveniently situated, it is a menace, ever producing fuel for periodical fires, which not only render the particular price of land less fertile but endanger adjacent property. Not that I mean that one should indiscriminately destroy the brush on the hills wherever found, for there are places where it is practically about all that the hills will support. I do mean that this brush will furnish good provender for Angora goats, and if housed in an open shed at night they will yield each year a large quantity of most excellent manure, and, judging from conditions here, many a place that today is nothing but a brush thicket, providing fuel for periodical fires, can, by judicious selection of grasses seeded thereon and pasturing goats in moderate number, keep down the sprouts that are so characteristic of this shrubby growth be, in the course of a few years, converted into excellent grazing land.

I will give a practical instance to make clear the point I wish to bring before the reader. Most likely it can be no solution to his problem, but I merely give it to show that he can and must think and experiment for himself, and apply the simple application of the principle that problems which often appear hopeless are often easy of solution if we only go at them right. We have a hillside here that grew a heavy forest of red fir, tan oak and madrone. With the forest removed, it would make but scanty growth of grass, and within three years it had reverted into a thicket of tan oak and madrone sprouts, with vacant places filled in with white thorn and blue myrtle (*caeanothus*), and in a few years it would have become fuel for a hot brush fire. Had this come to pass and been repeated a few times, this land would have become known as chemissal land, too poor to grow grass. As it was, the brush was made to supply forage to the goats, and they in return left a by-product of quite a quantity of fine manure. It is now ten years since the timber was removed, and today I am confident that if this land were cleared of all rubbish and a light dressing of goat manure placed thereon and harrowed in and seeded to some of our best perennial grasses and red clover it would produce a very good crop that will improve year by year.

I beg the reader to understand that not by any means are all the lands in these parts of this particular character, for they are not. Lands of this particular character often carry a heavy forest, but differ from ordinary forest land by having no soft or succulent undergrowth. The productive capacity of such land is to be estimated by the thrift of the forest trees they carry, rather than by what they will grow immediately after being cleared, without recourse to manuring.

The curiosity of some of the readers may be aroused to ask, why did I want to busy myself with such land as this, when there is so much other good land in the State? Briefly answered, it is this: I believe that the soil and climate of Ettersberg will produce some of the finest apples that can be grown in the State of California, and it is to that we are heading, and already have an orchard of some 5,000 trees out, and are carrying on experimental work and making a general study of the apple, just as this paper will indicate we are doing with forage plants.

Experiments with Grasses at Ettersberg.—Grown to manhood in the "fog belt" of Humboldt county, near Ferndale, and with a natural fondness for the study of Nature, I was familiar with every variety of grass growing in Eel River valley, and had made selections in Italian rye grass before I had attained my majority, it is not strange that when I found myself under new conditions after settling here at Ettersberg, where summer fogs are almost unknown, and the soil very different from the soil of Eel River valley, that I should naturally begin anew with grass experimental work. Beginning with such grasses as succeeded in cool, foggy sections, I was soon convinced that they could not altogether meet requirements here, where conditions were dissimilar. My next move was to get samples of about everything advertised by seed-houses. The first results here came early, and were of such a nature as make me believe that only grasses of the more widely cultivated sorts produced seeds of good germinating qualities. This was afterward disproved and to a certain extent would point to the fact that some seed-houses do not work to their best interest and by sending out seed of low germinating quality to nip the ardor of the experimenter in the bud.

I had already begun to bring some of our native grasses under cultivation, when I had an opportunity to read Prof. Jos. Burt Davy's bulletin on "Range Con-

ditions in Northwestern California," and thought that he did not give ribgrass the credit it deserves, as a forage plant on the range in this part of California.

Though Prof. Davy started on his way to South Africa before I could reach him, he secured, through his colleague, Prof. A. V. Stubarranch, then of our State University, seeds of a large number of forage plants. These were supplemented by several kinds from the agrostologist, Prof. Spillman of Washington, and with seeds I purchased in the market and native forage plants, I had in the neighborhood of 150 different varieties under observation.

The Object of This Present Report.—While I have been carrying on this work for several years, it is not of such a nature that it can be worked out quickly, especially when one is handicapped for time as I have always been. The most that can be expected at this time is a statement of facts and results, supplemented by speculation as to the probable value of the species discussed, for the guidance of those who would care to make experiments for themselves. As it is a most important line of work for study and investigation, I hope there will be others who will take it up and lend a hand in carrying on experiments and make public the result of their investigations, that we may get more facts as to the merits and adaptations of the various species of grasses and other forage plants. Don't allow a little thing like the fact that you will not be paid by the public for work of this kind, deter you from trying to do anything, for the educational feature of work of this nature is worth more than ever it will cost you in dollars and cents.

Grass Gardens, viz., Field and Range Work.—Whatever may be the shortcomings of studying the native and making an estimate of the adaptability of various species of grasses by observing them growing side by side in plots of half a square rod or so, it certainly is very interesting, and one is able to make a comparative study and that is precisely what we are trying to get at. When we once know just how each species behaves on a certain kind of soil in a given locality, we have the very best foundation of facts to guide us in a trial on a practical scale. I would call attention to the fact that, while I have alluded to these small plots as a "garden," in my work here, the difference between them and practical field work was nothing more than that they were sown in drills and kept free of weeds, without any pretense of stirring the ground, and the plots were all on virgin soil and no fertilizer was used.

There is, however, a "grass garden" which I have developed here that is well worth considering by anyone desirous of rapidly increasing a grass when but a very small quantity of seed is to be had. This is by transplanting and placing single plants, say twelve by fifteen inches, on well enriched land and give good cultivation. Handled in this way, it will produce an enormous quantity of seed and can be harvested in the greatest purity. A small packet of seed started in a seedbed and transplanted will cover quite an area and reasonably produce fifty times as much seed as one could expect by sowing the same quantity of seed in the ordinary manner. Indeed, the possibilities of producing fancy or high grade grass seeds in this manner are so apparent to me after demonstration that I feel justified in recommending this as a field worthy of exploiting by small land-holders who are not averse to a little extra work, or to "freak-farming" of a substantial and useful character on a practical foundation. Grass seed can be grown by this method on land that is so weedy that it would be out of question to expect anything by sowing the seed on the land, and in my experience the increased yield in seed will far more than pay the extra cost in labor in planting and cultivation until the young plants have the ground entirely covered.

(To Be Continued)

PAINT FOR FARM BUILDINGS.

Hence here is a simple and cheap recipe for the preparation of an outdoor paint, endorsed by the Agricultural Department of the Transvaal Colony in South Africa:

"Stir into one gallon of milk about 3 pounds Portland cement and add sufficient Venetian red powder or any other paint powder to impart a good color. The milk will hold the paint in suspension, but the cement, being very heavy, will sink to the bottom, so that it becomes necessary to keep the mixture well stirred with a paddle. This feature of the need of stirring is the only drawback to the paint, and as its efficiency depends upon administering a good coating of cement, it is not safe to leave its application to untrustworthy help. Six hours after painting, this paint will be as immovable and unaffected by water as month-old oil-paint. The party giving this recipe claims that he has

heard of buildings twenty years old painted in this manner in which the wood was well preserved. The effect of such a coating seems to be to petrify the surface of the wood. Whole milk is better than butter-milk or skim-milk, as it contains more oil, and this is the constituent which sets the cement. If mixed with water instead of milk the wash rubs and soaks off readily. This cement-milk paint brushes on smoothly and easily—almost equal to genuine oil-paint—is cheap and easily made."

THE MARKETS

Wheat.

According to the semi-annual report of the Merchants' Exchange as to the total amount of wheat on hand at December 1, California's supply is put at 3,975,966 cts., or 198,798 tons. The market has ruled quiet all week, with the exception of a few fluctuations which were about equal, up and down, and which effected no material change in prices. The general tendency is not to buy in large quantities and the few sales that do occur are consequently of small proportions and produce very little effect. The receipts are about normal with the daily arrivals only slightly more than the every day consumption. Reports from Eastern markets show that conditions there are much the same as locally, the price varying each week within a range of $\frac{1}{4}$ to 2 cents, but with no marked change from week to week. The total produce for the State has been a matter of interest. The report of the Merchants' Exchange shows the entire 1906 crop to have aggregated 356,000 tons. The wheat export of California has been less this year than usual, owing to the fact that the crop was small and to the good quality of the grain which made it a favorite with California's millers. In fact, the export trade now is practically nothing and very little, if anything, is being done in San Francisco on the export line. North, however, the export trade is much more active as there is more grain to be exported and the demand from China and Japan is of fair size.

Barley.

The receipts this week have been comparatively small and so have the demands. The price has not been altered, but the general tendency is toward a decline. The report of the Merchants' Exchange on the barley situation was given out this week. The various estimates by prominent dealers have been both above and below the actual amount, according to this report. Earlier in the year, the estimate ranged somewhere in the neighborhood of 700,000 tons, but the violent storms of March did so much damage to the growing crops that the estimates fell to 500,000. This last estimate has proved to be a little low. According to the Merchants' Exchange, the stock on hand December 1 was 218,897 tons.

Flour.

The flour situation locally is much the same as wheat, with the exception of the somewhat brisk every-day demand which keeps the market steady. The flour on hand on December 1, as reported by the Merchants' Exchange, was 85,541 bbls. The speculative element is not much in evidence in accordance with the unsettled condition of the wheat market and sales are only what home consumption justifies. Millers are showing much the same tendency as they were a week ago and are taking orders, only, in a conservative way.

Oats.

The demand for oats holds up well and the market is firm. Local dealers are finding the daily receipts pretty well cleaned up each day and there is very little in the way of holdover from one week to another. The lack of warehouses necessitates the handling of only small quantities and the trade is only what local demands justify. The Merchants' Exchange gives the total amount of oats now on hand as 236,498 cts. The demand is brisk for feed oats and it is to this that local dealers attribute the steadiness of the market.

Corn.

The best California yellow corn is quoted at \$1.55, but the supply is so limited that the price varies considerable with the quantity of the grain. The demand for feed corn is fairly good and local dealers depend almost entirely upon this for the maintenance of the market.

Feedstuffs.

The feedstuffs market has remained firm all week on account of the immense demand coming from teaming sources. Ground barley is the leading feed and sales of this are about double all other varieties. The price has held up, with few exceptions. The situation north is much the same. Millers are selling in small lots, only, and are taking orders only as they can be filled.

Hay.

Arrivals continue to be far short of the actual needs of the market. Cars are still scarce and the storm has again interfered with the arrivals by water. As a result, the market continues abnormally strong.

Bags.

Bag makers and dealers report that there is no rush in any line. The demand for cotton goods is, however, steady and large enough to keep the few houses now in operation fairly busy. Some interest is taken in grain bags for delivery next year. Bags for June-July delivery are quoted at 8¼ to 9½c. Wool bags are selling at 28½c. for 3 lb. and 43c. for 4 lb.

Wool.

The wool market is not attracting much notice locally, as the daily transactions are not great. The price is steady at unchanged figures. The following quotations are given: Fall clip, San Joaquin and southern, 4 to 8c.; fall lamb's, 8½ to 13c.; northern do, 13 to 15c.; Humboldt and Mendocino, 13 to 14c.; middle county, 8 to 10c.; northern, 11 to 14c.; Nevada, 15 to 18c. for spring, and 11 to 14c. for fall.

Hops.

The hop market is at a somewhat lower basis than a few weeks ago. The very best varieties bring a trifle above market quotations, but most sales are made for not more than 14 cents, while a couple of weeks ago sales were made for as high as 16 cents.

Beans.

As far as market quotations are concerned, the bean situation is about the same as one week ago. The estimate of the Merchants' Exchange places the entire crop on hand December 1 at 84,520 bags. Limas are firm at good figures, selling as high as \$4.40 for the best varieties. Other varieties are selling as follows: Bayos, \$2 to \$2.40; peas, \$3 to \$3.25; small white, \$2.85 to \$3; larger white, \$2 to \$2.35; pink, \$1.90 to \$2.15; red, \$2.45 to \$2.85; lima, \$4.25 to \$4.40; red kidney, \$3.75 to \$4; blackeyes, \$4.40 to \$4.60; butter, nominal, at \$3.50 to \$4.

Poultry.

The poultry trade has been quiet, owing to the rain, but on account of light arrivals from domestic shipping points, the price has held up well. Some few cases of dressed turkeys are arriving daily.

Butter.

The butter market has been weak during the week and the price has dropped from 36 to 31 cents for the best. The downward trend of prices has, however, been checked and now remains fairly firm at the above figure. The supply has been a little more plentiful.

Eggs.

Receipts of eggs are gradually increasing with each week and the daily income is now just about equal to the demand. Local dealers clean up the day's receipts easily. The market, although steady now, has dropped from 46 to 43 cents within the last week.

Cheese.

The cheese market has been quite firm all week, but no change in price has resulted. There were a few fluctuations during the week, but the market is the same now as one week ago.

Potatoes.

On account of light arrivals and a good local demand, Rivers have held very firm this week. Owing to bad weather, part of the daily receipts did not reach the merchants' hands until several days after their arrival in the city, and on this account the supply has been a little short in nearly all lines. Oregon Burbanks are arriving freely, but, on account of weather conditions, their free circulation has been prevented.

Onions.

Onions are arriving in plentiful quantities and are selling at a low figure. The market has been a little overstocked for the past month, and, although the price has been very weak, there has been no material change. The price ranges between 50 and 65 cents.

Vegetables.

The market has been rather slenderly supplied with vegetables, on account of light arrivals. This shortage is due to a lack of picking on the part of the grower and not to any shortage in crops. Several cars of mixed vegetables came in from Los Angeles, but they were rain damaged and did not sell well.

Fresh Fruits.

Dealing in fresh fruits has been very unsatisfactory lately, as supplies are altogether too heavy for the somewhat weak demand in every line except grapes and cranberries. Grapes are just about gone and these last showers will undoubtedly wind up the grape deal-

ing for the season. Apples are plentiful and weak with sales only partly disposing of the receipts.

Dried Fruits.

Conditions locally are just about the same, as they were one week ago, with prunes still holding up at high prices. The recent showers caused some little inconvenience to local packers, as everything had to be stored inside, making already limited quarters still more incumbered. Prices are about as before, with no oversupply of anything.

Raisins.

In raisin centers the situation is becoming more and more interesting. Prophecies have been made that as high as 7c. will be paid for raisins next year. Some of the growers who held their crops are now receiving as high as 7c. in the sweat-box. This is the highest price paid for raisins for many a year and growers are anticipating a very successful season for next year. The crop, however, is practically all bought up and the greater part has been shipped East. The seeders are running full capacity throughout the State and the crop will soon be cleaned up as far as California is concerned. The crop has proved to be of good quality and is meeting with entire satisfaction in Eastern markets.

Citrus Fruits.

Oranges are coming in freely and are not so firm in price as they were a week ago, although large quantities change hands daily. There are very few dealings in lemons and the supply is meagre. Very little business is being done in limes or grape fruit and the price is largely nominal for these. Quotations are: Navel oranges, \$2.50 to \$3.50; fancy, \$1.75 to \$2.25 for choice, and \$1.25 to \$1.50 for standard; lemons, \$1.50 to \$3; for choice, and \$.75 to \$1 for standard; grape fruits, \$2 to \$4; limes, \$3.50 to \$4.

Honey.

The honey market has held firm since last week, with a slight tendency to an increase in price in the better varieties. Bright comb has gradually increased from 16 to 17 cents and occasional small sales are transacted at somewhat higher prices.

Nuts.

Nuts of all kinds are firm at high figures. The holiday demand is scantily supplied and dealers are unable to get further orders. The price in nearly all varieties is much higher than at a corresponding time last year.

SPRAY AND USE — REX LIME AND SULPHUR SOLUTION

The Greatest Insecticide and Fungicide Known to Modern Science.

COST. We deliver it to points in California for 24c per gallon. One gallon is used with eleven gallons water, making twelve gallons of diluted spray for 24c, or 2c per gallon. This is as cheap as it can be made at home and saves time, labor, and the very disagreeable work of mixing, boiling, and handling. REX LIME AND SULPHUR SOLUTION is entirely free from sediment. No clogging of spray pumps. Pumps last longer and spraying is done more quickly and thoroughly.

ITS ADVANTAGES. It is straight lime and sulphur. No other ingredients are used. It is mixed and boiled twelve carloads at a time in four huge vats by specially made equipments for producing that perfect chemical combination so essential in order to reach the full limit of value for destroying insects, fungus, mildew, etc. It is much more perfect preparation than orchardists can possibly make.

READ CAREFULLY what Prof. R. W. Thatcher, of Pullman, Washington Experiment Station, has to say about it:

"I have analyzed REX LIME AND SULPHUR SOLUTION and find it contains a MUCH LARGER percentage of sulphur IN SULPHIDE FORM than any other preparation I have ever known, and it is the sulphur in sulphide form that gives the lime and sulphur spray its value."

In a letter to Mr. W. H. Benteen, of Watsonville, Cal., Prof. Thatcher explains as follows:

"In regard to the REX LIME AND SULPHUR SOLUTION I would say that their solution is as good or better than the homemade preparations."

"I have no hesitancy in recommending it very strongly for use wherever the lime and sulphur preparation is desired."

E. H. Shepard, Mgr. of Hood River Apple Growers' Union, Hood River, Oregon, reports as follows:

"Like everyone else here I have had to spray. The first year I cooked the lime, sulphur and salt myself. Results fairly good. The next year I used lime and sulphur, cooking chemically with caustic potash. Results better. Last year I used REX LIME AND SULPHUR SOLUTION. Results very much better."

Prof. A. B. Cordley, State Entomologist at Corvallis, Oregon, after making official experimental tests on a larger scale, reports as follows:

"I have tested the REX LIME AND SULPHUR SOLUTION in comparison with the homemade lime and sulphur sprays and in the tests made—which was on a considerable scale in the larger orchard of the Benton County Prune Company—I must say that the REX gave better results than did the homemade spray."

OTHER ADVANTAGES.

REX LIME AND SULPHUR SOLUTION has been very extensively used both for spraying and dipping sheep and cattle, and the Department of Agriculture at Washington, D. C., makes frequent analyses of it and requires that it must be made at all times to stand the same tests. This gives the users of it the best possible protection, because it is and must be uniform, while the homemade spray varies from ten per cent. to fifty per cent. in its strength and value.

USE NO SALT.

There is no need of using salt with REX LIME AND SULPHUR SOLUTION.

FOR FUNGUS.

Use the straight REX LIME AND SULPHUR SOLUTION—one gallon with eleven gallons water, adding just enough milk of lime to make the spray white on the trees. This will destroy and prevent the fungus.

IF BLUESTONE IS WANTED. It is scarce and almost impossible to get this year, but can be mixed with REX LIME AND SULPHUR SOLUTION after diluting with the water. If Bluestone is used with REX, there is no need of using more than one-fourth to one-half the amount that would be used with REX LIME AND SULPHUR SOLUTION.

We shall be pleased to furnish more complete information to fruit growers who write us for it.

We are establishing carload dealers in all fruit growing communities. Where we have no dealers, we will ship freight prepaid from Benicia in fifty gallon barrels at \$14.75 per barrel. When barrels are empty, ship them back to us at Benicia and we will pay freight on empties returned and rebate \$2.75 for each empty barrel returned.

We also make and supply the well-known REX ARSENATE OF LEAD. Also REX STOCK AND POULTRY FOODS AND REMEDIES and famous REX CONDITIONER.

The REX COMPANY, Benicia, California, and Omaha, Neb.

THE NURSERY.

FRUIT VARIETIES MOST POPULAR ON THE PACIFIC SLOPE.

By E. J. Wickson, Dean of the College of Agriculture of the University of California and Acting Director of the University Experiment Stations, at the Convention of the Pacific Coast Association of Nurserymen, at Hanford December 5, 1906.

APPLES.

Cal. Growers.	Cal. Nurseries.	Oregon	Washington.	Utah and Idaho
Newtown Pippin	Newtown Pippin	Newtown Pippin	E. Spitzenberg	Gano
Belle Fleur	Belle Fleur	Jonathan	Newtown Pippin	Jonathan
W. W. Pearmain	R. Astracan	Gravenstein	Gravenstein	Rome Beauty
Gravenstein	W. W. Pearmain	E. Spitzenberg	Baldwin	Yel. Transparent
R. Astracan	Gravenstein	W. W. Pearmain	Jonathan	Ben Davis
R. I. Greening	R. I. Greening	R. Astracan	King	Winesap
E. Spitzenberg	Red June	Ark. Black	Rome Beauty	W. W. Pearmain
Mo. Pippin	Jonathan	Rome Beauty	Oldenberg	Newtown Pippin
W. Astracan	E. Spitzenberg	Winesap	Yel. Transparent	Ark. Black
Red June	Ben Davis	Wagner	Wealthy	Wealthy

APRICOTS.

Royal	Royal	Royal	Royal	Moorpark
Blenheim	Blenheim	Moorpark	Moorpark	Royal
Moorpark	Hemskirk	Tilton	Blenheim	Blenheim
Hemskirk	Tilton	Blenheim	Hemskirk	Hemskirk
Peach	Moorpark	Peach		Peach
Newcastle	Newcastle	Hemskirk		Acme
Tilton	Peach	Newcastle		

CHERRIES.

Royal Ann	Black Tartarian	Bing	Royal Ann	Royal Ann
Black Tartarian	Royal Ann	Lambert	Bing	May Duke
Bl'k Republican	Bing	Royal Ann	Lambert	Early Richmond
Rockport	Bl'k Republican	Purple Guigne	Black Tartarian	Black Tartarian
Bing	Early Richmond	May Duke	Bl'k Republican	Bl'k Republican
Chapman	Chapman	Black Tartarian	May Duke	Bing
Purple Guigne	Gov. Wood	Bl'k Republican	Early Richmond	Lambert
May Duke	Rockport	Gov. Wood	Centennial	Eng. Morello
Centennial	May Duke	Centennial	Eng. Morello	Windsor
Black Bigarreau	Lambert	Chapman	Late Duke	Montmorency
Lambert	Knight's Early	Knight's Early	Gov. Wood	Gov. Wood

GRAPES.

Sultana	Muscat	Concord	Niagara	Concord
Alicante	Tokay	Delaware	Concord	Muscat
Black Prince	Cornichon	Niagara	Delaware	Tokay
Carignane	Emperor	Muscat	Moore's Early	Black Prince
Verdal	Malaga	Tokay	Muscat	Niagara
Sweet Water	Rose of Peru	Black Hamburg	Tokay	Black Hamburg
Black Morocco	Sultana	Black Morocco	Malaga	Rose of Peru
Zinfandel	Isabella	Isabella	Rose of Peru	Sweet Water
Rose of Peru	Mission	Campbells Early	Sweet Water	Black Ferrara
Malaga	Thompson	Rose of Peru	Campbells Early	Campbells Early
Emperor	Black Morocco	Worden	Agawam	Delaware
Thompson	Mataro	Moore's Diamond	Black Hamburg	Rogers
Cornichon	Black Hamburg	Moore's Early	Moore's Diamond	Moore's Early
Tokay	Sweet Water	Agawam		Worden
Muscat	Black Prince	Black Prince		

PEACHES.

Heath	Muir	Elberta	Elberta
Alexander	Phillips	Early Crawford	Foster
Hales	Tuskana	Muir	Early Crawford
Mary's Choice	Lovell	Early Crawford	Orange Cling
Henrietta	Elberta	Late Crawford	Triumph
St. Johns	Foster	Foster	Utah Orange
Lemon	Early Crawford	Alexander	Globe
Sellers	Salway	Triumph	Alexander
Nichols	Orange Cling	Susquehanna	Muir
Susquehanna	Late Crawford	Phillips	Salway
Orange Cling	Heath	Mary's Choice	Sellers
Late Crawford	Alexander	Heath	St. Johns
Elberta	Sellers	Wheatland	Hales Early
Foster	Hales	Lovell	Heath
Tuskana	Susquehanna	Orange Cling	Brigg's May
Early Crawford	Nichols	Lemon Cling	Charlotte
Lovell	St. Johns	California Cling	
Salway	Triumph	Globe	
Phillips	Wheatland	Tuskana	
Muir	Strawberry	St. Johns	

PEARS.

Bartlett	Bartlett	Bartlett	Bartlett
Winter Nelis	Winter Nelis	D'Anjou	Seckel
Seckel	Seckel	Winter Nelis	Clapp's Favorite
Easter	Winter Bartlett	Flemish	Barry
Du Comice	Easter	Du Comice	D'Anjou
Coyenne D'Ete	Barry	Seckel	Winter Nelis
Clapp's Favorite	Du Comice	Easter	Keiffer
Glout Morceau	B. Hardy	Clapp's Favorite	Flemish
Barry	Madeline	Winter Bartlett	Easter
Comet	Clapp's Favorite	Clairgeau	Du Comice
		Keiffer	Clapp's Favorite

PLUMS.

Wickson	Wickson	Peach	Bradshaw	Hungarian
Hungarian	Burbank	Bradshaw	Peach	Yellow Egg
Kelsey	Hungarian	Green Gage	Hungarian	Satsuma
Yellow Egg	Kelsey	Cherry	Yellow Egg	Peach
Tragedy	Climax	Yellow Egg	Washington	Bradshaw
Washington	Green Gage	Burbank	Coe's Golden	Burbank
Satsuma	Yellow Egg	Coe's Golden	Burbank	Wickson
Burbank	Satsuma	Blue Damson	Green Gage	Jefferson
Jefferson	Tragedy	Hungarian	Columbia	Grand Duke
Climax	Blue Damson	Wickson	Climax	Coe's Golden
Grand Duke	Jefferson	Maynard	Duane	Blue Damson
Gyman	Washington	Washington		Green Gage

PRUNES.

French	French	Italian	Italian	Italian
Imperial	Sugar	French	French	German
Sugar	Imperial	Sugar	Sugar	Silver
Giant	Robe de Sergeant	Silver	Silver	French
Robe de Sergeant	Silver	Imperial	Imperial	Sugar
German	German	Giant	Giant	Giant
Silver	Italian	German	German	
Splendor	Giant	Splendor	Tennant	

It was my privilege to prepare a paper for the Convention of the American Nurserymen's Association held in Texas in June, 1906, on the "Specific Requirements of New Varieties in California Fruit Growing." In order to ascertain what changes in the character of varieties would, in the opinion of the growers, be desirable it seemed advisable to ascertain first which of the existing varieties are most satisfactory to them and what specific modifications would enhance their value from a growers' point of view. For this reason I requested my correspondents to name their best varieties of the different fruits and to use them as standards in describing desirable variations. One result of this inquiry was a fuller designation of the most popular old varieties than has been secured hitherto. When I received the invitation to prepare something for your meeting, it occurred to me that I could compare the growers' conclusions as to the varieties best for planting with the nurseryman's conclusions as to varieties which he considered best to propagate for sale and in this way approach the popularity of variety from two points of view. To accomplish this I mailed letters of inquiry to Pacific Coast nurserymen so far as I could secure their addresses, stating to them the varieties of each fruit which had been approved by California planters and asking them to mark them in the order in which they ranked in their trade and to add others which deserved mention. I received very gratifying response to this request and the tables I present herewith show the result of a very voluminous correspondence. When the reports were taken up it clearly appeared that it would be of little use to consider the Pacific Coast as a whole, but to make lists for the different States because varieties had such limited range in some cases. Of course the lists should not be made for States which are merely geographical divisions without regard for regional characteristics, but the attempt to group in regions of similar climatic conditions was impossible without taking more time than was available. It is also obvious that many nurserymen sell stock in all these regions, and, therefore, a subsequent inquiry as to regional adaptations and demand is desirable. I hope to pursue that at another time.

The present showing is, therefore, valuable only in a general way and chiefly for the light it throws upon the trade in trees, although it will be found to have clear indications of important pomological inquiries to be subsequently taken up as to why certain varieties are high in one place and low in another. Some cases of this kind are easily explained, such as the precedence of American grapes over the vinifera varieties in the northern portions of the Coast, but even these vinifera varieties have a place, because some localities favor them. A more puzzling proposition is the popularity of the Moorpark apricot at the north. This variety stands even lower in California than the tables indicate, because of shy bearing, but in some interior regions at the north it is said to be more trustworthy, which may be explained by climatic conditions which give it more definite periods of dormancy and growth. This is a matter which is as yet purely conjectural and needs to be enquired into. There are many other similar studies to be made of the behavior of varieties of all fruits, both from cultural and commercial points of view. All that I can do now is to thank the nurserymen who generously gave their time to the inquiry I undertook and to present to them the preliminary results thereof which the tables embody.

PACIFIC COAST NURSERYMEN'S ASSOCIATION.

From an address by Mr. F. W. Power, president at the meeting in Hanford, December 5.

The past season has been most prosperous and promises even better for the balance of the season and from the present outlook there will be but little salable stock to carry over. We all come here with friendly feelings, not only to each other but to the commissioners of horticulture and fruit growers as well. All are working along different lines to the one great end of making the Pacific Coast the greatest and best fruit growing section in the United States.

Although up to the present we do not have written reports from all our committees, they have done much and worked cheerfully.

I have called upon several nurserymen to assist in increasing the membership and making the meeting a success and in nearly every case they have responded cheerfully, and I am pleased to say that our membership has increased by 90 per cent since the first of July. This was not accomplished without much work, by both officers and members, and in some instances my zeal for the association was so great that I almost, if not quite, tried the patience of some of my friends.

While this meeting is held at the most inconvenient time for nurserymen to leave their business there is a good attendance.

We have introduced at this session the badges for members and badge book. This I am certain you will find very convenient for finding members with whom you are acquainted. We hope to make the badge book a complete nurserymen's directory of the Pacific Coast.

The legislative committee is doing a good work. Mr. Eckert, of the Washington committee, is attempting to secure

a joint conference with a like committee of the fruit growers of that State, looking toward a revision of their law at the coming session of the legislature. Mr. McGill, of the Oregon committee, is also busily engaged along with others in the various States. The legislative committee should be thoroughly organized so that all members in each State would work in harmony, and by having a good active member in each State to watch new legislation much can be done toward a more uniform inspection law. If the members of the legislative committee of each State would make it a point to meet a like committee of fruit growers and inspectors and discuss proposed legislation all could work in harmony when the bill was finally introduced.

The transportation committee has done little during the past six months. I have called upon one of the general freight agents of the Southern Pacific Company, and secured data concerning carload rates. As most of you know in the "Western classification" the following class B rates are listed:

Car 36 ft., 6 in., or less, 16,000 lb. minimum.

Car over 36 ft., 6 in., not over 45 ft., 6 in., 20,000 lb. minimum.

Car over 45 ft., 6 in., 24,000 lb. minimum.

The Southern Pacific Company makes an exception to this, making 20,000 lb. the minimum without regard to size, but allowing class C a lower rate, and in many instances 20,000 lb. class C is less than 16,000 lb. class B. The following table is prepared showing comparative carload rates:

Class B 16,000
Class C 20,000

From several points showing exact difference. The point selected usually be-

(Continued to page 397)

THE DAIRY.

THE STOCKTON CONVENTION.

The convention of the Creamery Operators' Association, at Stockton, was a great success in point of numbers, interest, and sociability, and we expect to find room for ample publication of its proceedings as soon as we get a little farther along with matters now pressing for publication and by which we hope to keep our readers busy during the period of long evenings. Fruit subjects have secured a temporary right of way, but the animal side will soon be turned into fuller view.

THE BOOK OF ALFALFA.

Mr. F. D. Coburn, whom our readers already widely know because of his eminent success as secretary of the Kansas department of agriculture, has produced a book which should have a wide sale in California, because of the broad view which it gives to our peerless forage plant, alfalfa. Mr. Coburn began some years ago with a small brochure on alfalfa, but he was not content until he could make the most authoritative, complete, and valuable work on this forage crop ever published. No forage plant has ever been introduced and successfully cultivated in the United States possessed of the general excellence of alfalfa.

The plant, although known in the old world hundreds of years before Christ, its introduction into North American occurred only during the last century, yet it is probably receiving more attention than any other crop. When once well established, it continues to produce good crops for an almost indefinite number of years. The author thoroughly believes in alfalfa, he believes in it for the big farmer as a profit bringer in the form of hay, or condensed into beef, pork, mutton, or products of the cow; but he has a still

more abiding faith in it as a mainstay of the small farmer, for feed for all his live stock and for maintaining the fertility of the soil.

The treatment of the whole subject is in the author's usual clear and admirable style, as will be seen from the following condensed table of contents: History, Description, Varieties and Habits; Universality of Alfalfa; Yields, and Comparisons with Other Crops; Seed and Seed Selection; Soil and Seeding; Cultivation; Harvesting; Storing; Pasturing and Soiling; Alfalfa as a Feed Stuff; Alfalfa in Beef-Making; Alfalfa and the Dairy; Alfalfa for Swine; Alfalfa for Horses and Mules; Alfalfa for Sheep-Raising; Alfalfa for Bees; Alfalfa for Poultry; Alfalfa for Food Preparation; Alfalfa for Town and City; Alfalfa for Crop Rotation; Nitro-Culture; Alfalfa as a Commercial Factor; The Enemies of Alfalfa; Difficulties and Discouragements; Alfalfa in the Orchard; Practical Experiences with Alfalfa.

The book can be had for \$2, postpaid, by ordering from the Pacific Rural Press First National Bank Building, Berkeley.

PATRONS of HUSBANDRY

GRANGE MATTERS.

To the Editor: I am late in reporting very interesting meetings of San Jose Grange and Santa Clara Pomona Grange, but I have been very busy, particularly as I am, for a time, an editor, once more.

At the San Jose Grange, the most important things were the installation of F. H. Babb, as lecturer of the State Grange, vice the writer, resigned. The Master of the State Grange, W. V. Griffith, installed him and he has entered upon the active duties of his important

office. The other item of interest was the beautiful conference of the third and fourth degrees on some new members. It was conducted by Sister G. W. Northern and a team of sisters, without aid of the ritual. The Harvest Feast that followed was splendid; attendance large.

At Pomona Grange, Bro. E. C. Abbott was elected Master. The names of the full corps of excellent officers I have not with me at this writing, but E. C. Abbott is the new Master. They and the officers of the several subordinate granges of the county are to be jointly installed at Mountain View, on Saturday, January 8, 1907, when there will doubtless be a large attendance. The feast will be a great treat.

While "on the wing" I have learned that there seem to be openings for granges at Mayfield, near Palo Alto (Bro. E. C. Abbott of Campbell will look after that), and at Corcoran, the thriving town at the junction of the Santa Fe lines in Tulare county. There seems a possibility of reviving the dormant lodge at Le Grand, Merced county, and at Lone Star and West Park, Fresno county. But the prospect is not flattering for the last two. There ought to be granges at Modesto and Turlock, in Stanislaus county.

It was clearly the sense of the last State Grange that an aggressive campaign should be waged during this winter and fall, for the extension of the Order of Patrons of Husbandry in this State. Worthy Master Griffith of the State Grange will doubtless come back from the National Grange, held last month at Denver, full of enthusiasm, and, perhaps, with promise of one of the successful Eastern organizers to push the work for some months in California, since there is something like \$1,500 in the State treasury.

With this screed I close my regular reporting to the Rural Press, turning the work over to my successor, F. H. Babb, of San Jose. I hope to keep posted on and to publish grange progress in the Co-operative Journal, which I have been called upon to edit. The latch-string is always on the outside of the office, 237 Bacon Building, between Eleventh and Twelfth streets, Oakland.

J. W. WEBB.

WHITEWASHES.

The following recipes which are recommended by the Department of Agriculture of the State of Queensland, Australia, may be useful:

"No. 1.—20 lb. of lime (unslaked), 3 lb. common salt, ½ lb. alum. Slake the lime with boiling water until the consistency of the wash is similar to thin cream. To increase its antiseptic properties add ½ a pint of crude carbolic to each bucketful of wash.

"No. 2.—To half a bucket of lime add two handfuls of common salt and two handfuls of tallow, or, better still, soft soap at the rate of 2 lb. to 30 gal.

The Cream of Cream Separators

The Sharples Dairy Tubular is the cream of cream separators—the pick of the whole bunch. Supply can wait low, you can fill it with one hand. All gears enclosed, dirt free, absolutely self-cleaning—no oil holes, no bother—needs only a spoonful of oil once or twice a week—uses same oil over and over. Has twice the skimming force of any other separator—skins twice as clean. Holds world's record for clean skimming.



Bowl so simple you can wash it in 3 minutes—much lighter than others—easier handled. Bowl hung from a single frictionless ball bearing—runs so light you can sit while turning. Only one Tubular—the Sharples. It's modern. Others are old style. Every exclusive Tubular feature an advantage to you and fully patented. Every Tubular thoroughly tested in factory and sold under unlimited guaranty. Write immediately for catalog J-44 and ask for free copy of our valuable book, "Business Dairying."

The Sharples Separator Co.,
West Chester, Pa.
Toronto, Can. Chicago, Ill.

of wash. Slake slowly, stirring all the time. This quantity will make two bucketfuls of wash which possesses the properties of being very adhesive and unaffected by rain.

"No. 3.—Slake lime with water and add sufficient skim-milk to bring to the thickness of thin cream. To each gallon add 1 oz. of salt and 2 oz. brown sugar dissolved in water.

"The germicidal values of No. 2 and 3 can be increased by the addition of one-fourth pound of chloride of lime to every 30 gal. of wash. Before applying the wash to wooden, metal, or stone structures, precautions should be adopted to clean the surface of foreign matter thereby increasing the benefits of the solution. Care should also be taken to bring all crevices under the influences of the antiseptic."

JOHNNY'S AFTERTHOUGHT.

There's one thing I'm more thankful for since Thanksgiving is past—
And I expect they's other boys that's jest as glad as me—
And that is, though I "gobbled" lots and got "stuffed" full and fast,
'Bout like a turkey, no one cooked or carved or et me. See?

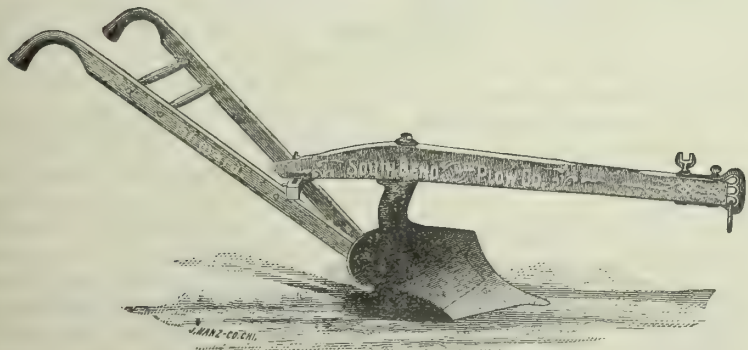
PILES CURED IN 6 TO 14 DAYS.

PAZO OINTMENT is guaranteed to cure any case of Itching, Bleeding, or Protruding Piles in 6 to 14 days, or money refunded. 50c.

FOR ORCHARD WORK

THERE IS NOTHING TO EQUAL

THE CELEBRATED



South Bend Chilled Plows

THEY ARE BUILT SO THEY CAN BE
WORKED CLOSE UP TO THE TREES AND
VINES, MAKING THOROUGH CULTIVA-
TION AN EASY AND COMFORTABLE TASK

Write Us For Full Particulars

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GENERAL AGENTS

131-153 KANSAS STREET

SAN FRANCISCO, CAL.

Farming Prosperity

CREAM SEPARATORS

There was never before a time in the history of the country when the average American farmer had such big crops worth such good prices as he has this year.

There isn't a farmer anywhere who has use for one who can not afford to buy himself a

DE LAVAL CREAM SEPARATOR

now and do it right away, and there isn't a farmer anywhere having use for a separator who really can afford not to do so.

Its use means more and better cream and butter, with less work and trouble for everybody—it means profit, comfort and satisfaction.

If you already have a "cheap" or inferior separator, "trade it in" for what it's worth and replace it with a DE LAVAL.

Put some of your prosperity into the most profitable farming investment ever made—of which a De Laval catalogue, to be had for the asking, must convince you.

DE LAVAL DAIRY SUPPLY CO., General Agents.

309 Twelfth St., 107 First St., 123 North Main St., 1017 Post St.,
Oakland, Cal. Portland, Ore. Los Angeles, Cal. Seattle, Wash.

HOME CIRCLE

UNDER THE MISTLETOE.

There's a fire in the grate and a light in the hall,
For it's Christmas time again.
And the sleighbells ring and the children call.

For it's Christmas time again.
O, it's time for a Christian land to raise
Her loudest peans of love and praise
For the Holy Babe of the Bethlehem days,
For it's Christmas time again.

There's a wreath of green at the window pane,
For it's Christmas time again.
And the church bells echo the glad refrain,
For it's Christmas time again.

O, it's time to turn with the olden smile
To the friend we doubted and scorned awhile,
To rid our hearts of their greed and guile,
For it's Christmas time again.

There's a spray of berries as white as snow,
For it's Christmas time again,

So come to me under the mistletoe,
For it's Christmas time again.
And here's a wish that our love endure,
And here's a prayer that our faith be sure,

And here's a kiss that is fond and pure,
For it's Christmas time again.

—Lalia Mitchell.

CONSOLATION.

(Original.)

"There's crape on the Chittendens' door," said Mrs. Cressler. "Chauncey has passed away. Poor Chauncey—to have been obliged to endure that woman for so long! It's a wonder he lived as long as he did. Well, I suppose I must go over and offer the usual consolation."

Now, there was not only a want of reason for Mrs. Cressler's going over to offer the "usual consolation," but there was a superfluity of reason why she should not do so. Mrs. Cressler had herself been Mrs. Chittenden and by good rights should have been the widow. But she had tired of Chittenden, sent him off and secured a divorce on the ground of desertion. On the day the divorce was granted she had married Tom Cressler. Chittenden, who had been forced to desert one woman, clung to another and married her. Cressler was still living with Chittenden's first wife, but report said that he was very abusive, the reports emanating from his wife, and if he did not mend his ways he, too, would be forced to desert her. Mrs. Cressler's intention was to offer Mrs. Chittenden that kind of consolation which Satan would give a soul he had purchased—that is, he would thrust it into hell.

"Good morning, Mrs. Chittenden. I have thought, considering what we have both been to poor Chauncey, I would come over and offer my sympathies. Notwithstanding his faults he was too good for most women."

"He was too good for me," said the widow demurely, "but I suppose he wasn't good enough for you, Mrs. Cressler, or he wouldn't have left you."

"I was glad when I saw that you and Chauncey were getting on so well together. There was too great a gap between him and me. Chauncey was not a smart man."

"His first wife was."

"It isn't that I was very smart," said Mrs. Cressler modestly, "but Chauncey was very dull. He needed a wife of very moderate intellect."

..dhad:"

"You were fortunate in getting another husband the day you got your divorce from the one that deserted you," said Mrs. Chittenden. "Maybe instead of luck it was smartness."

"I didn't want poor Chauncey to suffer from thinking I'd take him back."

"It was very kind of you not to make him suffer any longer than he did."

"There wasn't any time—if I hadn't been married—that he wouldn't have been glad to return to his sufferings."

"Then it must have been luck for him that you were married."

"We'd see about that some day, only in heaven there's no marrying or giving in marriage."

"How is it in the other place? Do you think you're going to have him there?"

"I'm not going there, Mrs. Chittenden, nor is Chauncey. If there's marrying there you'll have to look out for a new husband."

"You have both Chauncey and Tom Cressler in heaven, only there's no more bigamy there than marriage."

Mrs. Cressler was not getting ahead in the game. The thrusts were vigorous but they were parried with great skill. There was one thing she had come over for that thus far she had not gained—a knowledge of what funds Chittenden had left his widow. She had a vague hope that the law might look kindly upon her and consider her a fraction of that widow.

"I hope Chauncey left you comfortable, Mrs. Chittenden," she said in a tone to intimate that she would like to get back to her purpose of offering consolation.

"It's you he's left comfortable," replied the other, "because he was nothing to you. He left me uncomfortable, because we were everything to each other."

"They say you made a frugal wife and he left a penny or so in the bank."

"He did, and to his widow."

"There's alimony due me."

"I hope you may get it."

"If it's due the law'll allow it."

"Yes, if it's due. You got your divorce at noon and married at 1 o'clock. There's alimony for one hour due you."

"I suppose it wouldn't look well for me to come to the funeral?"

"Chauncey's funeral, so far as his first wife is concerned, occurred long ago."

"Of course, I'd like to show my kindly sympathy for you. The neighbors might think it queer of me to be here, but it would show them that I'm not malicious."

"Oh, they know you haven't any grudge against me. Why should you have? It was I who made it easy for you. Chauncey was well enough satisfied with the desertion plan after he met me."

"H'm! They all know that I wouldn't stand him any longer."

"He told me he was afraid you would."

"I'd have just liked to hear him say that in the flesh."

There was a step in the back room—the room where Mrs. Cressler supposed the corpse was lying—a man's step, and who should walk into the room but Chauncey Chittenden.

"La's a-mercy!" exclaimed Mrs. Cressler. "I thought you were dead!"

"That's the fellow in the other flat."

"What have you been lying to me for this way, Mary Chittenden?"

"I haven't been lying."

"And you, Chauncey Chittenden—I always thought you were above eavesdropping."

"A corpse can't eavesdrop. I am only a corpse so far as you are concerned. I heard what you thought of me alive long ago. I'm glad to hear what you think of me dead."

Mrs. Cressler flounced out.

MARION MAY HOLT.

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San Mateo County

HINTS TO HOUSEKEEPERS

A cloth dipped in boiling water, wrung out and placed over fish that has been boiled will keep it warm for quite a while.

Those who find that the Welsh rabbit does not agree with them, may enjoy this simple substitute: Grate some cheese and mix with it a grain of red pepper, a pinch of mustard and a bit of curry, pile upon slices of toasted bread or browned crackers and return to the oven until the cheese is melted.

A tablespoonful of turpentine placed in the boiler with clothes will whiten them beautifully.

If a piece of paper placed in the oven turns a dark yellow, the heat of the oven is right for the baking of bread or cake.

If double layers of brown paper are placed under oilcloth on shelves, or tables, it will last twice as long.

A small piece of wash leather wet with methylated spirits and rubbed on mirrors or picture glass will clean them beautifully. Polish afterwards with a soft cloth.

An easy mode of covering jelly glasses: Brush white of an egg over white kitchen paper, cut into pieces of proper size, and cover the jelly while hot. The paper will stick tightly and prove as air-tight as parchment.

Cover plaster of Paris ornaments that are intended to be cleaned, with a thick coating of starch and allow it to become perfectly dry, then it can be brushed off and the dirt with it.

To keep dress skirts free from wrinkles if there are not patent hangers convenient, they should be folded down the center front, then the doubled skirt folded in thirds, and a large safety pin thrust through the folds. The safety pin, when fastened, is used as a hanger, and in this way the skirt hangs straight, with no strain on any part of the waistband.

If a small bag of spice is placed in the kettle when making apple or crab-apple jelly the flavor will be much improved, and it varies the jelly without effort. A few leaves of sweet geranium thrown into the jelly also gives a delicious flavor.

The floor of the sick room should be wiped over every day with a cloth wrung out in water and some good disinfectant.

A good formula for eyewash is: Fifteen drops of spirits of camphor, one teaspoonful of boric acid, two-thirds of a cup of boiling water.

Onions are excellent for other than edible purposes. The juice of onions will quickly allay the intolerable stinging pain from a bee or wasp sting.

Clean the bathtubs, stationary wash-stands and sinks with kerosene, as there is no better vanquisher of grease and

dirt. Rub them well with oil, allow it to dry and let the hot water run until the oil has disappeared.

Never wash chamois skins in hot water. Use cold water and avoid soap, if possible. The skins clean very easily, as a matter of fact.

To clean a mackintosh, spread it out on a deal table and go over it carefully with a small scrubbing brush and some soap moistened with rain water, rinse thoroughly in clear cold water, and hang on a line in the shade to dry. Any stains which will not yield to soap and water will probably be easily removed by rubbing with a little ammonia.

To remove a cinder from the eye an engineer gives a rule: Let the injured eye alone and rub the other one, and the cinder will be out in two minutes. It is a simple remedy, though it sounds unreasonable, and is worth trying.

A heavy broom should always be selected in preference to a light one for thorough sweeping, as the weight aids in the process. In buying a broom, test it by pressing the edge against the floor. If the straws bristle out and bend, the broom is a poor one, for they should remain in a firm, solid mass.

Red pepper is an excellent condiment, and its effect on the liver is remarkable. Malaria and intermittent chills cannot endure the presence of red pepper, which should be upon every table.

If you wish to mend your gloves neatly, turn them inside out and sew them over and over with fine cotton thread. Silk seems to cut the kid. If there is a tear, set a piece of kid under it and secure it with a few stitches; if you have not the kid of the right color, use a bit of ribbon or silk. Save the best part of the old pair to mend the new. Court plaster will mend a break nicely, but always stiffens the kid.

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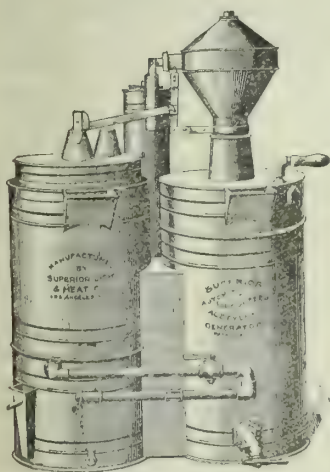
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DOMESTIC HINTS.

Mock Mince Pie.—One cup of water, about three ounces of butter, one-half cup of vinegar, one cup of whole raisins, one and a half cups of sugar, one-half teaspoonful of ground cloves, three soda crackers, rolled, two eggs, one teaspoonful of cinnamon. Beat butter and sugar to a cream, first mixing the spices with the dry sugar. Beat all together except the beaten eggs, which stir in last. This will make three covered pies.

Rice Pudding with Jam.—To make this wash four ounces of rice and drain it. Put it in a saucepan with a pint of milk, and let it simmer gently for half an hour. Add two ounces of fresh butter and simmer again until it is quite soft. Pour it out, sweeten and flavor with any agreeable flavoring and beat it up with two well-whisked eggs. Turn it into a plain mold, well buttered, and bake in a gentle oven for half an hour. Turn it out before serving and garnish with any bright-colored jam spread round or upon it.

Hot-water Gingerbread.—One-half cup molasses, quarter of a cup of brown sugar, quarter of a cup of butter, one teaspoonful soda, one saltspoonful salt, one and a scant half cupful flour, egg, half teaspoonful cinnamon, quarter teaspoonful cloves and one teaspoonful ginger. Mix dry ingredients, except soda, which should be dissolved in half a cupful of boiling water. Beat egg very light, adding it to mixture the very last. Cream butter, add sugar, molasses, flour, soda and water, lastly the egg. Bake in sheet or in gem cups. Makes a very nice dessert with vanilla sauce.

Points in Dish Washing.

Before clearing the table, prepare a place in the kitchen for the soiled dishes, thus avoiding confusion and extra labor.

Gather up and remove the dishes methodically, glasses by themselves, silver and plates uniform in size in separate piles.

Save steps by using a tray or pan, thus carrying a larger number of pieces from the dining table at once.

Take a little more time, if necessary, and free all dishes from bits of food, grease, etc., before they are placed in the dish water.

Use plenty of hot water, changing often. We eat from dishes that have passed through the dish water.

Use soap of other preparations (borax is good), which will make the water soft and which will easily remove grease.

Place the dishes when washed in a wire drainer; or if you do not have this convenience, a substitute can easily be provided by making a few holes in a large milk pan which may then be placed in a larger pan. Pour very hot water over the dishes. This will drain them into the lower pan, leaving the dishes so bright and dry that only a little polishing with a towel is necessary.

Clean dish towels are necessary to secure clean surfaces. Cleansing the towels each time they are used is the only way to secure this result.

Piling many dishes into the pan at once is not as well as washing the tumblers, metal, and other dishes by themselves.

FASHIONS

FASHIONABLE COLORS

AND TRIMMINGS.

The woman who had a gray dress last year and who wants to wear it again this year, can do so and not have the slightest feeling that she is behind the times. Gray will be worn very much this fall and winter, but the fashion authorities state that to be strictly new it must be a dark gray, which is known as taupe. It strongly resembles an elephant's ear in color. The most popular shade of the season, however, will be brown—mahogany, nut brown and a golden brown shade. Copper will also be a very good color. The bronze greens are the height of fashion, and the blues which are not too dark, are also in favor.

Dresses and skirt and coat suits are all much trimmed. It is no longer the vogue, however, to trim a brown suit with black braid. The braid, if possible, should match exactly the color of the gown.

Plaid silks and plaid woollen fabrics are very much the vogue. In the bright shades they look very charming as separate blouses, and gay plaid silk may also be used as pipings or little ruffles for a dark gown, especially when one of the colors of the plaid matches the shade of the dress goods. But whole costumes of plaid silk, when one's wardrobe is not very large, should be avoided.

Jennie—Jack, you ought to make some sacrifice to prove that you love me. Come, now, what will you give up when we are married?

Jack—Jennie, I'll—I'll give up being a bachelor.

A popular soprano in the lumber region is said to have a voice of fine timbre, a willowy figure, cherry lips, chestnut hair, and hazel eyes.

"Oh, no, you never see Mr. and Mrs. Poorley at church together."

"Why, I thought they were both members—"

"So they are, but when she has clothes good enough to wear at church he hasn't, and vice versa."

"What is it the poet said was 'sorrow's crown of sorrow?'"

"I don't know. Maybe he meant the aching crown you have the morning after you try to drown your sorrows."

"I understand you have perfected another great invention?"

"Yes," answered the scientist, modestly.

"Is it on the market?"

"Oh, it wasn't intended for the market. It's for the magazines."

ACETYLENE GAS.

When the farmer has gas for cooking and lighting in his home, he is making rapid strides toward the life ideal. The oil lamp has been replaced by the bright gas flame in many progressive farm houses, and the clumsy cookstove has surrendered to the trim little gas range that occupies but half the space and gives twice the heat of the oil or coal stove.

This is possible by the introduction of the Superior Generator, that is practicable for the lighting of single houses or for small communities. Acetylene gas gives the most satisfactory results. It burns with a bright, white flame, and, on the stove burner, makes an intense heat that is suitable for cooking and baking of any kind.

The generator made by the Superior Light and Heat Company, of Los Angeles, has always given excellent satisfaction. Those who are contemplating installing a gas plant, and those who would like to adopt modern methods on the farm, should write for their Illustrated Catalogue No. 4, which explains in detail the machine and its operation.

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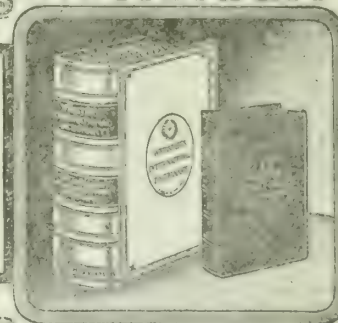
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BUFF ORPINGTONS—We won at State Fair ALL FIRST PRIZES in this class 1900 and 1901. We have just won at San Jose GRAND SPECIAL for BE-T-3 Breeding Pens, 3 Cocks, 3 Cockerels, 3 Hens and 3 Pullets, ALL VARIETIES COMPETING. Mr. Farmer, YOU NEED THIS BREED. Write me and learn why.

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AGRICULTURAL REVIEW

Butte.

TWO CARLOADS OF FRUIT TREES AND VINES.—The Gridley Herald. C. J. Ley, agent for the Chico Nurseries, informs The Herald that he has sold two carloads of fruit trees and vines to be delivered at Gridley within the next few weeks. The shipment includes peach, prune, almond, apple, and orange trees, and raisin and wine grapes.

Among the orders is one from J. W. Humble, who will plant his 20-acre tract in Gridley Colony No. 6 to prune trees.

NOW IS THE TIME TO SPRAY YOUR TREES.—Gridley Herald. Now is the time for the orchardist to dose his trees with the various dopes that are good for the trees and bad for the bugs. Insects and fungi are actively growing during warm moist weather of winter, and the time to catch them unawares is when they are getting to work. Spraying frequently and persistently is a profitable investment for the orchardist.

Colusa.

GRAPE GROWING IN COLUSA.—The Sacramento Union: The grape growing industry in the territory surrounding the town of Williams will be developed on a large scale the coming spring. Several people are going to set out tracts ranging from 20 to 150 acres. A corporation is now being organized to plant the Weinstock-Lubin ranch, situated at Cortina creek, which contains 1296 acres, to wine grapes.

The intentions are to contract and operate a large winery on this place when the vines commence bearing. Another industry that still lives in that vicinity is the oil. The Williams Oil Company is now boring its third well. The first two were failures, but the outlook for success from the present one is very flattering, and the directors of the company are securing new leases on land and the company has recorded with the county recorder 1113 acres in the past few days. All of the new land leased is in close proximity to the present well.

Fresno.

PRUNERS FORM AN ASSOCIATION.—The Fresno Morning Republican: The strike of 112 pruners who were employed in the vineyards near Fresno continued in effect yesterday, the men remaining firm in their demand for increased wages. The 112 strikers and 100 other pruners, pickers, and packers who reside in Fresno, held a meeting last evening in the Cosmopolitan House, at the corner of

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Fresno and G streets, and formed a protective association to further the interests of the vineyard pruners and packers of this vicinity. This is the first association or union of farm workmen which has been formed in the county.

The list of men who struck Monday morning at the vineyards near Fresno was as follows: Barton vineyard, 25 men; Margherita vineyard, 16 men; Sunnyside vineyard, 20 men; Fresno vineyard, 25 men; Elsen's vineyard, 26 men. This number includes Mark Sorano, the foreman of the Elsen vineyard, James Feretto, the foreman of the Sunnyside vineyard, and Jos. Demeda, the foreman of the Fresno vineyard. Mr. Sorano is taking an active part in the conducting of the strike and the formation of the association, and made the following statement yesterday afternoon in regard to the position of the men in the matter:

"We believe that we are justified in asking from the vineyard owners an increase in our wages, from \$1.25 per day and board to \$1.50 per day and board, or from \$1.75 to \$2 per day without board. The cost of living now is much greater than it was a year ago. Houses which rented for \$5 per month a year ago now cost us \$9 per month and wood which cost \$6 per cord a year ago now costs us \$8 or \$9 per cord.

"We will not go to work again until our wages are raised as we ask that they should be. A vineyardist from Selma came to Fresno this morning and offered ten of our men the increased wages which we ask, but none of us will go to work unless all do."

Mr. Sorano was selected as president of the protective association at the meeting last evening, and will conduct its affairs as executive officer from now on.

An employment agency created considerable stir among the strikers yesterday afternoon by posting on a bulletin board in front of their office a notice that it wanted men to work at the wages which the striking pruners ask. This wage was \$1.50 per day and board or \$2 per day without board. The strikers were suspicious of the source of the call for men, however, and none of them accepted the offer of the agency for positions. It is said that several vineyard owners west of town are willing to pay the wages which the striking pruners demand.

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Luxemburg, Wis., R. F. D. No. 4, Jan. 30, 05
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Yours respectfully, Antoine Wery.

Bolton, N. J., July 19, 06.
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Dear Sir:—I have used your Kendall's Spavin Cure and find that it will do all that you say it will. It used as directed. I have cured a blood spavin on one of our best horses, and would not be without it in the stable. Please send me a copy of your "Treatise on the Horse and his Diseases."
Very truly yours,
Clarence Hart, Coachman for B. Strauss.

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Monterey.

PAJARO VALLEY APPLES.—Salinas Weekly Index: The apple crop of Pajaro valley this season was larger than most people imagine. Up to and including last night, 1613 carloads of apples had been forwarded from Watsonville for the season to date. About 100 carloads of such fruit may be added to the above total as the shipments for the season from Pajaro, Vega and Aromas. The canneries, cider works, etc., have used up fully 100 carloads of apples, and the seven driers, which have been running over time ever since the opening of the season, have converted no less than 900 carloads of apples into evaporated stock. It will be seen from the above figures that 2713 carloads of apples have thus far been handled for the season, and shipments will continue for some time yet. If all the fruit had been started marketward in the green state at one shipment, it would make a trainload about 20½ miles in length, exclusive of the 104 engines that would be required to pull the load.

Sacramento.

HEAVY ORANGE SHIPMENTS.—Sacramento Union: The activity in shipping oranges doubled at the opening of this week. Monday found cars waiting for the fruit and immediately three carloads went out and the next day two more. Now the packing force is not able to keep the storage room clear so that the stream of oranges coming from the orange groves can be conveniently handled. A night force of Japanese has been added which helps to keep the room clear. This state of things will continue to the end of the week, which will close the shipping for Christmas. Then the olive picking will begin and the remainder of the orange crop will come in with less haste.

Santa Clara.

FRUIT TRAYS BURN.—San Jose Herald. In the neighborhood of 1000 fruit trays, the property of James Abasente, piled on a lot adjoining the property of the California Compounding Company, at 209 West Taylor street, burned shortly before 2 a. m. this morning. The cause of the fire is unknown, but the supposition is advanced that a cigarette stump carelessly thrown by a tramp started the blaze. The loss is estimated at \$300.

BIG PROFITS OF PRUNE GROWERS.—Chico Daily Enterprise. The prune growers of California will receive \$2,550,000 more for their crop of 1906 than was obtained by them for the crop of 1905. This is the estimate of a leading dealer in the local market.

The total estimated amount due to the prune growers for this year's crop is \$4,050,000, representing 180,000,000 pounds of prunes. In California was 60,000,000 pounds. This showing makes the crop of 1906 exceed that of 1905 by 120,000,000 pounds.

All about Bees and Honey

The Bee-keeper's guide to success. The Weekly

American Bee Journal

tells how to make the most money with bees. Contributors are practical honey producers who know how. Interesting—Instructive. \$1 per year; 3 mos. (13 copies) 25c. Sample free.

AMERICAN BEE JOURNAL,

334 Dearborn St., Chicago.

000 pounds. As all the stocks are practically cleared up, the estimate for 1906 is supposed to be fairly accurate.

The same authority says that taking the season altogether, the average price will be about the same as that of last year.

PACIFIC COAST NURSERYMEN'S ASSOCIATION.

(Continued from page 392)

ing where a nursery is located or a common point.

If the freight committee will get acquainted with the railroad officials and have facts and figures to present, they will find them, at least, open to conviction, but you must know what you want and be able to tell why you want it, and how it will benefit the railroad and if a lower rate is asked we must be able to tell approximately how much would be shipped.

At the present time every nurseryman wanting to ship a carload over the S. P. system orders the largest sized furniture car, as he must pay 20,000 minimum, and I am certain that if the S. P. Co. would grant a 16,000 minimum on small cars that they would be actually gainers in amount received as carloads. Furniture cars are scarce and hard to get, while 36-ft. cars can be had nearly all times.

We can get a 16,000 class B minimum on 36 ft. cars if we want it, and ask for it as an association through some officer or special committee, but could not get a promise of 16,000 minimum at class C rates. They want to know, however that it is the wish of the association and not of one company.

The secretary is required to do much work with no compensation and I trust the time will soon come when our membership will be large enough to warrant our paying a small salary for this.

Representation at national associations is of great interest to our work, such as the American Association of Nurserymen (and every member of the Pacific Coast Association of Nurserymen should also join the American Association of Nurserymen); and we should also be represented at the National Association of Entomologists and Nursery Inspectors, either by a representative of our association, or through the American Association of Nurserymen.

More can be done toward uniform laws in this association than any other, for it is there that the various State laws are discussed.

While we have never been able to agree upon a uniform method of grading stock we should continue to work along that line, as different methods of grading are sure to cause confusion.

In the appointment of committees I would suggest that the by-laws be changed so that the president appoint the chairman of each committee or in one like the legislative committee, a chairman for each State, and that the chairman select the other members, as often the committee is so scattered that they cannot do good work.

Like one of our most prominent horticultural writers I "look upon the nursery business as the foundation of our fruit growing, all trees come from the nursery and the variety of fruit planted depends very largely upon what the nursery can supply." "Fruit growing is one of the most profitable and pleasant rural occupations" and the time should come when nurserymen, inspectors, and fruit growers, would all work in harmony. Much more good can be accomplished by all meeting together, discussing various grievances, and deciding upon a method of joint co-operation, than by each of the three interests working at cross purposes, and I trust that great good may be done by this joint meeting.

CHAFF.

Barber—You and your brothers are such young men I often wonder why you're so bald.

Snapperton—If you'll promise not to say anything about it I'll tell you.

Barber—Oh! I won't say a word.

Snapperton (whispering) — Our hair fell out!

Young Lady—I want a pair of shoes, large and comfortable. Two will do.

New Boy glancing at her foot)—Mr. Leather, the lady wants two shoes large and comfortable. Where's that box of sizes?

"Were you frightened when you arose to make your first speech?"

"What should frighten me?"

"The audience."

"The audience left as soon as my name was announced."

"Inventions are discouraging. Some one else always gets the credit for them."

"That's right. I never invent anything but excuses, but my wife always takes those right out of my mouth."

Giles—My wife can drive nails like lightning.

Miles—You don't mean it?

Giles—Sure, I do. Lightning, you know, seldom strikes twice in the same place.

Jorkins—My dear, I wish you would not sing that song about "Falling Dew."

Mrs. Jorkins—Why not?

Jorkins—It reminds me too much of the house rent.

A prominent man called to condole with a lady on the death of her husband, and concluded by saying, "Did he leave you much?"

"Nearly every night," was the reply of the bereaved widow.

PROFESSOR SHAW ENDORSES STOCK FOOD

Professor Thomas Shaw, an eminent authority on feeding, says, "When the animal doesn't digest its food, which is indicated in the droppings, or when it doesn't respond sufficiently in appearance or in production, though given a sufficiency of food, in such cases a mild tonic would be helpful in affecting improvement."

Dr. Hess Stock Food, manufactured by Dr. Hess & Clark, Ashland, Ohio, meets just these requirements. It contains tonics for the digestion, iron for the blood, nitrates to eliminate poisonous waste material from the system, and laxatives to regulate the bowels. These ingredients are also endorsed by every medical writer in America.

Now, if the digestion is stimulated, the appearance improved and the production of the animal increased by the addition of the above mentioned ingredients, it is undoubtedly a wise investment to use Dr. Hess Stock Food.

It costs less than a penny a day to feed Dr. Hess Stock Food to a horse, cow or steer, and but three cents per month for the average hog. Consider the small amount of additional increase in weight or milk that is necessary to cover the cost of the Stock Food, and remember it is sold on a written guarantee.

Geo. A. Heyl, Washington, Ill., says: "I have been in the stock and poultry business for a great many years, and can say Dr. Hess Stock Food is all O. K. It is scientifically compounded, and seems to be just the thing to make stock thrive. It is a food as well as a medicine."

"Dr. Hess Poultry Pan-a-see is also a great food for poultry, and has been of much value to me in raising some of the fanciest chickens that were ever placed on the market. Instant Louse Killer, manufactured by the same firm, is also valuable as a disinfectant and for keeping fowls free from parasites."

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If every cow, horse, sheep or pig, receives small doses of Dr. Hess Stock Food twice a day with the grain rations, they will pay a larger profit than is otherwise possible. Such medical authorities as Professors Winslow, Quilman and Finlayson endorse the bitter tonics contained in Dr. Hess Stock Food for improving the digestion, also iron as a blood builder and nitrates for eliminating poisonous material from the system.

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the prescription of Dr. Hess (M.D., D.V.S.) contains the above ingredients and it is Sold on a Written Guarantee.

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25 lb. pail \$2.00

Smaller quantities at a slight advance.

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The closest personal inspection of the land by proposed purchasers is invited. Parties desiring to look at the land should go to Willows, California, and inquire for P. O. Elbe.

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Agent of N. D. Rideout, Administrator of the estate of H. J. Glenn, at Chico, Butte County, Cal.

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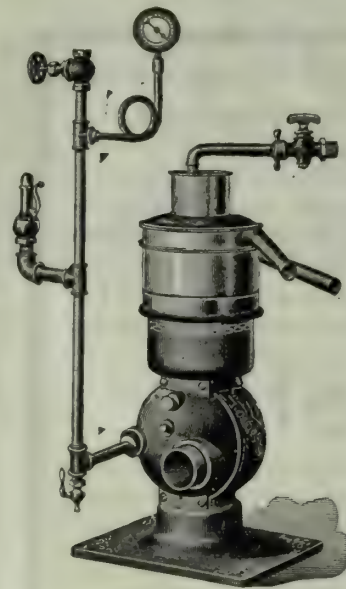
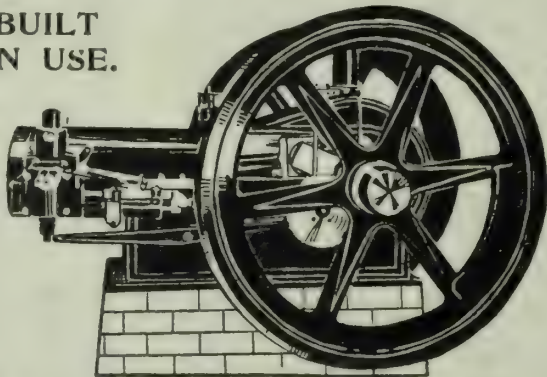
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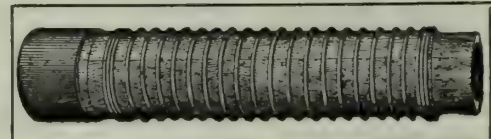
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LXXII. No. 26.

SAN FRANCISCO, SATURDAY, DECEMBER 29, 1906

THIRTY-SIXTH YEAR

AN OLD MEXICAN CITY.

This is the time of the year when Californians go formally to Mexico. Of course, they are running down individually or in groups at all other times of the year bent upon various errands of recreation or industry, but at the holidays there is always a formal excursion of Californians over the Southern Pacific to enable the local tourists to see things and buy things of quaint character and to take a glance at people who are not in a hurry and who everlastingly worship at the shrine of tomorrow. It is either restful or restive to see such a people according to the temperament of the traveler. But all of us cannot go to Mexico, even at the holidays, and for such a glimpse of an old Mexican city will be interesting. In his Mexican sketches, Mr. T. A. Rickard, editor of the Mining and Scientific Press, finds ample opportunity to introduce observations which are of general interest in connection with his discussion of technical conditions and activity. We draw upon him for a few appreciative allusions to the ancient and honorable city which the pictures portray.

Guanajuato, in the State of the same name, is a city of 50,000 people, situated at an altitude of 6,600 feet among the foothills of the Sierra de Santa Rosa. The air is dry and clear, colors are vivid, lines are defined, and the sunlight brilliant. The town is not without character, for it is adorned by many churches and other impressive buildings; it lies ensconced among terraced gardens and brown hills, on the higher slopes of which stand the battlemented enclosures and picturesque churches of historic mines.

The history of Guanajuato begins in 1526, six years after the Spanish Conquest, when the mineral wealth of Mexico was being eagerly sought out and there were many things accomplished during the following twenty-five years, for in 1559 there was wide development. To those of us who regard the discovery of the Comstock, less than fifty years ago, or even the event at Sutter's Mill, fifty-eight years ago, as a historic event, it is worth noting that the happenings briefly chronicled in the foregoing lines occurred before 1600—before the first settlement of Virginia, shortly after the sailor captains of Elizabeth had swept the Spaniards off the seas, and just about the period when Shakespeare and Bacon were busy preparing docu-

ments of controverted authorship. By this time the population of the town had grown to 4,000, and it continued to increase as villages sprang up around the individual mines. In 1619 the town was granted a patent, becoming dignified by the name of Villa Real del Guanajuato. This was a year before the landing of the Pilgrim Fathers at Plymouth.

In the early life of the region forced labor was employed, and two proclamations bear testimony to the brutality of it, for one of them prohibited the indiscriminate sale of Indians and the other forbade the branding of a slave in the face.

Within a century, that is, by 1700, the population quadrupled. Immigration was slow, for Spain was a

long way off in those days of uncertain sea voyages; the transport of supplies was kept tedious and hazardous, the whole European population of Mexico was still meagre, and mining methods were as yet primitive. But the discovery of gunpowder and its application to mining, the introduction of pumps and the accumulation of wealth among the mine owners, all tended to enlarge the scale of operations until Guanajuato toward the end of the 18th century became one of the great mining centers of the New World.

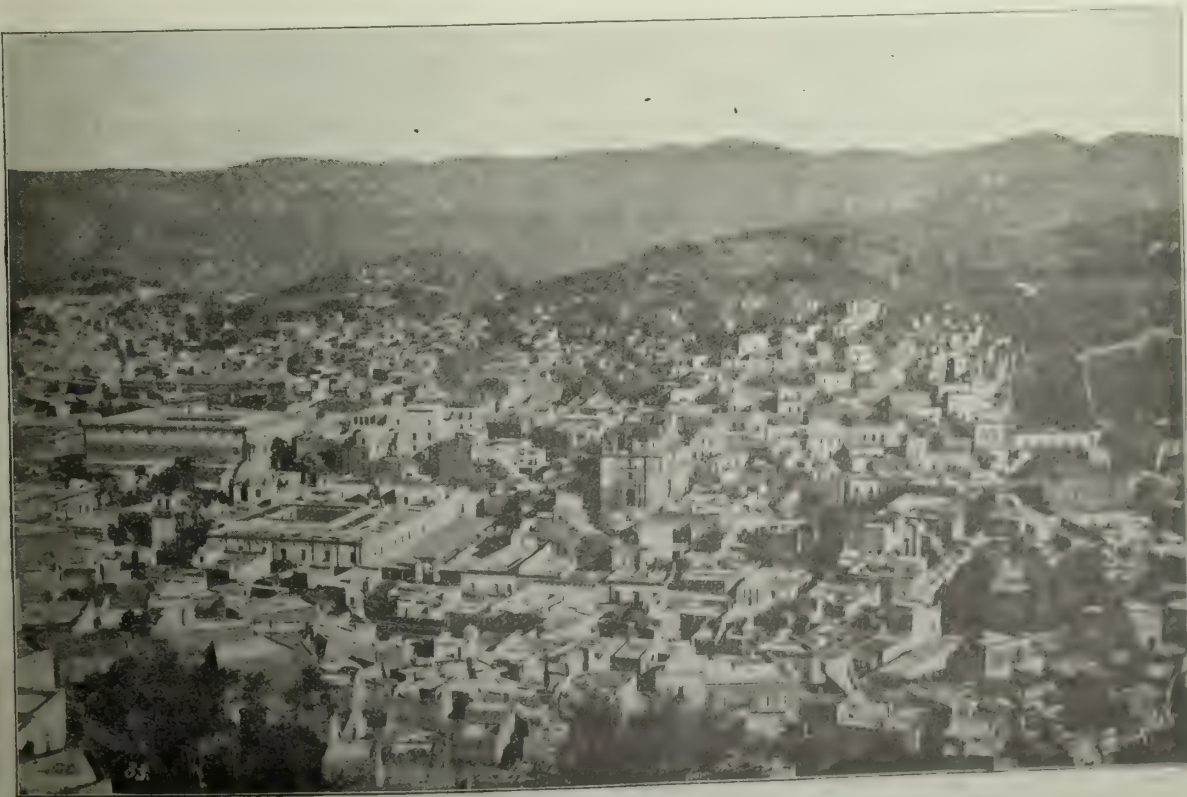
The big mine owners won such wealth that, like their modern successors in Nevada and Montana, they became legislators and were given seats in high places; they were granted titles of nobility and enlivened the

ranks of Spanish aristocracy. It was a great day for these mine operators. They were consulted in affairs of State, just as nowadays men who contribute to campaign funds are likely to possess what Mr. Mike O'Flaherty termed "influence"; they posed as Providence to the poor people, for when times were hard and the corn crop was a failure, these great men sent for the needy and saved them from starvation. It is true that the big galleries and comfortable cross-cuts, large enough for the passage of a broad-gauge locomotive, that supplied the mining engines when the big old-fashioned ones were the evidence of work carried out with such characteristic intent. When an unusual bonanza was struck, the fortunate owner built a palace or even a church, in token of gratitude to his faithful mine.

The output of silver from the mines of this region was large. The old records show for one deep shaft in Guanajuato, production started at \$200,000 per year of it extended during the last half of the 18th century. This figure corresponds with the total output of the Comstock up to the time when the lower workings were abandoned in 1875. On August 10, 1890, the Kingsley, according to the report of \$2,675,866 was paid. As this represented one-fifth of the yield of a period of five years, it serves to indicate even the extraordinary character of these old mines. The other mines also produced enormously at this period, so that the population of the district at the beginning of the 19th century had increased to 100,000.



Scene in Guanajuato. The Modern Quarter. La Bufa in the Background.



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THE WEEK

As we write on Christmas Day, the skies have the color of a good year which plays all the hues of verdant pastures, golden grain-fields and ruddy orchards of a gloriously productive summer upon the leaden background of a winter of abundant rains. With us there is a longer distanced relation between dripping wintry skies and glorious summer growth than pertains to humid climates, as is declared in the proverbial weather-wisdom that "April showers make May flowers." It is the ample rains beginning at or before the holidays which make for California not only February flowers but the whole calendar of fruition which ends not until late autumn fruits are gathered in. Whether this is done directly by filling deep soils to their lowest storage places, or indirectly by heaping snows in the mountains to fill irrigation streams of the valley months afterwards, it matters not; it is the winter's abundance of water which ensures the summer's productive bounty. The Christmas sky of a good year is apt, therefore, to be dull and leaden and to the owner of broad acres which are to yield wealth, or at least comfort, these somber hues are brilliant as a rainbow in the blessings they promise. Only the winter visitor is depressed by them and even he is apt to attain the philosophy of the resident and console himself with the reflection that what he may lose in personal comfort is gained in manifold by the industries of the State; that what may be bad for him is good for the country. We have then as a rule few who complain of a rainy Christmas but rather a multitude who rejoice in it for the reason we have suggested.

But a rainy Christmas does not make a good year any more than a single swallow makes a summer and yet it is a clear conclusion from experience that most very productive years do have rain at the holidays. They have, in fact, rain at frequent intervals and Christmas is apt to be in the list. These are the years of excessive rain; of soaked soils and idleness; of floods and sad erosion; of shifty road beds and destructive overflows. These are generally, though not always, the years which open with heavy rains in September and October and continue month after month with heavy precipitation. Christmas is drowned in such a year as is nearly everything else. There are also the years of scant rain and much anxiety and discomfort when the rains before the holidays are almost absent, the holidays themselves are days of balmy brightness followed by a storm late in January, bringing a promise which is not fulfilled. The third class of years, of which the present seems to be one, has rains opening rather late in the autumn but which show a persistent manner manifested by frequent returns in moderate amounts during the rainy months; giving ample moisture for growth, ample intervals for work to make use of it and harvest returns which are delightful. In such a year a rainy Christmas is apt to have a place and we rejoice in it as a token of such general character of 1906-07.

The Christmas demeanor of California this year is exceptionally buoyant. There never was such a rush of affairs, never such free disposition toward investment and courage in industrial undertakings. We hear of it from all parts of the State. The great trouble is

the scant labor supply, upon which we have descanted perhaps too much of late, but it is a limiting and discouraging factor which can hardly be exaggerated. Every enterprise which can get along with it and put forth something which the people want, is rewarded by free patronage at rates far above the normal. We never saw a time of such free buying with so little thought of the cost; there seems to be plenty of money and prices naturally rise. Courage and confidence are, of course, the secret of it, for there is probably no more money than usual and those who may come again to proclaim, as they have in the past, that brisk times depend upon volume of money, should stick a pin into their reasoning faculties now; it may be helpful to them later on. However, the philosophy of the situation may run, there is no doubt about the fact. Everybody is trying to buy everything. The slab piles at the sawmills are being worked up into marchantable lumber; the old skates from the barn yard are being glorified into roadsters; the frog-bellies from the distant bins are being smoothed down into high-grade prunes, the nurseries are clean of trees, seed grain is being pursued hundreds of miles, butter and eggs have wheels on them, while the Christmas turkey has soared like an eagle.

The city Christmas trade has made new records. The rehabilitated stores of San Francisco report that though it has been hard to get as full stock as they desired because of transportation limitations, they never did such a week's business in their own palaces of trade as they have just done in their temporary places. People seem to want everything and have money with which to pay for it. This gladness which manifests itself over the counters goes with its possessors to their homes and California has not been denied a particle of the general American elation and jubilation, although our affairs have been a little upset during the closing year. It is very comforting to have the confidence that the spirit with which Californians approach the new year is likely to be upheld by the character of the year for abundance and breadth of production which the rainy Christmas foreshadows. It may be that the present industrial disposition and situation are too glad to last and that reaction may come ere long, but a succession of good agricultural years will carry it far into the future and give people a chance to cool down gradually for it.

The seismograph in our printing office did not record much of a shake the other day but there must have been rather a serious upheaval of some kind, for the lists of "fruit varieties popular on the Pacific Coast" which we have compiled with such care and arranged in order of precedence, came out with some of the fruits exactly upside down. The grapes and peaches reported by the California growers, as printed on page 392 of our last issue, were just in this condition. The varieties least esteemed headed the lists in both cases, while the varieties most popular were at the feet of the columns. In order that readers may not be misled and that the showing may properly represent the wisdom of those who reported their experience to us, we republish the tables upon another page of this issue and ask all to substitute the revised copy for the first one in all studies they may be inclined to make of the subject. These lists present the relative standing of varieties from a commercial point of view; commercial with the grower who sells the fruit and commercial with the nurserymen who sells the trees. Of course, the nurserymen's list is, in a certain way, ahead of the growers'. The grower naturally includes varieties which he has had some time and would not dig up. The nurserymen's list naturally includes new varieties which are selling well and in a sense prophetic, though sometimes falsely so. The higher places which some of the newer varieties have in the nurserymen's lists do, however, show the tendency toward replacement of some of the older varieties which is probably truly prophetic. There is enough in the showing to ex-

cite pomological study which it would take a lifetime to fully cover.

There is such pressure upon our columns at present that we shall probably not find space to give in full the seed offering of the agricultural department of the University of California, as we sometimes do. It will do as well, perhaps, to announce that the descriptive seed list has been prepared in pamphlet form and those who wish to see what the University offers for experiment this year can get the publication without cost by postaling for it to the College of Agriculture, Berkeley. Seed distribution is only maintained for a brief period so application should be made at once, whether one expects to do the planting at once or later. This distribution is different from the free distribution by Congressmen, in at least two particulars: First, the things are not, as a rule, standard varieties which can be bought from the seedstores, and are therefore not to be depended upon for a crop; they are merely things to be tried to see if they are different or better than the old. Second, they are not distributed free; the receiver has to pay a small amount for packing and postage. For these reasons the distribution commends itself to those who like to see something new growing and to judge of its desirability and are willing to assume some responsibility by agreeing to furnish brief accounts of their observation and experience to the University. There are evidently many of this class in California, for seed was sent last year to 799 applicants through 333 postoffices situated in 52 counties of California, and about three-quarters of a ton of seed was used in the distribution. No other State has a plan of distribution exactly like that which has been proceeding at the University for over twenty years and it has received wide commendation. Whoever wishes to take part in it should send for the seed circular of 1906-07, as advised above.

The National Council of Horticulture have thought it wise to call for a meeting of a congress of the horticulturists of the world to assemble at Jamestown, Va., during the latter part of the exhibition to be held there in 1907 to commemorate the 400th anniversary of the first permanent English settlement in what is now the United States. The exact date of the meeting and the formal program had not been decided upon but will be announced later, but in the meantime we ask that all interested in progressive horticulture, plan to attend the congress and communicate with Professor H. C. Irish, Missouri Botanical Garden, St. Louis, as to what definite subjects should be discussed. California should be well represented at the congress.

The meeting arranged by the California Promotion Committee at San Diego to arouse attention to the importance of developing the harbors of California was a significant success. People prominent in the activities of all parts of the State were present and spoke effectively and their testimony will be brought to the attention of the general government. Two declarations were particularly important. One was by Dr. Clarence E. Edwards, chief of Publicity of the California Promotion Committee, who said: "California is particularly fortunate in its harbors, and were any of them situated anywhere along the parallel coast of the Atlantic it would be so fostered and developed by the State to which it belonged that it would attract the commerce of the world." Another statement comes very close to our parish. It was by John H. Hartog, secretary Colusa County Chamber of Commerce, who in discussing the "Value of California's Harbors to its Agriculture," pointed out the fact that, as the farmer is the foundation of our country's prosperity, so is the farmer concerned in all matters that concern this country's greatness, and harbors are one of those. He also declared that inseparable from the subject of harbors is that of waterways and added: "If you improve your harbors to attract the world's commerce, improve also the feeders that supply the cargoes." That is just right.

QUERIES AND REPLIES.

PEACHES IN GEORGIA AND CALIFORNIA.

To the Editor: Would you be kind enough to give me some literature relative to the growing of peaches and citrus fruits in your State? Also, can you tell me how many cars of peaches are shipped on an average from your State every year? What is the name of the leading market variety? Why is it that they keep so much longer and better than our Georgia peaches? Do the trees bear every year, or are they often killed by spring frosts? Are they raised in a section where irrigation is necessary, or where the rainfall is sufficient? Is the business overdone or is there room for more? What would you say the average grower netted per acre per average year from an average orchard? I have been growing peaches here for several years and have an orchard of 15,000 bearing trees, but so far the trees do not bear with sufficient regularity to make the business profitable. There are other unfavorable climatic conditions that make it extremely doubtful if they will ever pay much in this locality and I thought of coming out in your State if you could give me any encouragement. How far north in your State does the citrus belt extend? Is citrus fruit grown anywhere in your State without the aid of irrigation? Are your peach growers troubled with scale, borers, curculio, etc.?—GROWER, Kensington, Ga.

In good years we have shipped nearly 2,000 carloads of fresh peaches to the Eastern markets. The record for 1905 was 1,946 cars. This year the crop was short, the canning industry came into direct competition for the fruit with the shipping interest, and the fresh shipments were very much reduced. The fullest account of the varieties chiefly grown in California is contained in the Pacific Rural Press of July 21. The reason our fruits keep so much better than those grown in humid climates is not due to the variety, but to the favorable conditions of dry air under which they are grown. There are sometimes injurious spring frosts in certain localities. Peaches are grown either with or without irrigation, according to the local rainfall, character and depth of soil, etc. There seems ample room for the extension of peach planting, and supplies of trees of popular varieties ran low in the California nurseries before the beginning of the present planting season which is now on. We cannot give you a figure concerning peach products which would be of any value. The profit depends upon the variety, upon the soil, and upon the grower himself primarily. Locations suited for citrus fruit culture extend through not less than 500 miles distance from the extreme south of the State to the upper end of the Sacramento valley. Within this great distance there are districts suitable for these fruits, and selection has to be made according to local conditions of soil, climate and water supply. There is no commercial product of citrus fruits without irrigation, even in places where rainfall is most abundant. Our peach growers have to fight scale, borers and many other pests and diseases, but the curculio has never secured a footing in California.

FOR FROSTED GUMS.

To the Editor: I have quite a grove of young blue gum trees, planted last spring. A few nights ago we had a very severe frost which nipped the tender shoots very badly. Do you think it will kill the trees and is there any way of pruning or other treatment that will be of any benefit to them?—PLANTER, Rio Vista.

The trees will take care of themselves and will make new shoots if not frosted too badly. The treatment for any frosted part of any plant is to prune it off as soon as seen for in some cases a die-back follows below the frosted part.

USE OF COPPER SULPHATE IN CALIFORNIA.

To the Editor: Can you give me any idea of the total amount of copper sulphate used in a year in California and why there is such a demand for it?—DEALERS, Philadelphia.

We can give you no idea of the amount of copper sulphate used in this State. We can only say that it is used in exceedingly large and in constantly increasing amounts for the purpose of checking fungus injuries to nearly all classes of plants we grow—grains, vegetables, tree fruits, grapes, etc. In fact, it is, in connection with lime, a universal fungicide and as all these products are

grown more largely and more intelligently the consumption of copper sulphate will increase.

VINE HOPPERS.

To the Editor: I have often wondered if there is any cure for "vine hoppers." If you can give me any information regarding these bugs it would be of great benefit to me.—Reader, Del Ray.

There is no perfectly satisfactory treatment of vine hoppers. The kind which they have in some parts of the State, which drop to the ground when the vine is shaken, can be caught in shallow pans made half-round so that two can be quickly pushed into place and cover the ground under the vine before the canes have run out much. Bushels of them are caught in this way. The kind you have in Fresno takes to the air and not to the ground and cannot be caught in that way. Some new experiments and studies of this insect will be made the coming season. Fortunately, these insects are not bad everywhere and always. They seem to be held in check by some agencies not yet fully known.

DRY BOG LAND.

To the Editor: What is dry bog land? Is it a kind of clay? Does it contain a humus similar to peat? Is it rich or poor in vegetable matter?—ENQUIRER, Visalia.

Dry bog is a form of black adobe; it is not of a peaty character. It is a fairly good soil of its kind. It has been judged, because of its lack of natural drainage, unsuited for fruits, but recent experience seems to indicate that it may be better than formerly thought, if moisture conditions are kept about right.

FERTILIZING GRAPE VINES.

To the Editor: What commercial fertilizer would be best suited for enriching muscat vineyard on a medium sandy and (so-called) ash land soil? What would you consider suitable proportions of nitrogen, phosphoric acid and potash? Please give formula. Also, about how many pounds per acre proper amount to use on fairly good land?—READER, Fowler.

The essays by Mrs. Sherman and Professor Bioletti in our last two issues contain suggestions on this point and the latter states that experiments to determine some things that need to be known are now in progress. The best thing we can advise is to experiment on a small scale yourself. The formulas prepared by dealers who are advertising in our columns are based upon general analysis which show the requirement of the vine and its products and they are as good a start as you can get in trials to test these preparations under your own conditions. You should correspond with our advertisers on the subject.

PASPALUM DILATATUM.

To the Editor: I would like very much to get information as to whether or not Paspalum dilatatum has been grown or experimented with in California, and if so what were the results? What is the nature of it, the measure of its growth, most suitable conditions for it, and the probability of a successful growth with or without irrigation; soil best adapted to, and would the climate of the San Joaquin valley be suited to it?—T. S. S., Fowler.

This grass has been tried to some extent in California but not widely nor is there definite information available to answer your questions in detail. We shall be glad to have observations from anyone who has reached conclusions.

STARTING SEEDS—SHOT-HOLE TREATMENT.

To the Editor: I am planning to start a nursery. Do you recommend any treatment to the seed previous to planting, such as cracking the shell, or soaking in hot water? In regard to the fall spraying of fruit trees for shot-hole fungus, do you not think it advisable to spray when the weather conditions are such that the spores are leaving their dormant, and entering the active state, on the ground that since they are then more susceptible to the action of the spray, a more thorough and efficient job of disinfecting could be done?—C. E. D. Kingsburg.

The secret in starting tree seeds generally is to prevent the seed from getting very dry by keeping it fairly moist but not wet from the time it is taken from the fruit. Peach, apricot, plum pits, etc., should be

well dried off on the outside and then kept from drying through afterwards. About the same is true of pips of apples and pears. After seeds become quite dry they can be revived by soaking before planting and a higher percentage of germination can be had in that way. The hard pit of the olive is about the only common seed which can be cracked to advantage or that needs such expensive treatment. Your theory about spraying for shot-hole is correct as a theory but it is not practical to work upon such a fine discrimination. The bluestone in the Bordeaux will kill the spore whether active or not; therefore, spray early and kill the spores before they get busy.

HOT WATER AND BLUESTONE.

To the Editor: I have been reading with considerable interest the articles on peach blight, but believe one point has not been touched upon. Some of my neighbors are dissolving their bluestone in hot water and I would like to know if hot water will injure the strength of the bluestone. In preparing the bluestone for grain it is dissolved in cold water. It is claimed that the bluestone dissolves much quicker in hot water than in cold water.—ARTHUR RUPERT, Fresno county.

Hot water has no effect on bluestone except to dissolve it more quickly. The only objection to it, if you get the proportions right, is the cost of cooking the water. The reason cold water is used in bluestoning grain is that the cold water will dissolve less bluestone to the gallon than hot water; will, in fact, dissolve just enough to make the right strength for grain, while hot water will dissolve too much, with the chance of killing the seed. This danger does not exist in preparing Bordeaux mixture according to a definite formula.

FRUITS ON HARD-PAN LAND.

To the Editor: I have read with interest your articles on trees on hard-pan soil and on deep soil. I admit the pictures which are doubtless true to life make an interesting comparison. I have been a resident of the San Joaquin valley for sixteen years and most of the time have lived on hard-pan land, said land being planted to muscat vines and fruit trees and while the vines and trees will not produce so early on the hard-pan soil and require more irrigation than on the deeper soils, yet they will produce in most cases quite profitably after they are five or six years old. Also, there is a great deal of hard-pan land planted to vineyard and orchard, principally vineyard, in Fresno county, that yield good crops. On the land mentioned the hard-pan is from one and one-half feet to four feet beneath the surface, as hard-pan generally varies in depth in a single field. Of course, there is some difference in hard-pan, some of it being almost like rock and some that becomes rather soft when wet and if the hard variety happens to be near the surface, no kind of fruit will do well. One instance will be of interest, for five years my father and I farmed a field of muscat vines of some over a hundred acres, on land where the hard-pan was from one and a half feet to four feet in depth, and we grew a crop of raisins ranging from three-fourths of a ton to a little over a ton to the acre and of good quality. This land was well cultivated and watered in summer. The vines were about twelve years old. Now I have no land to sell but thought it might be well to have facts from another point of view. The place above mentioned had large gum trees, oranges and fig trees on it, also.—ARTHUR RUPERT, Fowler, Fresno county.

You are perfectly right. There is a very large acreage of fruit, chiefly grapes and berries, on hard-pan land in various parts of the valley and some of it is very profitable. It has to be handled by frequent and not large irrigations and it will soon require very judicious fertilization if it has not yet reached that point. It requires a little more wisdom to handle this land than the deep well-drained loams which, for deep rooting plants, are better suited naturally. Neglect manifests itself sooner on such land. Our pictorial showing of the subject was chiefly to illustrate that fact. On the other hand, some of the greatest disappointments in California fruit growing have come from the planting of shallow land in the hope of making them profitable by rainfall. They are water-logged in winter and dried hard in summer and trees are either killed outright or struggle along, dwarfed and bearing poor fruit.

HORTICULTURE.

VARIETIES OF WALNUTS AND FILBERTS.

To the Editor: The letter below from Mr. Frank B. Marks of Dos Palos, Merced county, was sent to me from your office accompanied by a little box of samples of walnuts, with the request to identify the variety, if possible, and make any comments thereon which might prove of interest to your readers. Mr. Marks' letter follows:

"To the Editor: I send you samples of walnuts in the hope that you may be able to identify the variety. The nursery tag was lost, but my impression is that it is a French nut.

"The tree is eight years old, grows vigorously and has borne increasing crops since the fifth year. It stands the hot summer sun here perfectly, while the English walnuts I planted at the same time sun-scald so badly that no growth worth mentioning is made.

"Please give your opinion as to the commercial rating of these nuts. The tree has had no care whatever, has been crowded on one side by willows and gets water by such irrigation from a ditch about ten feet away which is filled at intervals during the summer. Under this treatment the yield this season was a flour sack full of shucked nuts."

The samples of Mr. Marks' walnut are medium size, round and broad, the shell thick and heavy and of a dark color, rather smooth; the meat has a dark colored pelicle, but fills the shell well and is of first quality; it is a good nut, but with nothing remarkable in appearance and size; the chief quality of the tree is, likely, its being a prolific bearer; it's a dessert nut, it should have to be bleached on account of the very dark color of the shell. Mr. Marks thinks it is a French nut; perhaps it is, though it is very hard to tell; in fact, it is easier to say to which of the French standard varieties the nut does not belong. Nothing so vague when speaking of a variety of walnut with no pedigree at all, as to say: it is a French nut, it is a variety of the French walnut, and so forth. I have a collection of twenty-one varieties of French walnuts, besides four varieties of my own origination; well, this walnut from Dos Palos has no resemblance to any one of them. It approaches, however, the Chaberts and Proeparturiens more than any of the other varieties. If the shell was much thinner and white, and the meat with a light colored pelicle, it might be said to be a seedling of the Chaberte. Still, if really of French origin, the nut of Mr. Marks must be of Proeparturiens descent.

A Collection of French Varieties.—As you were so unfortunate in losing your own collection of walnuts in the big San Francisco fire of last April, I will seize this opportunity for sending you with this letter a cabinet of the leading French standard varieties of walnuts, all grown upon my own place and borne on grafted trees of the first generation, and with their natural color, as none of them have ever been bleached, to wit:

Mammoth Varieties.—Alpine or Wonder of the Alps, Tauge or Mammoth, Fertile a Gros Fruits, Gladly or Improved "A Bijou."

Commercial Varieties.—Mayette Blanche, Franquette, Meylan, Lanfrey, Cluster, Parisienne, Chaberte, Cluster-Proeparturiens, Parry.

Ornamental.—Vilmorin (a cross between the Eastern Black and the English walnut.)

A few lines of description, I think, will not be out of place here:

Alpine or Wonder of the Alps.—A magnificent nut; square shape, rather smooth for a mammoth nut; meat filling the shell well.

Tauge or Mammoth.—Very large or much furrowed. In France, where this nut grows still larger, boys make little windmills out of the shell.

Fertile a Gros Fruits.—A queerly-shaped nut, that makes one think of the odd style of women's sleeves of a few years ago, so large and inflated at the shoulder. The foliage of this variety is remarkable for the large size of the leaves and the dark shade of the latter.

Gladly or Improved "A Bijou."—Like improvement consists in the shell being smoother and the meat filling it better than with the "A Bijou" itself. Originated by a prominent Bordeaux horticulturist, named Gladly.

Besides these four varieties, I have two others of the Mammoth kinds: The "A Bijou" proper, and the Galban, originated by a well-known French horticulturist of southern France, who gave it its name. I consider the Galban walnut as really the finest of these six mammoth varieties; it is well shaped and with a much smoother shell than any of the other five varieties. I will add that all those mammoth varieties are perfectly soft shell, well filled and quite prolific.

Commercial Varieties.

Mayette Blanche.—At the head of all stands the great Mayette, but Mayette Blanche and not Mayette Rouge; for I noticed that some of our walnut writers in speaking of the Mayette have reference to the Mayette Rouge, probably not knowing the difference. The Mayette Rouge, besides having a red shell which has to be absolutely bleached, if put on the market as a dessert nut, may be considered as a shy bearer when compared to Mayette Blanche, a heavy and constant bearer. No Mayette Rouge for us, here, on the Pacific Coast. The Mayette Blanche is a nicely shaped nut, elongated but broad, which can be made to sit on its big end, shell almost white; it is next to impossible for any one, having once seen a genuine standard Mayette, to fail identifying this remarkable variety. The Mayette is known also under the name of Grenoble, the latter place in France, on the river Rhone, being the shipping port for this variety to Marseille, to be there distributed all over the world.

Franquette.—A fine dessert nut, of elegant shape, long and slender, and not broad and irregular as represented on some cuts in papers. The original Franquette, like all these borne on trees grafted "from the original," has two distinct and unmistakable characteristics, its long, and slender shape. The shell is a little thick and proportionately more heavy than that of most all other varieties described here; but, like Mayette, it has a kernel of superior quality.

Meylan.—A superb nut, short and very broad; shell thin, very smooth and of cream color; originated some fifty years ago in the southeast of France.

Cluster.—This nut "took the cake," as expressed by the members of the Nut Exchange in New York. Samples of eight varieties of French walnuts were sent to them for inspection by myself, twelve years ago. They chose this as the very best for them to handle, on account of its being so hermetically closed as they had been considerably bothered by moths stinging walnuts in warehouses. The Cluster is medium to medium large, very smooth and perfectly white; grown in clusters, like large bunches of Muscats, up to twenty-five nuts in a cluster; immensely prolific.

Parisienne.—Like Mayette, Franquette and Chaberte, it is late in budding out, therefore about immune from frost and blight, as are the three other varieties. The nuts are large, nicely shaped, with a broad small end. It originated seventy-five years ago.

Chaberte.—The sweetest walnut and richest in oil, here in California, as well as in France. Thin shell, smooth and light colored, excellent to remove from the shell; one of the very best and most in demand for walnut cream candy and confections in general.

Cluster-Proeparturiens.—Originated by myself thirty-two years ago; good sized nuts for Proeparturiens; grows in bunches of four to sixteen; very prolific.

Parry.—A beauty; the prettiest, smoothest and whitest nut of the whole cabinet; medium size, finely shaped. Originated in the southeast of France some sixty-five years ago.

Vilmorin.—A cross between the Eastern Black and English walnuts; simply a curiosity, as all those crosses of black and English walnuts are. Foliage quite ornamental. The nut has the shape of the English walnut, but the shell is somewhat burrowed like that of the Eastern Black.

The Mayette Blanche, Franquette and Chaberte were introduced by myself into this country in 1875, the Proeparturiens in 1871, and all the other kinds thirty to twenty years ago, at various times.

Your readers will please bear in mind that all the nuts described in this article are of the first generation and representing the regular standard French varieties of the Persian or English walnut (*Juglans Regia*).

I return Mr. Marks' samples for you to compare with the samples of the thirteen French varieties I am sending you, and to enable you to ascertain how right I was in my conclusions as to what French variety Mr. Marks' walnut belonged, if belonging to a French variety at all.

Filberts.

With the cabinet of walnuts, I send you also a box of four of my best, finest and most prolific varieties of filberts, and which have proved to be so eminently adapted to the Pacific Coast.

Grosse Blanche of England, called by me Barcelona, for short: A large, round, highly flavored nut.

Du Chilly Cobnut.—A superb nut, long, broad and flat, with white meat. No wonder that it sells at 25 cents per pound in London, England.

Red and White Aveline.—Paper shell, cleanest kernels of all, and of delicate flavor.

These four varieties are quite prolific, but particularly the Grosse Blanche of England, which in the

State of Washington, where it has been fully tested, bears very heavy crops. Trees of this variety around Vancouver, Washington, fifteen years old, average from twenty-five to thirty pounds of nuts per ton, the trunk of the latter being four inches in diameter, the trees branched at three feet and the top twelve feet broad; suckers grubbed out. Du Chilly Cobnut, trees of the same age, size and training, bear less, but good crops, however, averaging fifteen pounds per tree. The Aveline turned out heavy bearers, not in weight, for the shell is thin and light, but in the amount of the crop by measurement. The State of Washington seems to be wonderfully adapted to the raising of filberts, so I say: Good for Washington!

FELIX GILLET.

Nevada City, Cal., Dec. 16, 1906.

[The collection of varieties accompanying this very valuable and interesting sketch are worth going far to see. It is placed for observation and instructional uses in the Agricultural Building of the University, where all who desire can study it. Mr. Gillet desires us particularly to say that he has no trees or scions to sell. All his stock was covered by orders some time ago.—ED.]

THE BOTANIST.

A STUDY OF FORAGE PLANTS AT ETTERSBERG, HUMBOLDT COUNTY.

(Written for the Pacific Rural Press by Albert F. Etter.)
[Second Paper.]

Improvements in Grasses By Selection.—Along the above lines, too, we must proceed in improving our grasses by selecting superior types from among our cultivated grasses. By selecting the seeds of an individual plant of superior characteristics and growing the plant from this parent as individuals, one is easily able to discern whether he has found a freak of no value, or whether it is a plant that will reproduce itself as a fixed type, and the better the plants are developed the more easily can one estimate their similarity or difference in character.

To the unobserving farmer, a stockman who rides over the range, it may seem that all grasses of a given species are alike or at least so nearly so as to make a distinction quite superficial. However, I will say that if one has a head for the work and is able to discern the difference between a normal character and a development stimulated by abundant plant food, he can pick up many plants that are out of the ordinary.

In the year 1893, I selected five samples of Italian rye grass that I believed were of superior merit, and in the fall of that year I marked out five plots in the middle of an acre which was to be sown to ordinary rye grass that day. On these five plots were sown the seeds of the five individual selections and all without the least pretense of additional preparation. Two of these selections were not different and one other but slightly different from the ordinary rye grass growing all around the plots. Of the other two, a difference was early noticeable and by the time they were six inches high, one could easily locate them if fifty yards away. One selection had broad leaves of a rather lighter hue and abnormally heavy stems and very large bunch and rather large seeds, while the other had a rather darker green foliage than that prevailing all about and the leaves were narrower and the stems more numerous and slender than in ordinary rye grass. (Right here, permit me to say, that no one need for a moment suppose that I may have had some other species of rye grass and didn't know it.) While I did not weigh the crop, I am satisfied that either of the two selections out-yielded the rest of the field at least 50 per cent, and, furthermore, they apparently were very nearly true to type.

I wrote of these experiments to Prof. W. J. Spillman several years ago, while Mr. Spillman was in the office of an agrostologist in Washington, and he communicated the fact to me that the Department of Agriculture had also been carrying on work along this same line and that fully fifty different types of timothy had been selected from ordinary timothy and that they would reproduce themselves to type. He further stated that selection had also been made with orchard grass and meadow fescue, I believe, and that they were preparing to take up the same line of work among the wild grasses throughout the country.

Possibilities of Our Native Grasses.—Too prone are we to look to far distant lands in Asia and Africa for valuable new plants, and it is quite the fad to think that because such and such plant came from a far distant land that it must be valuable. The reward of our hopeful experiments is often failure, and I venture to say that only too often we could find among our

own native plants better opportunities for amelioration than we have a right to expect from plants coming from a climate altogether unlike California. Some plants are like some people, and readily adapt themselves to their environment, while there are others that seemingly cannot forget the winter snow and their winter sleep while the meadows are brown and sear in their native land. One who has never given this subject of climate adaptation proper study is apt to jump at the conclusion that a grass from a cold climate would be delighted with our mild open weather in winter. I have given this point much attention and so far as I can see, instead of appreciating our mild winters, they are devitalized and disgusted. So, too, must we take into consideration summer rains or the lack of them in California, as there are many grasses that thrive in a climate with cold winter and warm and rainy summer, and if they don't get summer rains they are disgusted again.

Requirements of a Grass for California.—In dealing with this topic, I will not consider low lands or irrigated lands, which, for obvious reasons, have considerable moisture, even in the absence of summer rains, but rather the natural uplands, hills and mountain slopes. A grass to succeed and be of value must be a good germinator and be able to establish itself quickly after the first rains of autumn. To fairly meet our climatic conditions, it should not only be a winter grower but resistant to frosts such as we have, and if it be a perennial plant, be deep-rooted and able to sustain life with a scant supply of moisture and take its rest for the year, in the hot, dry months of June, July, August and September, rather than from winter colds and snows.

While there may be excellent grasses from other lands to experiment with, we should not overlook what we have at home. My experiments here point strangely to the possibilities of developing some of the best types of our native grasses, and I believe some of them could be found that would meet every requirement as grasses to seed back onto our ranges where the more desirable grasses have been killed out by overstocking.

In speaking of bringing under cultivation types of our native grasses, I do not mean that we are to go out on the range and gather seed of botanical species wherever we find them, for to get anywhere near the bottom of the matter we must go deeper than ordinary square-cornered botanical rules. The rather limited collecting I have already done shows that the same species taken from localities not distant from each other, when grown side by side, are quite different in type, and we might naturally expect to find it so where the same line of plants have existed for generation after generation without admixture from other localities. If cultivated grasses can be selected in types, how much greater is the chance for selection among the native species on such a broken topography as California presents.

To make this matter perfectly clear and have it based upon a foundation of fact, I will cite a few cases where selections have proved different in type. A selection of *Descampsia elongata* from Wilder Ridge, near King's peak, has proved very superior to another selection from Rainbow Ridge, both in Humboldt county. The former has finer and longer blades and taller and more slender stems, and the plant in every part is less harsh and more desirable than the type from Rainbow Ridge, which has comparatively short blades and coarser and harsher stems. Types of "creeping fescue" from Bear River Ridge, Rainbow Ridge and here at home show great variation in the amount of leaves and seed stalks produced, as well as in quantity of stems. So, too, do we find varying types in the species of *Elymus*, a grass having a seed head somewhat like rye grain, and generally but sparse leaves and harsh seed-stalks.

Another fruit that is very significant and should be duly considered, is the fact that these native species have established a record of their permanency and hardihood by preserving their existence under range conditions for a good half century, and this "roughing it" ought to have left us only the most enduring of their kind.

By selecting the more promising individual plants from the various locations where they naturally abound and give them a trial in the garden to test their power of reproducing their particular type, we could within a short time, by growing the seed by the garden method, hereinbefore described, have seed in goodly quantity of the very best types of our native grasses, and probably better adapted to take advantage of all our climate offers than grasses from any other part of the world.

Grasses and Their Families.—I will now proceed to tell a few things about the various grass families and their varieties. I say a few things, for after one has studied anything as extensive as the grass and forage

problem for several years, if he has any adaptation for practical work, he will have discovered so many points which he is unable to decide without further observation, that the things he really has mastered seem relatively less important.

The Fescue Family.—This is the first I will consider. There are about eighty species of fescue and here on my grounds I have grown about twenty-five species or varieties. In the broad leaved forms were *Festuca pratensis* (meadow fescue), *F. arundinacea* (reed fescue), *F. spectabilis* (beautiful fescue), and *F. Kingii* (King's fescue). The narrow leaved fescues or bunch grasses were represented by *Festuca durinacula* superfine O., *F. durinacula* N., *F. ovina durinacula*, *F. durinacula* superfine, *F. durinacula* fancy, *F. ovina* (sheep fescue), *F. ovina capillata* (slender fescue), *F. ovina trachyphylla* (rough leaved sheep fescue), *F. ovina sulcata*, *F. ovina* var. *Europea*, *F. ovina* superfine O., *F. ovina* (Arizona sheep fescue), *F. ovina* E., *F. ovina* O., *F. ovina* (Australian sheep fescue), *F. tenuifolia* (various leaved), *F. rubra heterophylla*, *F. rubra heterophylla* N. F., *F. rubra* (red fescue), our native creeping fescue and our native blue fescue.

Of the broad leaved fescues, *F. pratensis* or meadow fescue is by long odds the variety most generally cultivated. A trial of it in Eel River valley by me fifteen years ago, did not demonstrate that it is comparable to Italian rye grass as a fall and winter grower, and in the summer the rye grass choked it out. In the experimental plot here, adjoining *F. spectabilis*, its behavior showed conclusively that it was of better quality as a hay grass than *F. spectabilis*, but that in point of hardiness against heat and drouth in summer and cold, wet and frosty weather in winter, it was at a great disadvantage. While it made an excellent crop of hay and seed the second season here, I do not consider it of any particular value in this region, as it completely disappeared the second year and failed to volunteer at all from the scattered seed, as rye grass would. Then, as pointed out before, rye grass is hardier and makes much better progress in winter and it is also more likely to catch well and if anything it is superior for hay. In thus comparing meadow fescue with Italian and perennial rye grass, it is discounted on every point and is counted out as of little value, or at least of no special value in this region.

Festuca spectabilis compared with *F. arundinacea* or reed fescue, outclasses the latter on every important character, so I will not consider reed fescue further. "Spectabilis" means worthy of admiration or beautiful to behold, and from what I have seen of this spectabilis fescue it is certainly a beautiful grass to look upon. It stands in the front rank as a hardy grass against cold and frost. I sowed a plot of this grass, just a hundredth part of an acre, in drills one foot apart, in March, 1905. This plot was at the base of a hill with a northern exposure, and to make matters worse there was a barn close up on the east side and a five-foot picket fence along the south side of the plot. Last winter was unusually frosty, yet still this plot of grass shut out the sunshine, made a remarkable growth during winter and remained bright and green at all times. It was certainly worthy of its name and beautiful to look upon, and kept on growing until it stood quite six feet high. It was cut for seed and the crop weighed, when perfectly dry and the entire yield figured by the acre, was 17,300 pounds per acre. When threshed, the yield per acre was 1,600 pounds of seed of about the size and weight of meadow fescue or rye grass. The straw, though coarse, is easily comparable to orchard grass, being a trifle coarser and a little less harsh. It produces a great abundance of leaves or blades that are quite tender and beyond reasonable doubt in this stage it would be palatable to stock, and if cut in season, like orchard grass, should be to make the best of hay, I believe it would make good hay. As I said before, the blades are very abundant; more so than in most cultivated grasses, as compared to the seed stalks, and of heavier material (fleshy) than the blades of any of our cultivated grasses. Where the plants stand somewhat thinly on the ground these blades will remain green quite late in the season, even until the fall growth starts, but in this advanced stage it is probably more beautiful to look upon than to fill up on, and I suppose this observation is applicable to most grasses in this stage of over-maturity. I believe that if it were grazed it would stand tramping admirably and be very permanent. It is a severe test on the permanency of a plot of grass to allow it to seed and ripen before cutting, but this fescue seeds the second and third year was in perfect form to seed again last spring, when of necessity we had to uproot it. The seed is a good germinator, appearing in about fourteen days, about the same as orchard grass,

and the young plants develop quite rapidly, but not as fast as rye grass.

It is a deep rooting grass and should succeed on land that is open and porous, where plants must go down to considerable depth to find a permanent supply of moisture and plant food. A similar grass, reed fescue, has been recommended in Sweden for land having a clayey subsoil, and here where perennial rye grass entirely disappeared the second season after cutting the crop for seed, as before noted, *Festuca spectabilis* proved permanent. It is a grass that is certainly well worth experimenting with.

King's Fescue.—This is a grass that in its young growth looks much like a stalk of red top. It does not grow tall here; about two feet or so. Its most inviting characteristic is its splendid winter growth and permanency. In my work with it here it does not catch as readily as could be desired. In germination it required twenty days and the young plants do not develop as rapidly as some other grasses, but still I consider it a promising kind to experiment with in permanent pastures. The seed is rather small and easily harvested, as it does not shatter in the field.

Sheep's Fescue and Other Narrow Leaved Fescues.—Of all these fescues of this type which I had in the garden, most of them resembled one another quite closely. I don't mean to say that there is little choice between them, for in the plots *F. ovina* O. and *F. ovina* E. (Arizona sheep's fescue) and *F. durinacula* superfine O. were much better in yield than the others. This I infer means that they are better adapted to stand our long summer drouth and heat than most other varieties of this type. Many of the other varieties were unable to stand the hot summer weather and dried up or were unable to make satisfactory growth with the moisture available in the drier portion of the year.

The sheep's fescues are hardy and long lived grasses and are but little affected by frost, yet they do not make quite as good winter growth as could be desired here in this mild climate. This reluctance to winter growth is, no doubt, largely due to the fact that most of the species are native to the Rocky Mountain region, where conditions do not favor winter growth, and frequent summer rains characteristic of that region are also missed by these grasses when brought into a region, where from the middle of June until the middle of September, rains are almost entirely wanting.

In growth these grasses are quite short, fifteen to twenty-four inches high, and they are by nature grasses for grazing rather than for hay making. The seed ripens very early in the season and is easily harvested and cleaned. It is a good strong germinator, appearing in about fourteen days, and where I sowed it on a "burning" last fall it made a comparatively good catch, and is now looking well.

I shall make a special reference to *F. ovina* var. *Europea*, as it is quite different from those varieties noted above. Of larger and stronger growth, and in every way as desirable as the Rocky Mountain species, I consider it as perhaps the most desirable of all the sheep fescues for experimental sowings in California. It seeds later in the season and produces much more blades than the other varieties, but possibly is slightly less drouth enduring, but, however, far more so than rye grass, and it is certainly worth trying in situations where rye grass succeeds only moderately well on account of drouth.

(To be continued.)

INDIA'S MOVEMENT TO EXTEND SILK CULTURE.

From Calcutta Consul-General W. H. Michael reports that with the purpose in view of encouraging Indian farmers to engage more extensively in silk culture, and to spread the knowledge of correct methods in handling silk worms, the government of Eastern Bengal and Assam has remodeled the course of instruction at the Rajshahi Sericultural School. It is the desire to induce the sons of the silk farmers to attend the schools, and thereby become more proficient in silk culture than their fathers have been. The new rules at the school will come into force January 1.

LATE AUSTRALIAN WOOL SHEARING.

Consul-General J. P. Bray, of Melbourne, reports that the Australasian wool shipments from July 1 to September 30 were 143,421 bales, a decrease of 115,534 bales, as compared with the corresponding period last year. The shearing is about thirty days late this year owing to the continuous rains throughout Australia during the past two months, and it is feared that the wool will not be of so good a quality as last season. It is estimated by the best authorities in Australasia that the total increase in the clip for this season will amount to about 150,000 bales.

THE APIARY

RELATION OF BEES TO FRUIT INDUSTRY.

(By Mr. J. M. Rankin of the U. S. Department of Agriculture at the California Fruit Growers' Convention at Hanford.)

I do not want my hearers to imagine for one moment that I am going to attempt to cover the entire field, as my subject would indicate. On the contrary, I want to consider briefly a few of the ways in which the bee may be useful or otherwise to the interests of the fruit grower.

Unfortunately, there is in some of the fruit sections of this State a prejudice against the bee. This makes it necessary for us to discuss two different phases of the question. 1. The good resulting from the presence of the bees, and 2, the possible damage done by them.

Benefits of Bees.—It is an undisputed fact that the blossoms of the most of our fruits are self-sterile. They require some outside agent to complete the fertilizing. In some instances all the fertilizing agent necessary is the wind, but this is true, I think, to a very limited extent with our fruits, owing to the adhesive nature of their pollen. They require an assistant, or servant, as it were, to do this fertilizing for them, and almost universally this agent is found in the insect world.

In nature all life is so proportioned that each individual fills its natural place, but when man enters with his aggressions and progress conditions are changed. He sows hundreds of acres of wheat and the Hessian fly breeds and multiplies faster than its natural enemies, and so damage the crop. He plants thousands of acres of fruit and the pests on this fruit, imported with it from other countries, and in the absence of their natural enemy, thrive and multiply. They become such a pest that the fruit grower must fight them, and yet, in nature, there was provided a remedy to hold them in check. So, then, with the multiplying acres of fruit some artificial means of assisting in its fertilization becomes necessary and the most efficient and easily installed agent is the honey bee.

If we were certain of clear weather during the entire time the trees were in bloom we would not worry, but, unfortunately, it often happens that one variety of fruit will only see a few hours of fair weather while in bloom. This was true the past spring in regard to a peach orchard standing beside the plant introduction garden at Chico, and under the writer's observation. The time of bloom happened during a prolonged cold storm and the blossoms saw less than a half day of sunshine. The insects on this bloom numbered four bees to one of another kind, not because there were more bees than other insects, but because the bee is the strongest insect that does this work and will fly during inclement weather when other insects are unable to do so.

The progressive fruit grower of today is the man who does not leave a straw turned to secure the best possible yield in his orchard. He is beginning to realize that in the past he has neglected to assist nature in this respect and so lost crops that might have been profitable.

The blossoms were placed on the tree for a reason and the nectar was placed in these blossoms for no other reason than to attract the insects, because the tree wanted assistance to enable it to produce its fruit.

Injuries By Bees.—In regard to the second part of my subject, I think the most of my hearers will agree that the drying yards where the fruit is being cut is the only place that bees sometimes become a nuisance. If a dearth in the honey flow comes at the time when the fruits are being placed on the trays bees sometimes cause more or less annoyance. I regret that more beekeepers have not guarded against this honey dearth, which occurs almost universally over the State in July and August. Some such plant as *Melilotus Alba*, or *Phacelia tanacetifolia* could be scattered in waste places and they would occupy the attention of the bees when nothing else was in sight.

In regard to bees puncturing and eating the fruit, let me say plainly that it is absolutely impossible. The mandibles of the bees are constructed in such a way that they cannot puncture the skins of fruits. Place a bunch of ripe grapes inside a beehive and the bees will coat it over with propolis and if the grapes have all been perfect ones not one of them will be punctured. Prick the skin of one-half another bunch and place this bunch in another hive and the bees will clean out the grapes punctured and coat the rest with propolis. Let a mouse or a lizard get into a hive and the bees will embalm him with this same propolis. Hang a string between the frames of a hive and it will be unraveled and carried out bit by bit. A piece of cloth will suffer

the same fate, showing that the bees tolerate the bunch of grapes for the same reason they do the lizard and the mouse. That is because they are unable to remove them.

Experience.—Many orchardists today have established small apiaries on their premises because they realize that the presence of the bees sometimes means a fair or even good crop of some certain fruit, and when their absence would have meant an entire failure. This is particularly true of the almonds and earlier blooming fruits that are apt to select for their period of bloom a run of cold or rainy weather.

Let me quote a portion of a personal letter from the president of the Yolo Orchard Company. He says: "By close observation we were led to believe that the working of bees in our almond orchard, especially during seasons when little dry weather prevailed, materially added to the fertilization of the bloom by the mixing of the pollen. We were sufficiently convinced of this fact to feel justified in the purchase of fifty colonies of bees, and still retain them, although they have not made enough of honey to justify taking any of them. On the other hand, there is no question but that bees, as well as all insects and birds, carry the germs of pear blight, which has become a very serious menace to the pears, apples and quinces."

As a rule, the fruit sections are not the honey producing section and so it is not probable that any fruit section will ever become heavily stocked with bees. In fact, it is generally conceded that, aside from the orange, there is no fruit bloom that produces enough nectar to justify maintaining bees for the honey they produce, but many prominent fruit growers are doing just what the Yolo Orchard Company has done, that is, installing a few colonies of bees for the sake of occasionally insuring a crop that would otherwise be a complete failure when the blossoming period happens to fall at a time that, owing to weather conditions, other means of fertilization are unable to accomplish the work.

LIMITATIONS OF ARTIFICIAL SILK.

Referring to his previous report concerning the manufacture of artificial silk in a Swedish factory to be built near Gottenborg, Consul R. S. S. Bergh quotes from an English letter received by him as follows: "Here in England the dresses made from artificial (wood pulp) silk have been discarded because the creases made when the wearers sit down do not come out. It is scarcely possible to distinguish the real from the artificial silk, but this defect has proved fatal for use as dress pieces. I believe it is used in a certain percentage as an adulterant mixture with real silk or for umbrellas or linings in coats, etc., but not on its own merits could it be used as a dress piece."

MEANEST MAN YET.

The agent of a handsomely illustrated book to be sold on the credit system—a feast to the intellect and an ornament to any library—leaned against the side of the house, caught his breath, clenched his fist, and looked skyward.

"What's the matter?" asked the policeman.

"I've met the meanest man," he answered. "I've heard of him, and I've read about him in the papers, but I never expected to meet him face to face."

"How do you know he was the meanest man?"

"By the way he acted. I showed him this work of art, lectured on it for half an hour, showed the engravings, and when I hinted that it would be a good thing to order, what do you think he said?"

"I don't know."

"He said he never bought books. He didn't have to. He just waited for some agent to come along and tell him all there was in 'em, and turn over the leaves while he looked at the pictures."—London Tit-Bits.

"ELASTIC" ENGLISH.

Prof. Thomas R. Lounsbury, the noted grammarian of Yale, discussing the question of simple English, said:

"There was a little boy who began to keep a diary. His first entry was: 'Got up this morning at 7 o'clock.' He showed the entry to his mother, and she, horror-stricken, said:

"'Have you never been to school? Got up, indeed! Such an expression! Does the sun get up? No, it rises.'"

"And she scratched out 'Got up at 7' and wrote, 'Rose at 7,' in its place.

"That night the boy, before retiring, ended the entry for the day with the sentence:

"'Set at 9.'"—Philadelphia Record.

INTERNATIONAL EXPOSITION AT SEATTLE.

The city of Seattle, on Puget Sound, is to hold an international exposition in the summer of 1909, to be known as the Alaska-Yukon-Pacific Exposition. The primary purpose is to exploit the resources and potentialities of the Alaska and Yukon territories in the United States and the Dominion of Canada, and to make known and foster the importance of the trade of the Pacific Ocean and of the countries bordering upon it. The exposition, it is said, will represent an expenditure of approximately \$10,000,000 when the gates are officially opened on June 1, 1909.

THE MARKETS

Wheat.

The market continues to show very little life and there is very little doing locally. Buyers' views as to values do not come up to the expectation of most sellers who prefer to pay warehouse charges and cost of carrying. Some few small sales have been made at interior points, but the majority of dealers are out of the market and prefer to receive what wheat they have in country warehouses before making new engagements. Holders, on the other hand, are firmly convinced that prices will have to advance. Tonnage in northern ports is receiving liberal dispatch, and appearances indicate that exporters have largely anticipated their wants and at present are exerting no special buying pressure. Buyers have for some time past resisted any advance, being justified in their refusal by the weakness of foreign advices. The present local conditions are hardly likely to be radically changed unless foreign markets should move up sharply, of which action, at the moment, no signs are visible. A number of steamers are loading at Portland and at Tacoma for Oriental ports and there is a fair demand for wheat to that part of the globe. A number of new flour mills during the past summer have been built in Japan, and a few in China, and these are ready to begin operations, giving local exporters some trade. Very little new business has recently been reported for United Kingdom account. Vessels in port and nearly due were fixed prior to arrival and grain exporting houses took precaution a long time back to secure what wheat they needed before the arrival of these ships.

Flour.

Practically nothing is doing from San Francisco in an exporting way. The Oriental demand is falling off. The principal call at present comes from Shanghai and North China ports, but from other parts of the Orient very little is being done. Japan is purchasing sparingly and only special brands meet with any sale and price must be right as well to make any deals. Some of the large exporters of flour in the north maintain that business will continue good until March before any noticeable decline will take place. Others claim that business for the first sixty days of the new shipping year is only fair. The demand for South America is poor, but some call is made for flour to Central American ports. California is getting very little from the Columbia River or Puget Sound now. It is reported that a steamer now at Portland is chartered for South Africa, with a mixed cargo of wheat and flour. This will be the first shipment for over a year from the coast to that country, and whether or not the movement will continue with other vessels no one in the trade can say. In the local market the flour trade begins to pick up, and buyers are purchasing with more freedom, in anticipation of a good demand for the holidays. The market is in a healthy condition and jobbers have no difficulty in securing quoted prices.

Barley.

Although stocks are becoming heavier at tidewater points, and buyers have no cause to fear any shortage of supplies, the market is strong. Prices, however, are not so firm as they were a few weeks ago and the general level is a little lower. Offers are being made freely. There is, apparently, good buying by dealers who have not heretofore been actively in the market. Reports from the country state that the large holdings have been cut into and that stocks are becoming smaller in the hands of growers. Holders prefer to sell and do not care to pay additional storage charges. The export movement to the United Kingdom continues good, several cargoes having cleared this week.

Oats.

The oat market continues in pretty good shape considering the limited character of the transactions. The receipts are well regulated to the needs of the market and dealers are not hampered with any appreciable

surplus. Transactions are largely limited to feed grades, which are in good demand to the limit of local needs at prevailing prices.

Corn.

Little interest is taken in corn and the few sales made are of a retail character and the prices quoted are practically retail prices. Ruling quotations are now as follows: Small Round Yellow, \$1.50@1.55; Western Mixed, \$1.22@1.30; Yellow, \$1.25@1.35; White, \$1.25@1.35.

Rye.

New crop rye is in the market and is selling in limited quantities at from \$1.42½@1.45 per cental.

Millfeeds.

Arrivals of millfeeds have been very light this week and the market has ruled firm, though without change in prices. The outlook is for a strong market under light supplies for some time to come. In the north, while both bran and middlings rule from \$3 to \$5 under San Francisco prices, the situation is firm with an advancing tendency.

Wool.

About the only interest manifested is in middle county wools. Reports from Boston indicate a fair amount of activity in these, something like a half million pounds having changed hands last week at a clean cost of 65@66c. Local prices for middle county wools range from 8@10 cents.

Hops.

The coast markets in all three hop growing states are almost at a standstill with hardly any sales of consequence, and these made at a lower range of prices. The New York market is a shade lower and is dull at the lower prices. No transactions of consequence in Pacific Coast hops are reported from New York.

Beans.

Beans are still showing more firmness than is usual at this season of the year. With few exceptions, prices are unchanged. Large Whites are showing more firmness at unchanged prices. The market for other descriptions is steady with a fair movement for this season of the year.

Hides.

The hide market seems to show no variation from the steadily growing firmness that has characterized

it for months. Tanners are generally closing the year with light stocks and the outlook is for a continuation of present conditions. Good number one hides range as high as 13½ cents.

Butter.

The market here is rather firmer than it was a week ago. There has been a marked falling off in the receipts of fresh butter, the decreased arrivals being due chiefly to the fact that shipments of San Joaquin valley stock are being diverted to Los Angeles, where the market is very strong and high.

Cheese.

The cheese market is unchanged, the light receipts being about balanced by the demand.

Eggs.

Eggs were remarkably firm, in spite of the fact that receipts are increasing. The available supplies of fresh stock have been easily disposed of. Storage goods came in for the usual large share of attention this week and the quotations for them were unaltered.

Poultry.

In spite of heavy arrivals of live poultry from domestic shipping points, the market continues active and prices for everything except broilers and geese are maintained. Large roasting and frying chickens are in sharp request, with exceptionally fine large offerings selling above the outside quotations in some instances. Receipts of dressed turkeys were quite liberal just before Christmas and the stock met with a steady call at good prices. Some receivers asked 27@28c per pound, but there were very few sold at those prices 26c being about all the average buyer cared to pay. Game was in good demand and firm under light arrivals.

Potatoes.

Arrivals for the week have been but barely sufficient for the daily needs of the city and the market continues very strong. In fact, it is rather stronger than it was at the close of last week. Oregon and river burbanks are climbing steadily and are now quoted at as high as \$1.75 for Oregons and \$1.45 for rivers, with a few favored lines running still higher. Heavy shipments of Eastern potatoes are on their way to San Francisco and it is believed that fully 100 cars from Minnesota and Wisconsin will be in within a few days.

These are naturally expected to bring down prices more or less.

Vegetables.

The general run of vegetables has been ruling high all week and supplies are well cleaned up on practically all lines. Onions are firmer and have been marked up slightly in price. Arrivals of onions are about normal. String beans, green peas and summer squash are very firm. Tomatoes are selling as high as \$2 for the best but off grades are selling at a very much lower figure. Green chile peppers are rather weak.

Fresh Fruits.

The demand for all fruits in the market was firm up to Christmas but has been rather quiet ever since, though there are no changes in the prices. Notwithstanding heavy demands, the receipts of apples have been so large that there has been no falling off in the available stocks. Cranberries are in oversupply and sales are dragging. Persimmons are in fair supply but are not selling very freely. A few quinces are to be had but these are not finding active buyers.

Dried Fruits.

It has been a very quiet week in all kinds of dried fruits and probably there will be but little activity until after the opening of the new year. Quotations remain firm and there is some expectation of an advance early in January.

Citrus Fruits.

Oranges have been in plentiful supply all week and though the call has been heavy there is something of an oversupply. Tangerines are in freer supply and lemons, limes and grape fruit are about as before. The first car of rose brand oranges has arrived from Redlands.

Raisins.

There was an active demand for raisins just before Christmas but this has eased off since. Quotations are as before but the market is very firm and prices may go higher before long.

Nuts.

Both almonds and walnuts are scarce and higher and not for many years has the year opened with so bare a market as now. The best almonds are selling as high as 18½ cents and the best walnuts as high as 16 cents.

The offers below are good only when accompanied by the coupon.

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World Today 1.50
Ainslee's 1.80
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Ferry Building, San Francisco.

Gentlemen: I saw your ad. in the PACIFIC RURAL PRESS. Please find.....
herewith in acceptance of the subscription offer which I have marked above. Send the magazines to the address given below.

Name
Address
City

THE NURSERY.

FRUIT VARIETIES MOST POPULAR ON THE PACIFIC SLOPE.

(Revised and corrected.)

By E. J. Wickson, Dean of the College of Agriculture of the University of California and Acting Director of the University Experiment Stations, at the Convention of the Pacific Coast Association of Nurserymen, at Hanford December 5, 1906.

APPLES

Cal. Growers	Cal. Nurseries	Oregon	Washington	Utah and Idaho
Newtown Pippin	Newtown Pippin	Newtown Pippin	E. Spitzenberg	Gano
Belle Fleur	Belle Fleur	Jonathan	Newtown Pippin	Jonathan
W. W. Pearmain	R. Astracan	Gravenstein	Gravenstein	Rome Beauty
Gravenstein	W. W. Pearmain	E. Spitzenberg	Baldwin	Yel. Transparent
R. Astracan	Gravenstein	W. W. Pearmain	Jonathan	Ben Davis
R. I. Greening	R. I. Greening	R. Astracan	King	Winesap
E. Spitzenberg	Red June	Ark. Beauty	Rome Beauty	W. W. Pearmain
Mo. Pippin	Jonathan	Rome Beauty	Oldenberg	Newtown Pippin
W. Astracan	E. Spitzenberg	Winesap	Yel. Transparent	Ark. Black
Red June	Ben Davis	Wagner	Wealthy	Wealthy

APRICOTS

Royal	Royal	Royal	Royal	Moorpark
Blenheim	Blenheim	Moorpark	Moorpark	Royal
Moorpark	Hemskirk	Tilton	Blenheim	Blenheim
Hemskirk	Tilton	Blenheim	Hemskirk	Hemskirk
Peach	Moorpark	Peach		Peach
Newcastle	Newcastle	Hemskirk		Acme
Tilton	Peach	Newcastle		

CHERRIES

Royal Ann	Black Tartarian	Bing	Royal Ann	Royal Ann
Black Tartarian	Royal Ann	Lambert	Bing	May Duke
Bl'k Republican	Bing	Royal Ann	Lambert	Early Richmond
Rockport	Bl'k Republican	Purple Guigne	Black Tartarian	Black Tartarian
Bing	Early Richmond	May Duke	Bl'k Republican	Bl'k Republican
Chapman	Chapman	Black Tartarian	May Duke	Bing
Purple Guigne	Gov. Wood	Bl'k Republican	Early Richmond	Lambert
May Duke	Rockport	Gov. Wood	Centennial	Eng. Morello
Centennial	May Duke	Centennial	Eng. Morello	Windsor
Black Bigarreau	Lambert	Chapman	Late Duke	Montmorency
Lambert	Knight's Early	Knight's Early	Gov. Wood	Gov. Wood

GRAPES

Muscat	Muscat	Concord	Niagara	Concord
Tokay	Tokay	Delaware	Concord	Muscat
Cornichon	Cornichon	Niagara	Delaware	Tokay
Thompson	Emperor	Muscat	Moore's Early	Black Prince
Emperor	Malaga	Tokay	Muscat	Niagara
Malaga	Rose of Peru	Black Hamburg	Tokay	Black Hamburg
Rose of Peru	Sultana	Black Morocco	Malaga	Rose of Peru
Zinfandel	Zinfandel	Isabella	Rose of Peru	Sweet Water
Black Morocco	Mission	Campbells Early	Sweet Water	Black Ferrara
Sweet Water	Thompson	Rose of Peru	Campbells Early	Campbells Early
Verdal	Black Morocco	Worden	Agawam	Delaware
Carignane	Mataro	Moore's Diamond	Black Hamburg	Rogers
Black Prince	Black Hamburg	Moore's Early	Moore's Diamond	Moore's Early
Alicante	Sweet Water	Agawam		Worden
Sultana	Black Prince	Black Prince		

PEACHES

Muir	Muir	Elberta	Elberta	Elberta
Phillips	Phillips	Muir	Early Crawford	Foster
Salway	Tuskena	Salway	Muir	Early Crawford
Lovell	Lovell	Early Crawford	Phillips	Late Crawford
Early Crawford	Elberta	Late Crawford	Alexander	Orange Cling
Tuskena	Foster	Foster	Hales	Triumph
Foster	Early Crawford	Alexander	Triumph	Utah Orange
Elberta	Salway	Triumph	Tuskena	Globe
Late Crawford	Orange Cling	Susquehanna	Late Crawford	Alexander
Orange Cling	Late Crawford	Phillips	Susquehanna	Muir
Susquehanna	Heath	Mary's Choice	Susquehanna	Salway
Nichols	Alexander	Heath	Sellers	Sellers
Sellers	Sellers	Wheatland	Heath	St. Johns
Lemon	Hales	Lovell	California Cling	Hales Early
St. Johns	Susquehanna	Orange Cling	Brigg's May	Heath
Henrietta	Nichols	Lemon Cling	Charlotte	Wheatland
Mary's Choice	St. Johns	California Cling		Clair's Choice
Hales	Triumph	Globe		Carmen
Alexander	Wheatland	Tuskena		Willett
Heath	Strawberry	St. Johns		China Cling

PEARS

Bartlett	Bartlett	Bartlett	Bartlett	Bartlett
Winter Nelis	Winter Nelis	D'Anjou	Winter Nelis	Seckel
Seckel	Seckel	Winter Nelis	Clapp's Favorite	Barry
Easter	Winter Bartlett	Flemish	B. Hardy	D'Anjou
Du Comice	Easter	Du Comice	Winter Bartlett	Winter Nelis
Coyenne D'Ete	Barry	Seckel	Seckel	Keiffer
Clapp's Favorite	Du Comice	Easter	Easter	Flemish
Glout Morceau	B. Hardy	Clapp's Favorite	Clairgeau	Easter
Barry	Madeline	Winter Bartlett	Flemish	Du Comice
Comet	Clapp's Favorite	Clairgeau	Keiffer	Clapp's Favorite

PLUMS

Wickson	Wickson	Peach	Bradshaw	Hungarian
Hungarian	Burbank	Bradshaw	Peach	Yellow Egg
Kelsey	Hungarian	Green Gage	Hungarian	Satsuma
Yellow Egg	Kelsey	Cherry	Yellow Egg	Peach
Tragedy	Climax	Yellow Egg	Washington	Bradshaw
Washington	Green Gage	Burbank	Coe's Golden	Burbank
Satsuma	Yellow Egg	Coe's Golden	Burbank	Wickson
Burbank	Satsuma	Blue Damson	Green Gage	Jefferson
Jefferson	Tragedy	Hungarian	Columbia	Grand Duke
Climax	Blue Damson	Wickson	Climax	Coe's Golden
Grand Duke	Jefferson	Maynard	Duane	Blue Damson
Clyman	Washington	Washington		Green Gage

PRUNES

French	French	Italian	Italian	Italian
Imperial	Sugar	French	French	German
Sugar	Imperial	Sugar	Sugar	Silver
Giant	Robe de Sergeant	Silver	Silver	French
Robe de Sergeant	Silver	Imperial	Imperial	Sugar
German	German	Giant	Giant	Giant
Silver	Italian	German	German	
Splendor	Giant	Splendor	Tennant	

It was my privilege to prepare a paper for the Convention of the American Nurserymen's Association held in Texas in June, 1906, on the "Specific Requirements of New Varieties in California Fruit Growing." In order to ascertain what changes in the character of varieties would, in the opinion of growers, be desirable it seemed advisable to ascertain first which of the existing varieties are most satisfactory to them and what specific modifications would enhance their value from a growers' point of view. For this reason I requested my correspondents to name their best varieties of the different fruits and to use them as standards in describing desirable variations. One result of this inquiry was a fuller designation of the most popular old varieties than has been secured hitherto. When I received the invitation to prepare something for your meeting, it occurred to me that I could compare the growers' conclusions as to the varieties best for planting with the nurseryman's conclusions as to varieties which he considered best to propagate for sale and in this way approach the popularity of variety from two points of view. To accomplish this I mailed letters of inquiry to Pacific Coast nurserymen so far as I could secure their addresses, stating to them the varieties of each fruit which had been approved by California planters and asking them to mark them in the order in which they ranked in their trade and to add others which deserved mention. I received very gratifying response to this request and the tables I present herewith show the result of a very voluminous correspondence. When the reports were taken up it clearly appeared that it would be of little use to consider the Pacific Coast as a whole, but to make lists for the different States because varieties has such limited range in some cases. Of course the lists should not be made for States which are merely geographical divisions without regard for regional characteristics, but the attempt to group in regions of similar climatic conditions was impossible without taking more time than was available. It is also obvious that many nurserymen sell stock in all these regions, and, therefore, a subsequent inquiry as to regional adaptations and demand is desirable. I hope to pursue that at another time.

The present showing, is, therefore, valuable only in a general way and chiefly for the light it throws upon the trade in trees, although it will be found to have clear indications of important pomological inquiries to be subsequently taken up as to why certain varieties are high in one place and low in another. Some cases of this kind are easily explained, such as the precedence of American grapes over the vinifera varieties in the northern portions of the Coast, but even these vinifera varieties have a place, because some localities favor them. A more puzzling proposition is the popularity of the Moorpark apricot at the north. This variety stands even lower in California than the tables indicate, because of shy bearing, but in some interior regions at the north it is said to be more trustworthy, which may be explained by climatic conditions which give it more definite periods of dormancy and growth. This is a matter which is as yet purely conjectural and needs to be enquired into. There are many other similar studies to be made of the behavior of varieties of all fruits, both from cultural and commercial points of view. All that I can do now is to thank the nurserymen who generously gave their time to the inquiry I undertook and to present to them the preliminary results thereof which the tables embody.

CORRESPONDENCE.

THE LABOR QUESTION.

To the Editor: I want to express personal appreciation of your comments on the action of the fruit growers at the State Convention at Hanford regarding the labor question. The "leading journals" that intentionally misquote and misrepresent are no better than the gang of "grafters" in San Francisco and elsewhere that they in a spasm of morality (?) would have punished for their misdeeds.

The Rural Press prints the case logically and succinctly, but the papers that declare California fruit growers and farmers un-American are simply pondering to the lowest class of demagogues and politicians who inflame the passions of the "labor classes" one day, and condemn them the next. It is the paper that endeavors, for its own gain, to set the "working man" against the farmer, or vice versa, that is the traitor.

If the United States can, constitutionally or otherwise, close its doors against Chinese and admit Japanese, or close its doors against Japanese and Chinese and admit Hindus, it is surely equally able to, by treaty or otherwise, restrict in either or any case. There are commercial and industrial reasons why relations with Japan should continue to be cordial; with the British government in the case of the Hindus it is the same; with the Chinese, and what has been done, the day of reckoning is only deferred.

But, will not all nations, of whatever race, or, as the fruit growers phrased it, "irrespective of nationality," and whether weak or powerful, be likely to consent to the immigration of their surplus population being limited by those countries to which they go? It is a question which works both ways, and which must

always be regulated by the law of supply and demand, a law which no government or constitution of governments, can entirely ignore.

The Rural Press is again correct in assuming that the fruit growers do not want to belittle the points made by the opposition, but they do most strenuously object to misrepresentation at the hands of the "leading journals" (save the mark) of the State. We state the case: There are those in control of the affairs of the nation fully competent to deal with the many complex questions involved.

A metropolitan press which has often proved itself as corrupt as the "grafters" it would imprison, and cowardly, because it strikes when it knows it is safe, is also copied and enclosed by the "leading journals" of the interior.

Hoping that the Rural Press will maintain its attitude, and with the assurance of the support of the farmers in so doing.

LEONARD COATES.

Morgan Hill.

MILDEW ON GRAPES.

The mildew that is infesting our grapes in the surrounding sections is a subject that is now receiving much attention from the vine growers, and the question arises what is the best fungicide to use and how to apply it. It is pretty well established that sulphuring is the only effective and reliable remedy thus far used, but the problem has been how to apply it in an effective, inexpensive and at the same time rapid method. There have been a variety of crude appliances used, all of which have many objections, requiring much labor and wasting the sulphur. Our attention has recently been called to a machine called the Champion Duster. It seems it has been used for many years in the Eastern and Southern States on various crops, largely tobacco and potatoes, with very gratifying results, and we learn that a number of these machines have been used during the past year in the raisin growing districts near Sultana. More about them can be learned from Mr. F. D. Nagle, Sultana, Cal.

CURES BARB WIRE CUTS AND SPRAINED HOCK

Brookfield, Mo., March 16, 1906.

Dr. B. J. Kendall Co.,

Enosburg Falls, Vt.

Gentlemen: I have used your Spavin Cure very successfully on bad barb wire cuts on a horse, also badly sprained hock. I also used it on myself for sprained ankle and frost-bitten feet. Yours truly,

J. A. BUTLER.

THE DAIRY.

REARING CALVES TO MAKE COWS.

According to Hoard's Dairyman, a wise old dairy farmer once said to us: "The cow is either made or unmade in the first fifteen months of her life." Questioned farther he stated that he had come to his conclusion after years of observation and practice. He had noticed this: That where a farmer took the best possible care of his heifer calves, kept them dry and clean, fed them well in good growing food and kept them going in a strong, growthy manner, if they were well bred from good dairy stock, nearly all would make good cows, whereas, if they were ever so well bred, if they were neglected, and badly cared for, it was rarely, any of them would make good cows. We believe firmly in the truth of what this old farmer said. More good cows are spoiled by neglect, insufficient food, during the first fifteen months than from any other cause.

Good blood, dairy heredity and all that is necessary. It is the foundation. But if we are going to make good cows out of these heifers we must pay close attention to how we start them on the road.

For years we have been rearing heifer calves. Some of them we have sold and some of them we have kept. We are greatly impressed by our experience with the truth of the old farmer's theory. It is true that we take great pains that the heifer shall be well born. But that is only half the proposition, the first half.

If she is to have good, large capacity she must be steadily well nourished from the beginning to the time she is first in

calf. This done she has a greatly increased chance of profit to her owner. In buying heifers it is worth a good deal to know how they have been reared. Of one thing we are certain and that is, that it pays to feed the heifer skim milk daily till she is ten to twelve months old together with a pint to a quart of oats. Such feeding with good care turns out much finer cows than does the treatment heifer calves usually receive.

KEEP HER UP.

Good sound advice is always valuable. If there is any one thing the average dairy farmer needs to be well advised upon, it is to feed his good cows better. A Wisconsin farmer at Phillips writes to Dr. Smead of the Tribune Farmer complaining that his Jersey cow, fresh last November, and which gave 30 to 35 lb. of milk a day for three months, testing 5.5, now gives only six pounds a day on good pasture and that she looks very poor though she is healthy. Doctor Smead tells this man in plain, practical words that he has been neglecting this cow. That he should have fed such a fine cow better, so she could keep up; that there is little wonder she is poor when we consider the drain upon her system to produce that amount of milk and milk solids. That view, it seems, never entered that man's head. He thought something was the matter with the cow. The doctor gives him the sound advice to dry her off and feed her two quarts of oats a day till she calves. As he says, "Keep her up man, keep her up."

Like thousands of other men, says

Hoard's Dairyman, this cow owner did not appreciate what his cow was doing; what it meant to produce 3000 pounds of milk in 90 days, with a fat content of 165 pounds or 192 pounds of butter. Then, for the remaining six months she gave, we will allow 12 lb. a day or at the same figuring 2110 lb. milk producing 135 lb. of butter, or a total of 327 lb. of butter, and the man wonders that she is poor when he did not know enough to feed such a cow what food she ought to have. What has his cow earned? At least \$75 in butter and skim milk. She is a cow of so strong and decided a dairy temperament that she must give all the milk and butterfat she can even if she takes it out of her body.

There are thousands of such cows. That is the kind of a cow wise men are breeding for. It is a pity that there is not more breeding of fit dairymen to own and care for such cows.

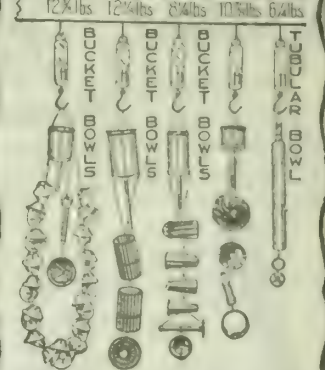
HINTS TO HOUSEKEEPERS

Cream of Oyster Soup.—Scald one quart of oysters in their own liquor; remove them from the liquor; chop them small and rub them through a fine sieve; put two level tablespoonfuls of butter in a pan, when melted add two tablespoonfuls of flour; add one cupful of oyster liquor; the oyster pulp, salt, pepper and paprika; just before serving add one cupful of whipped cream, beating it well into the soup.

Roast Turkey.—Allow sufficient time for baking, baste in its own gravy every half hour and do not add the dressing until almost done. The dressing is better made of stale biscuits. Break biscuits in small pieces, pour over them equal parts of hot gravy and water, add a little salt and pepper, mold in cakes, brown slightly. After removing the turkey from roaster add a little thickening to gravy and let come to a boil.

Saves Hours of Cleaning

Of course your wife would try to wash even the worst cream separator bowl properly twice every day. But why ask her to slave over a heavy, complicated "bucket bowl," like either



of the four on the left? Why not save her hours of cleaning every week by getting a Sharples Dairy Tubular Cream Separator with a simple, light, tubular bowl, easily cleaned in 3 minutes, like that on the right? It holds the world's record for clean skimming.

Sharples Tubular Cream Separators are different—very different—from all others. Every difference is to your advantage. Write for catalog M-131, and valuable free book "Business Dairying."

THE SHARPLES SEPARATOR CO.
West Chester, Pa.
Toronto, Can. Chicago, Ill.

STRAIGHTFORWARDNESS DID IT

It is a time of prevailing humbug—no doubt about it—and men are wondering whether it is impossible to do a successful business without any humbug.

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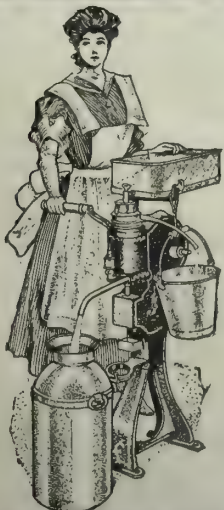
If you already have a "cheap" or inferior separator, "trade it in" for what it's worth and replace it with a DE LAVAL.

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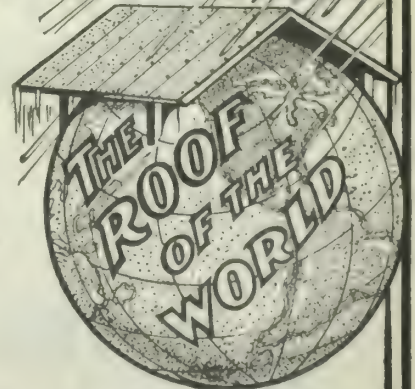
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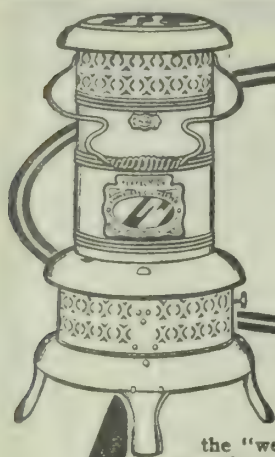
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HOME CIRCLE

THE MOTHER'S WORDS.

When the elder children were around me,

And needed my every care,
Noisy and rough with cloth-rent knees
And tumbled, wind-tossed hair;
I often thought when they were grown,
How free my life would be;
Then I could rest, and they would work
And lift all care from me.

But now, my boy so bearded

I hardly seem to know,
He's half ashamed to kiss my cheek,
And afar in the world must go.
My girls, though loving in their way,
Have grown so very tall—
And seem so strange—I often sigh
And wish that they were small.

Ah! mothers when you are weary,

And the children seem to crowd,
When they seek you in their troubles,
Or their glad tones are too loud,
Think not of that far future,
When they may help you rest;
Enjoy the present, happy days,
While they love mother best.

MISS TREVOR'S WARD.

"Are we quite through with mail, Miss Trevor?"

The young woman at the desk by the window looked up.

"Quit through with your share of it, Mr. Renwick. My share is a little larger than usual." And she bent again to her task.

He pointed to the package before her. "And those are all begging letters?"

"Most of them are begging letters. A few are merely annoyances."

The old man sighed. "It's strange how they persist in writing. They must know I never give indiscriminately. Perhaps the same sort of fever impels them to write to me that allures them into buying the lottery tickets. And you don't find one among them that makes an honest or a worthy appeal?"

"Not one, Mr. Renwick."

"I trust you are not getting hard, Miss Trevor? You are too young to be cynical."

"I don't think it's going to hurt me, Mr. Renwick. You have asked me to stand between you and these letter writers. It hurts me a little to find there are so many people who are willing to humiliate themselves, but I know that honesty and independence and pride still exist in the world, and that I am simply doing my duty when I deliver you from beggars and sycophants."

The old man watched the quick fingers working as the girl filed away the letters.

"What is your ambition, Miss Trevor?"

He had a way of speaking out abruptly and his question did not surprise the girl. She answered him without looking up: "To give my mother a good home, and to lay by something for the rainy day that we talk about and never expect."

"A modest ambition," said the old man "But have you never thought of marriage and a different sort of home?"

A soft flushed tinged the girl's cheeks. "I am thirty," she answered, "and quite hopeless."

He shook his head. "Then you are fully hopeless. But you have thought of it?"

The flush deepened. "Years ago," she murmured. "I was quite young. It was all like a dream. The wedding day was set. He never came."

The old man frowned darkly. "You were well rid of him," he growled.

"I tried to think so, but it was hard,

very hard. I'm afraid it robbed me of some of my faith in humankind."

"Because one man played you false," cried the old man. "That isn't fair. And did you find out what drew the unworthy fellow away?"

"It was another woman. I heard the story afterward. He had been wavering between us. It was the other woman who won." She sighed. "I was only twenty then."

The old man eyed her keenly. "I fancy," he said, "that you are a great deal happier today than you would be if you had married that unworthy fellow."

"No doubt that is true," she answered. "Yet somehow I can't help wishing that I had won him — instead of the other woman."

"The eternal feminine," muttered the old man. But there was no sarcastic chill in his words.

"I don't know why I have told you this," said the girl presently. She hesitated. "I think it must be because this is the anniversary of the day that should have been my wedding day."

Her face was hidden from the old man. Her eyes were on her work.

When he spoke his voice was quite gentle.

"You have paid me a compliment by telling me," he said. "I have won such a reputation for hardness that I am grateful to know that some one can treat me as a sympathetic friend." He paused.

"You speak of an anniversary," he said. "I am inclined to look upon it as an anniversary of your deliverance. You give it a more sentimental significance. That is natural. But it has just occurred to me that you might want to mark it in some practical way. Perhaps by helping a needy sister. Perhaps by making marriage possible for some worthy pair. You will know how to use this remembrance. Miss Trevor, you and I have given away a great deal of money—and you have saved me many times from giving unwisely."

The girl looked up.

"You are very kind, sir," she said, "and very thoughtful. But just now I can think of no way to—utilize your suggestion."

"The way will undoubtedly be made clear, Miss Trevor. Let me know when you find it."

He leaned back in his chair again, half closing his eyes. His thoughts were busy with the past. There was a girl—yes, she was very like this girl. Her hair was brown, her eyes were dark and serious. He had fancied her as a boy, and when he grew to manhood his dearest visions—he had visions then—always placed her by his side. But he was too poor to think of marrying, and she wedded the son of the rich miller—at least he passed for rich in those dull days.

The old man grimly smiled. He could buy the rich miller a thousand times over. And yet in that day he would have looked upon \$500 as a fortune. With \$500 he would have dared to ask the girl to marry him. Very likely she would have refused. Perhaps it was all for the best.

The girl looked up. "I beg your pardon, Mr. Renwick," she said, "but here is a letter that is puzzling. If I am a judge of such things, it isn't an honest letter, and yet somehow it worries me."

"Let me hear it."

"It purports to be from a child, but I feel quite sure it is inspired by an older head." She spread out the crumpled sheet.

"Dear Mister Renwick, I am only a little boy and nobody knows I am writing this to you cause papa and mamma are both too proud and they would be very angry if they knew I was writing. Papa had money once and we were so happy but he signed a paper for a friend

(Continued on page 411.)



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and the friend was not an honest man and papa lost all his money. And now papa has rheumatism in his hands and he finds it so hard to get work and mamma hasn't been well since baby Joe died and the rent is three months due and the man says we must pay or leave and I haven't any shoes to wear and mamma cries most all the time. Now, please can't you help us with a little money, dear Mr. Renwick, cause we are so poor and very worthy. I heard papa say that if he had \$200 it would put him on his feet again. It would be so little to you and so much to us Mr. Renwick, and I would pray for you every night. Please send soon to 29 Court alley, upstairs, back room, to Mister James Desmond That's papa and I'm little Jack."

The old man nodded. "Quite evidently a fraud," he said. "Little Jack piles it on too thick. Why let it worry you?"

The girl faintly smiled.

"I don't know why it should," she answered, "but it does." She hesitated. "I think," she said, "that I will investigate it personally, this evening."

"Court alley," mused the old man. "That's not a savory locality. I will send Brown with you. He will call with the motor car at 7:30."

When the old man entered his office the next morning the girl was at her desk.

"What did you find out, Miss Trevor?, concerning the boy and the letter he wrote?"

"Quite enough, sir. The people were what I expected. The man is a vagabond, and the woman a poor creature with an appalling taste for strong drink." "And the boy?"

"There is a boy, but he isn't related to them. The boy is better than his surroundings. He told me the woman made him write the letter and send it to you. The boy is an orphan. His father died four years ago, and his mother a year later. His only home since his mother died has been with this wretched pair."

"He should be taken from them," said the old man.

"I have arranged to take him," the girl responded. "I bought him from the people. He will be brought here this morning."

"And what will you do with him?" the old man asked.

"I mean to adopt him."

He drew down his thick grey eye brows. "Isn't this a great responsibility?" he gently asked.

"I have no doubt it is, but I mean to assume it."

A clerk appeared in the doorway. "Beg pardon, sir, but there is a child here asking for Miss Trevor."

The girl sprang up. "It is the boy," she said, "May I— may I bring him in?"

He was a handsome little fellow of eight years, with thick brown hair and big brown eyes. His clothes were shabby, but his face was clean and his curly hair was fairly smooth.

"Mr. Renwick, this is Jack — Jack Ainslie."

"How do you do, Jack Ainslie?" said the old man, and took the boy's hand in his.

The boy looked at him with frank eyes. "Did you get my letter?" he asked.

"Yes."

"She says it was naughty to write it. But I wouldn't if Mother Desmond hadn't told me. Why, I didn't even have a postage stamp."

"We understand, my boy. And so you are going to have a new home?"

"Yep. I'm going to live with her. She told me."

"And you're going to try to deserve all her kindness?"

(Continued on Page 413.)

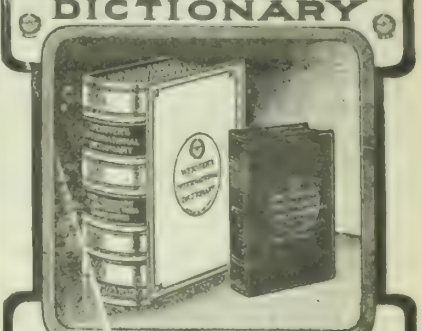
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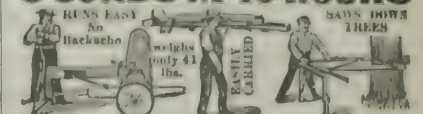
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AGRICULTURAL REVIEW

Butte.

AGREE TO PLANT BEETS.—The Gridley Herald: P. R. Erickson, agriculturist, in the employ of the Hamilton beet sugar factory, and some members of the local committee, appointed to help work up the acreage in this vicinity, have been visiting among the farmers during the past few days, and a good showing has been made in getting contracts. One hundred and fifty acres have been contracted, and it is expected that fully that much more will be promised. Besides this the Idaho colony which has settled on Gridley Colony No. 4 and 7, will plant from 200 to 300 acres.

Kern.

WASCO RAISINS YIELD BETTER THAN FRESNO.—Kern County Echo: The vineyardists of Fresno county feel amply repaid if their raisin grapes yield a ton of dried raisins to the acre. In the Wasco country the yield averages one and three-fourths tons to the acre. Quite a difference!

San Luis Obispo.

"TALL" SUGAR BEETS.—Paso Robles Record: Frank Wiley, who has charge of the farming operations on Hiram Corey's upper Buena Vista ranch, brought to the Index office today wonderful specimens of sugar beets grown in the alluvial soil on the river bottom. The beets, which are large ones, are notable for the great length of their tap roots, one of them being four feet long, twisted in a spiral shape like a rope. The other beet measured from crown to point of tap root over six feet! Who can beat that beet? Mr. Corey had 200 acres of sugar beets which yield over 3,000 tons, or upward of fifteen tons per acre. The Spreckels narrow-gauge railroad runs through Mr. Corey's beet fields this year, and the beets are now being delivered at the factory. They are of excellent quality.

Santa Clara.

SAN JOSE GRANGE HOLDS INTERESTING MEETING.—San Jose Herald: San Jose Grange held a very interesting meeting today at Odd Fellows' Hall. The business meeting was cut as short as possible to make way for Professor D. R. Wood, who delivered a very interesting lecture on the subject of agriculture in the schools. This, he said, is called nature study in the primary grades. When the child comes to school something interesting should be taught him and something about which he already has some knowledge, as education begins with environment, and gardening is just as much manual training as is work at the bench. Sunnyvale, Mountain View, San Jose, Lincoln, Live Oak and Orchard City Granges will install their officers under the auspices of Pomona Grange at Mountain View on January 7. V. F. Ylmans of Petaluma, an organizer for the Grange, attended the meeting today and made a few remarks.

Stanislaus.

CAGE THE LADY BIRDS.—Stanislaus County Weekly News: The State Horticultural Commission has received a letter from Geo. Compere, who for several months has been in Japan and China as the agent for California in the work of the Commission, says the Sacramento Bee. He writes that he will arrive home December 18, and is bringing with him more than 2000 "lady-birds." Let it be said here that "lady-birds" is the scientific name for "lady-bug" and is the only term used among horticulturists to designate this valuable insect. At the office of the secre-

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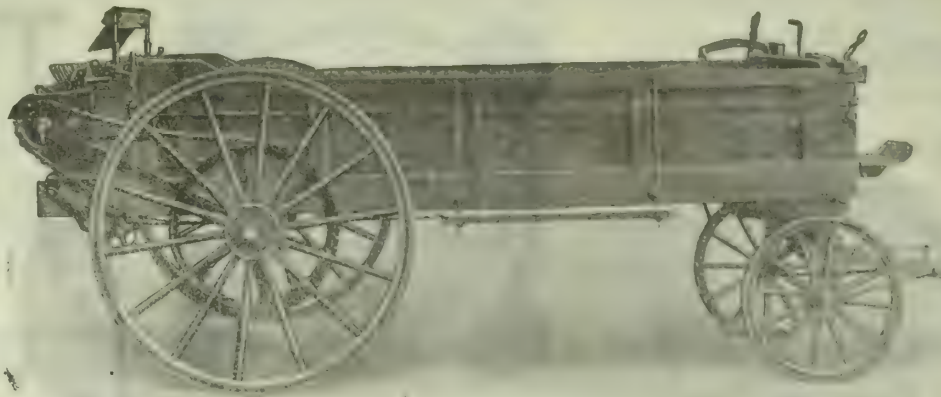
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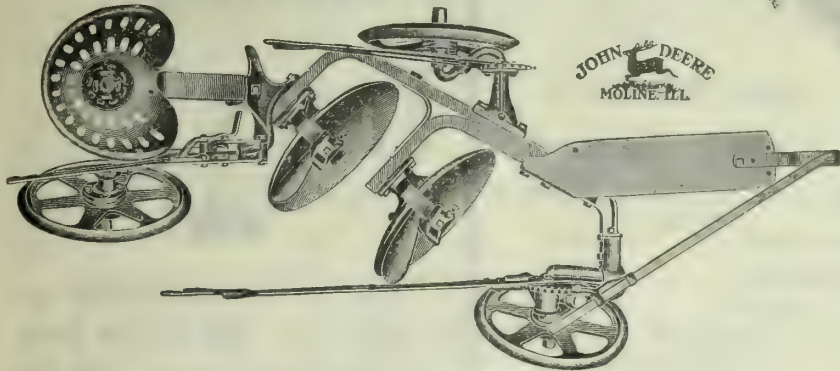
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tary, John Isaacs, of the Commission, they are having all kinds of fun over the ignorance of a large number of fruit growers of the State, who are unfamiliar with the technical term of lady-bug. Some time ago, letters were sent out stating that a shipment of the "pest-destroying lady-birds" would be received shortly," and those desiring to get a supply should put in early applications. As a result communications have been coming in that have convulsed the members of the commission. Almost every writer states he is nonplussed as to how he will get the "birds" home, and wants to know what kind of a cage would be the best for the purpose. Some have stated they will be after the "birds" and would like to know if they shall bring cages with them. To out-and-out technical terminology horticulturists in Secretary Isaacs' office the letters have proved too much, and the bare mention of "lady-birds" is enough to make them speechless. C. K. Carnes explained this morning that "coccinellidae" is Latin for the entire lady-bird family, and that no horticulturist ever thinks of calling his insect the lady-bug. In writing to the farmers, however, they forgot to go into a scientific explanation and the laughable letters have been the result. "Some years ago," he

explained, "the English sparrow was brought to this country as a pest-destructor, and I guess many of the farmers have gotten the idea that we are bringing some lady-birds over here that will go around picking bugs off the fruit trees."

MISS TREVOR'S WARD.

Continued from page 411.)

He nodded. "Yep. I'll bet she ain't the kind that knocks kids around. She looks mighty good to me."

The old man raised his head with a quick smile. Miss Trevor was gazing at the boy with an expression on her face that he had never seen there before. For the moment it seemed to him that she was beautiful.

She caught his wondering glance and flushed.

"That will do, Jack," she said. "You may sit over there until I can take you away."

Miss Trevor came a little closer to the old man's desk. "You may remember that I told you that yesterday was—was an anniversary?" she said to him in a low voice.

"Yes," he answered, "I remember."

She drew her breath quickly. "This is his son."

The old man looked up. "The son of the man who was unworthy?"

"Yes, there is no mistake about it. He bears his father's name. He is his living image. They were very poor and very unhappy."

She paused and looked away.

"And this is why you want to adopt the lad?"

"Yes."

He looked at her for a moment. "If I remember right," he gently said, "I suggested that you should mark the anniversary by some special act of kindness. You have done so—and now

I ask you to let me add my share." He made some figures on the letter pad before him. "I propose to put this amount in the bank as a Jack Ainslie fund," he said, "with Mary Trevor as sole trustee. I think the income will be quite sufficient to support and educate your ward until he comes of age."

He drew aside his hand so that she could see the figures. The tears rushed to her eyes, her lips trembled.

"Thank you," she murmured brokenly. Then she turned quickly and went to the boy.—W. R. Rose, in Cleveland Plain Dealer.

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GEORGE TOURNAY, Secretary.

DIVIDEND NOTICE

California Safe Deposit and Trust Co.

Cor. California and Montgomery Sts.,

San Francisco.

For the six months ending December 31, 1906, dividends have been declared on the deposits in the savings department of this company as follows: On term deposits at the rate of 3 6-10 per cent per annum, and on ordinary deposits at the rate of 3 1/2 per cent per annum, free of taxes, and payable on and after Wednesday, January 2, 1907. The same rate of interest will be paid by our branch offices, located at 1531 Divisadero St., 927 Valencia St., and 1740 Fillmore St., San Francisco.

J. DALZELL BROWN, Manager.

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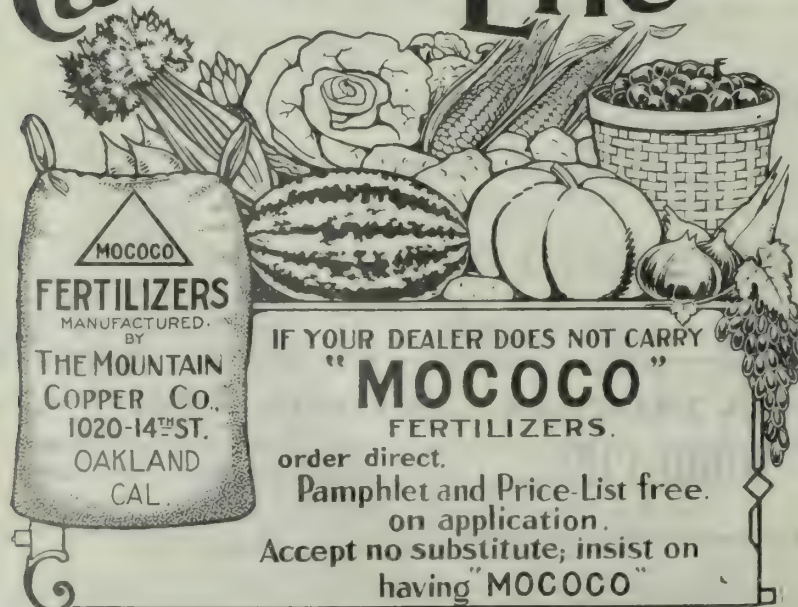
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